Baffinland Iron Mines Corporation

INTERIM MINE CLOSURE AND RECLAMATION PLAN

BAF-PH1-830-P16-0012

Rev. 2

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Index of Major Changes/Modifications in Revision 2

Item No.	Description of Change	Relevant Section
1	Updated to include reference to all relevant authorization received since previous revision.	Section 1.0
2	Updated to include conditions of Type 'A' Water Licence Part J, Item 2.	Section 2.3
3	Updated to reflect current allocation of Project components and status.	Table 3-1
4	Reference made to relevant FEIS volumes.	Section 4
5	Description of QA/QC program plan for managing the demolition land and other waste disposal areas.	Section 8.9, 8.9.1
6	Reflects current plan for the assessment of materials suitability (chemical and physical) for reclamation needs.	Section 8.10.1
7	Updated to reflect results from 6th annual geotechnical inspection report for physical and chemical stability of project components.	Section 9.1
8	Updated to include any results indicating implications of water balance or water quality model predictors, as well as, any adaptive management measures.	Section 9.2
9	Updated to reflect goals for closure criteria.	Section 11
10	Addition of contingency measures for all reclamation components including action thresholds that are linked to monitoring programs are currently under development.	Section 11
11	Section 2.4 moved to Section 13.1	Section 13.1
12	Removal of Appendix E to reincorporate Steensby and Rail Camp information back into main document.	Appendix E

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FORWORD

This Interim Mine Closure and Reclamation Plan (Interim MCRP) outlines the closure objectives, activities and criteria associated with the final closure and reclamation of the Mary River Project as approved under Project Certificate No 005 and its Amendment No 1 issued by the Nunavut Impact Review Board (NIRB) on May 28, 2014.

The Interim MCRP builds on the Preliminary Mine Closure and Reclamation Plan (Preliminary MCRP) which was reviewed and approved by the NIRB under Project Certificate 005 and its amendment, and, by the Nunavut Water Board (NWB) with the issuance of Type 'A' Water Licence 2AM-MRY1325. The Interim MCRP reflects the requirements of Part J, Item 2 of the Type 'A' Water Licence, 2AM-MRY1325 which required the Preliminary MCRP to be updated to an Interim MCRP 60 days prior to the commencement of the mining operations.

The Interim MCRP considers the complete development of the Mary River Project and describes expected closure activities at the end of the Project Life (21 year mine life). The Interim MCRP is thus a benchmark for the intended reclamation and closure activities associated with all components of the Mary River project approved under Project Certificate No. 005. The Interim MCRP will be updated as required throughout the life of the Project.

1 EXECUTIVE SUMMARY

The Mary River Project (the Project) is located on north Baffin Island, in the Qikiqtani Region of Nunavut. The Project is wholly owned by Canadian mining company Baffinland Iron Mines Corporation (Baffinland). The scope of the Project is defined by project Certificate No 005 and Type A Water Licence 2AM-MRY1325.

This Interim Mine Closure and Reclamation Plan (Interim MCRP) was originally updated from the approved Preliminary Mine Closure and Reclamation Plan (H337697-0000-07-126-0014) presented in Volume 3, Appendix 3B, Attachment 10 of the Final Environmental Impact Statement (FEIS) in accordance with applicable requirements of:

- Conditions applying to security and abandonment, closure and reclamation or temporary closure in Type "B" Water Licence 8BC-MRY1314, Type "A" Water Licence 2AM-MRY1325;
- Conditions applying to closure and reclamation set forth in Commercial Lease No.QI0C3001;
- The Project Certificate No. 005 (December 28, 2012) and its associated Amendment (May 28, 2014) terms and conditions;
- The Qikiqtani Inuit Association (QIA) Abandonment and Reclamation Policy for Inuit Owned Lands (Version 3.0, 2013);
- Aboriginal Affairs and Northern Development Canada (AANDC) Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the NWT (2013);
- Commitments made by Baffinland during the FEIS and Type 'A' Water Licence review processes.

Project related facilities were designed and constructed to minimize the footprint. These design and construction considerations have facilitated reclamation plans and minimized the engineering required to support the complete decommissioning and reclamation of the site.

Three closure scenarios and their associated closure and reclamation activities are described in this MCRP: short-term temporary mine closure, long-term temporary mine closure and final mine closure. In addition to these scenarios, progressive reclamation measures have been proposed to facilitate temporary and final mine closures measures.

In Short-Term Temporary Mine Closure, all facilities and equipment would be secured and de-energized. An inventory of all hydrocarbon products, chemicals, hazardous wastes and explosives would be carried out and all effluents would be monitored. Hazardous waste and explosives would be removed from the site. Personnel necessary, including environmental personnel, to meet closure criteria would remain on site.

During Long-Term Temporary Mine Closure the Project sites will be maintained in a secure condition, all facilities and equipment would de-energized and winterized. Site personnel will conduct general inspections periodically. They will maintain a record of these inspections. Although protective measures

will be in place the Project will no longer be monitored by on site personnel maintaining a full time presence on the Project.

Final Mine Closure and Reclamation will include removing all infrastructure, equipment and materials into an on-site landfill, the Mine Pit, quarries and/or other approved disposal location(s) for disposal of inert, non-hazardous, non-combustible materials. All other infrastructure, equipment and materials will be sent off-site to an approved disposal location. Arrangements will be made with a sealift contractor to collect materials and equipment at Milne Port to ship material destined for off-site transport. The airstrips will remain in place and left in good working order unless otherwise directed by regulatory agencies or the Land Owner to provide emergency/rescue landing spots for regional aircraft and access for post closure monitoring. Permanent dock structures will be left in place at Milne Port but all surface equipment and materials will be removed. Disturbed areas would undergo contouring of ground or granular surfaces as required to maintain stability and natural drainage patterns will be re-establish, if required, as reasonably possible. At Final Mine Closure and Reclamation, project components will be inspected to ensure long-term physical, chemical and biological stability.

The final closure and reclamation activities are expected to last a period of three (3) years. Post closure monitoring will continue until closure objectives have been achieved as shown by monitoring results. These activities are periodic. Monitoring and follow-up inspections will be conducted to assess the post-closure physical, chemical and biological stability of various components after closure and reclamation of the facilities. Environmental monitoring and follow-up inspections will assess the ongoing effectiveness of the reclamation.

The Mining RECLAIM spreadsheet provided by Aboriginal Affairs and Northern Development Canada (AANDC) (formerly Department of Indian Affairs and Northern Development) has been used as the basis for the interim estimate of the financial cost of final closure and reclamation measures required for the fully developed Project as described in the original FEIS. It addresses Project-related activity areas and infrastructure related to the original Mary River Project proposed in the FEIS including mobilization and post-closure monitoring. This estimate is intended to represent Baffinland's estimated closure and reclamation security for the Project, based on the information available at the time, at a planned closure scenario occurring at end of mine life. In order to account for interim closure and reclamation security adjustments to reflect project development phases until such a time planned closure commences, an updated determination of Project closure and reclamation security is captured on an annual basis in Annual Security Review (ASR) process to account for such cases Baffinland would not be able to reach its planned closure phase. The ASR process is conducted in accordance with Schedule C of Type "A" water license 2AM-MRY1325 and Section 9.2 of the Commercial Lease, No. Q13C301, agreed to between Baffinland and the QIA and includes consultation with Land-owners and other key stakeholders. The results of this ASR process should be considered on the interim basis to assess Project closure and reclamation liability until such time planned closure commences. In all cases, closure and reclamation liability estimates adhere to required closure and reclamation guidelines including, but not limited to, the QIA Abandonment and Reclamation policy guiding principles and stated assumptions.

2 INTRODUCTION

This Interim Mine Closure and Reclamation Plan (Interim MCRP) outlines the closure objectives, activities and criteria associated with the final closure and reclamation of the Mary River Project as approved under Project Certificate No 005 and its Amendment No.1 issued by the Nunavut Impact Review Board (NIRB) on May 28, 2014.

Mine closure and reclamation for the Mary River Project will be regulated under Baffinland's Type 'A' Water Licence 2AM-MRY1325 (Type 'A' Water Licence) and Commercial Lease No. Q13C301. In cases, if any, where there was conflict between Type 'B' Water Licence 8BC-MRY1314 and the Type 'A' Water Licence, Baffinland will adhere with the terms and conditions of the Type 'A' Water Licence. In cases where the term 'Abandonment and Reclamation (A&R)' is used in authorizations, regulations and other forms of communication, Mine Closure and Reclamation (MCR) is synonymous for the purpose of the Mary River Project.

The Interim MCRP considers the complete development of the Mary River Project and describes expected closure activities at the end of the Project Life (21 year mine life). The Interim MCRP is thus a benchmark for the intended reclamation and closure activities associated with all components of the Mary River project approved under Project Certificate No. 005. The Interim MCRP will be updated as required throughout the life of the Project.

2.1 CONCEPTUAL MINE CLOSURE AND RECLAMATION PLAN FOR THE PROJECT

The Mary River Project Interim MCRP contains and describes the studies and plans related to closure and reclamation of the Mary River Project mine site and its related mine facilities (the Project). The MCRP Plan addresses the physical, chemical, and biological stability of the Project components as well as future land use of each component of the mine. Participation of local communities and other stakeholders in the consideration of alternative reclamation activities to safeguard community values is encouraged.

Baffinland has committed to establish an advisory group focused on reclamation of the Project that will allow for local community input and involvement. At time of publication, the establishment of this advisory group is still in progress however its establishment is expected in the near term with the goal to facilitate on-going discussion, input and involvement regarding Project reclamation. This level of involvement will help ensure reclamation will be consistent with locally valued ecosystem components and regional planning objectives. All closure work will be carried out in accordance with permit requirements as stated in the Territorial Land Use Regulations.

The most recent AANDC guidelines envisage three primary stages in the development of a Mine Closure and Reclamation Plan (or A&R Plan):

- A Preliminary MCRP
- An Interim MCRP
- A Final MCRP.

After submission of the Final MCRP, the subsequent post-closure documents report the reclamation activities undertaken and compare the planned objectives performance against that which has actually been achieved.

2.2 Preliminary Mine Closure and Reclamation Plan

A Preliminary MCRP (H337697-0000-07-126-0014) was prepared for Baffinland in support of the regulatory approval process, including the Final Environmental Impact Statement (FEIS) for the Project, and was based on available Project design information which was at a conceptual design level. This document assumes that the reader has access to and is familiar with the FEIS content.

The purpose of that document was to provide an initial MCRP for the Mary River Project, at a conceptual level, in accordance with the regulatory framework established by the Inuit, Federal and Territorial governments.

2.3 Interim Mine Closure and Reclamation Plan

The Interim MCRP builds on the Preliminary Mine Closure and Reclamation Plan (Preliminary MCRP) which was reviewed and approved by the (NIRB) under Project Certificate 005 and its amendment, and, by the Nunavut Water Board (NWB) with the issuance of Type A Water Licence 2AM-MRY1325. The Interim MCRP reflects the requirements of Part J, Item 2 of the Type A Water Licence, 2AM-MRY1325 which required the Preliminary MCRP to be updated to an Interim MCRP 60 days prior to the commencement of the mining operations.

The Mary River Interim MCRP was developed to increase the detail of the closure criteria and planning presented in the Preliminary MCRP. It addresses any progressive rehabilitation undertaken to date and addresses temporary and long-term closure as well as final cessation of operations. Public health and safety is considered throughout all stages of progressive rehabilitation, closure and post-closure.

The Interim MCRP does not constitute a Final Mine Closure and Reclamation Plan. The Interim MCRP reflects the level of advancement of development on site and what is expect in future development. It is anticipated the MCRP will be updated several times throughout the life of the Project, as per the terms and conditions of the Type 'A' Water License and Commercial Lease No. Q13C301. Updates will refine and elaborate on all specific targets and commitments.

2.3.1 Regulatory Context

Baffinland is committed to, and will be responsible for, carrying out the closure and rehabilitation measures in a phased, on-going (progressive) manner as reviewed and agreed with the regulatory agencies and implicated communities.

This current revision of the Interim MCRP has been developed as per the Type 'A' Water License Part J, Item 2, in accordance with the *Mine Site Reclamation Guidelines for the Northwest Territories* (2007, INAC) and consistent with the *Mine Site Reclamation Policy for Nunavut* (2002, INAC) and the *Abandonment and Reclamation Policy for Inuit Owned Lands* (the Qikiqtani Inuit Association-Version 3.0).

The interim MCRP covers mine related components and addresses the following requirements of Type 'A' Water Licence Part J, Item 2:

a) Detailed description, including maps and other visual representations, of the preconstruction conditions for each site, accompanied by a detailed description of the proposed final landscape, with emphasis on the reclamation of surface drainage over the restored area;
b) A description of how progressive reclamation will be employed and monitored throughout the life of the mine, plus reclamation scheduling and coordination of activities with the overall sequence of the project; details of reclamation scheduling and procedures for coordinating reclamation activities within the overall mining sequence and materials balance;
c) Implications of any updated water balance and water quality model prediction results and any adaptive management measures that may be required;
d) An evaluation of closure and reclamation measures for each mine component, including the goals, objectives, closure criteria and the rationale for selection of the preferred measures;
e) A comprehensive assessment of materials suitability, including geochemical and physical characterization and a schedule of availability for reclamation needs. Particular attention shall be given to cover materials, including maps showing sources and stockpile locations of all reclamation construction materials;
f) An assessment and description of any required post-closure treatment for pit water that is not acceptable for discharge, taking into consideration further studies completed and updated modeling information;
g) Contingency measures for all reclamation components including action thresholds that are linked to the monitoring programs;
h) Monitoring programs to assess reclamation performance and environmental conditions including monitoring locations for surface water and Ground Water, parameters;
i) Monitoring schedules and overall timeframes;
j) QA/QC procedures for managing the demolition landfill and other waste disposal areas;
k) A list of non-salvageable materials and disposal locations;

l) Rock storage facility closure design plans and sections including the types of material placed and volumes;
m) Protocol for the disposal of any contaminated soil;
n) An assessment of the long-term physical stability of all remaining project components;
o) A revised closure and reclamation cost estimate; and
p) A detailed implementation schedule for completion of reclamation work

For reference where the noted requirements are addressed in the MCRP, please refer to TABLE 13-3

Relevant policies, guidelines and associated regulations that Baffinland will adhere to in the development of this and future revisions to the MCRP are outlined in TABLE 2-1, below.

TABLE 2-1: APPLICABLE MINE CLOSURE PLANNING POLICIES, GUIDELINES, AND LEASE REQUIREMENTS

Title	Source
Type A Water Licence 2AM-MRY1325	(NWB 2013)
Commercial Lease No.: Q13C301	(QIA 2013)
Guidelines for the Preparation of an Environmental Impact Statement for Baffinland Iron Mines Corporation's Mary River Project (NIRB File No. 08MN053)	(NIRB 2009)
Abandonment and Reclamation Policy for Inuit Owned Lands, Qikiqtani Inuit Association, Version 3.0	(QIA, 2013)
Mine Site Reclamation Guidelines for the Northwest Territories	(AANDC 2007)
Mine Site Reclamation Policy for Nunavut	(AANDC 2002)
Mine Site Reclamation Policy for the Northwest Territories	(AANDC 2002a)
Guidelines for Abandonment and Restoration Planning for Mines in the Northwest Territories	(NWTWB 1990)
NWT/Nunavut Mines Health and Safety Act and Regulations	2005

NIRB - Nunavut Impact Review Board
QIA - Qikiqtani Inuit Association
AANDC - Aboriginal Affairs and Northern Development Canada (formerly INAC - Indian and Northern Affairs Canada)
NWTWB - Northwest Territories Water Board

A Glossary of Terms, Acronyms and Abbreviations used throughout this document and the applicable guidelines and regulations can be found in section 14.

2.3.1.1 ANNUAL SECURITY REVIEW

On an annual basis, in order to account for interim closure and reclamation security adjustments to reflect project development phases until such a time planned closure commences, an updated determination of Project closure and reclamation security is captured through the Annual Security Review (ASR) process to account for such cases Baffinland would not be able to reach its planned closure phase. The ASR process is conducted in accordance with Schedule C of Type "A" water license 2AM-MRY1325 and Section 9.2 of the Commercial Lease, No. Q13C301, agreed to between Baffinland

and the QIA and includes consultation with Land-owners and other key stakeholders. Baffinland proposes should the need arise, this ASR process, with all administrative instruments and requirements, shall be used as an avenue to facilitate any additional discussion of closure & reclamation strategy or liability changes related to the Project on an as needed basis to reflect current Project understanding from stakeholders. For example, it is recognized that other parties such as the Department of Fisheries and Oceans (DFO) and AANDC have security requirements related to the ore dock installation that will be addressed in the ASR Process.

2.4 INTERIM MCRP GOALS AND OBJECTIVES

Over the life of the Project it is expected that techniques and methodology for mine site reclamation will continue to evolve with changes to our understanding of the Project site, stakeholder's views and technologies for cost effective and practical reclamation in northern conditions. Planning for the mine site reclamation will be risk based and remain dynamic in order to take into account results of on-going studies and identified best practices for the site specific conditions as this knowledge base is expanded over time.

The Project is being designed with closure and reclamation considerations in mind in compliance with the Baffinland Sustainable Development Policy. [1] General closure and reclamation objectives of this Interim MCRP Plan, correspond with the QIA A&R Policy. The main goals of this policy and the above guidelines and regulations are to:

- Apply the principles of pollution prevention and continuous improvement to minimize ecosystem impacts, and facilitate biodiversity conservation.
- Use energy resources, raw materials and natural resources efficiently and effectively.
- Engage with governments, employees, local communities and the public to create a shared understanding of closure and reclamation issues and take their views into consideration in making decisions.
- Return the Project affected and viable sites (Milne Port, Mine Site, and Quarries) to "wherever practicable, self-sustaining ecosystems that are compatible with a healthy environment and human activities" [2] (NRCan, 1994).
- Where practicable, undertake reclamation of affected areas as soon as practical in an on-going and progressive manner to reduce the environmental risk once the mine ceases operation (INAC, 2002. INAC, 2002a. Northwest Territories Water Board, 1990 and QIA, 2009).

[1] Baffinland Iron Mines Corporation, Sustainable Development Policy (September 2011).
[2] Natural Resources Canada. *The Whitehorse Mining Initiative Leadership Council Accord Final Report* (October 1994).

- Provide for the reclamation of affected sites and areas to a stable and safe condition and restore altered water courses to near their original alignment and cross-section. Where practical, affected areas will be returned to a state compatible with the original undisturbed area (Territorial Land Use Regulations).
- Restore altered water courses to their original alignment and cross-section (Territorial Land Use Regulations).
- Reduce the need for long-term monitoring and maintenance by designing for closure and instituting progressive reclamation, when possible.
- Provide for mine closure using the current available proven technologies in a manner consistent with sustainable development.
- Provide sufficient detail such that adequate scopes of work can be developed for the execution of reclamation work. Where insufficient details exists, monetary allowances should be included in the cost estimate to account for additional engineering and planning

In accordance with the above objectives the main objectives of the Interim MCRP are to:

- Establish a working group to consider reclamation options drawing from Inuit knowledge and arctic experiences of similar mining and use of decommissioned facilities for alternative uses.
- Provide for the long term physical and chemical stability of the Project areas so as to protect the public health and safety and ecosystem integrity.
- Promote and enhance natural re-vegetation and recovery of disturbed areas that is compatible with the surrounding natural environment and to allow for the future use by people and wildlife.
- Implement reclamation in a progressive on-going manner during the life of the Project and restore sites as soon as an area is no-longer required to limit the need for long term maintenance and monitoring.
- Reduce residual environmental effects once operations have ceased through final closure measures that are technically and economically feasible.

The list of major Project components in the MCRP will be updated with current planning.

Specific criteria are listed for reclamation scenarios in section 11 of this document. They are consistent with the AADNC 2007 Guidelines and will be revised and improved as the Project develops.

2.5 TECHNICAL CERTIFICATES

This update the MCRP was prepared by professionals of Hatch Ltd and other members of the Baffinland Mary River Project team.

2.5.1 CERTIFICATION

John Binns, M.Sc., P.Eng. – Environment Manager

Mr. Binns is a senior environmental engineer in Hatch's mining practice. He started his long career originally as an underground Mining Engineer with experience in gold and copper mines. He has broad experience in mineral exploration including mining geophysics, as well as extensive international experience in environmental management including mine closure, mine water management, Acid Rock Drainage, Environmental Management Systems (EMS), and EMS auditing.

Adam Grzegorczyk, B.Sc (Env.) - Mine Closure and Reclamation Planning

Mr. Grzegorczyk is an environmental analyst in Hatch's mining practice. He has broad experience in Environmental Management Systems (EMS), Lifecycle Assessment, project planning and due diligence. He has worked closely with clients throughout his career to identify environmental impacts and mitigation strategies during the project planning and implementation phases for large scale mining, metal, infrastructure, and energy projects with a particular emphasis on project closure and reclamation.

Catalina González, M.Env.Sc. – Junior Engineer

Miss González is an environmental engineer in Hatch's Environmental Service Group with experience in environmental management, abandonment and reclamation planning and security costs estimates.

3 PROJECT INFORMATION

3.1 PROPONENT NAME AND ADDRESS

The proponent of this MCRP is:

Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON, Canada L6H 0C3
Tel: (416) 364-8820 Fax: (416) 364-0193

3.2 PROJECT DESCRIPTION AND SITE PLANS

A summary Project Description is provided below along with location drawings for each of the major Project sites identifying when components are planned to be reclaimed.

3.2.1 PROJECT DESCRIPTION

The basis of the Mary River Project (the Project) is production and shipment of high grade iron ore from Deposit No.1 located on North Baffin Island in the Qikiqtani Region of Nunavut. There are three (3) main project locations consisting of the Mine Site, Milne Port located north of the Mine Site, and, Steensby Port located south of the Mine Site. Milne Port is connected to the Mine Site by a 115 km Tote Road while a railway, 149 km in length, will eventually be constructed to connect Steensby Port to the Mine Site. The Mine Site is located approximately 160 km south of Pond Inlet (Mittimatalik) and approximately 1,000 km northwest of Iqaluit.

The Project Description for the project has been presented in the Final Environmental Impact Statement (FEIS 212 and FEIS Addendum 2013). The Project plan calls for a phased development approach. Initially, Milne Port be developed and the Tote Road will be upgraded to enable the Company to mine and ship 3.5 Mtpa of ore via Milne Port. At a later stage, the railway will be constructed that will connect the Mine Site at Mary River to a newly constructed Port in Steensby Inlet on the south-western coast of Baffin Island. For the construction period, material, equipment and supplies required for the installation of needed facilities at the Mine Site and the northern portion of the railway will be received via Milne Port. Goods received at Milne Port will be transported to the work sites via the existing Tote Road. Likewise, construction materials for the new port in Steensby Inlet and the southern portion of the railway will be received at the Steensby Port location.

It is expected that the Steensby Port facilities and the Railway will take four (4) years to construct. Upon completion of the railway and Steensby port construction, an additional 18 Mt/a of iron ore will be transported by rail and transferred to ore carrier vessels from Steensby Port for shipment to international markets. Shipping of ore from Steensby Port will occur year round and will require vessels with icebreaking capabilities.

The ERP includes development of a nominal 3.5 million tonnes per annum (Mt/a) road haulage operation from the Mine Site to Milne Port for shipping of iron ore during the open water season. The ERP introduces the following additional infrastructures that were not part of the original approved Project:

1. Milne Port:
   - Ore stockpiling, reclaiming and loading equipment.
   - Ore dock.
2. Mine Site
   - Truck haulage fleet and associated extended maintenance facilities.

The construction of the ERP facilities is scheduled to be completed by end Q1 2015 except for final commissioning of the ship loader which cannot occur until mid-July when ore shipping begins in the open water season of 2015. Iron ore will be transported to Milne Port along the Tote Road by ore truck and shipped out of the Milne Port during the open water season. Approximately 2 Mt iron ore will be shipped in 2015 with 3.5 Mtpa shipped thereafter. During the construction phase of the Project, the majority of the construction material and supplies, fuel and mining equipment will be received at Milne Port during the open-water season August to October.

Once the Railway is operational, the Mary River Project will produce and ship 3.5 Mtpa of ore via Milne Port and 18 Mtpa of via the railway and Steensby Port.

The Project sites are shown on FIGURE 3-1. The Major Project Components are listed in TABLE 3-1.

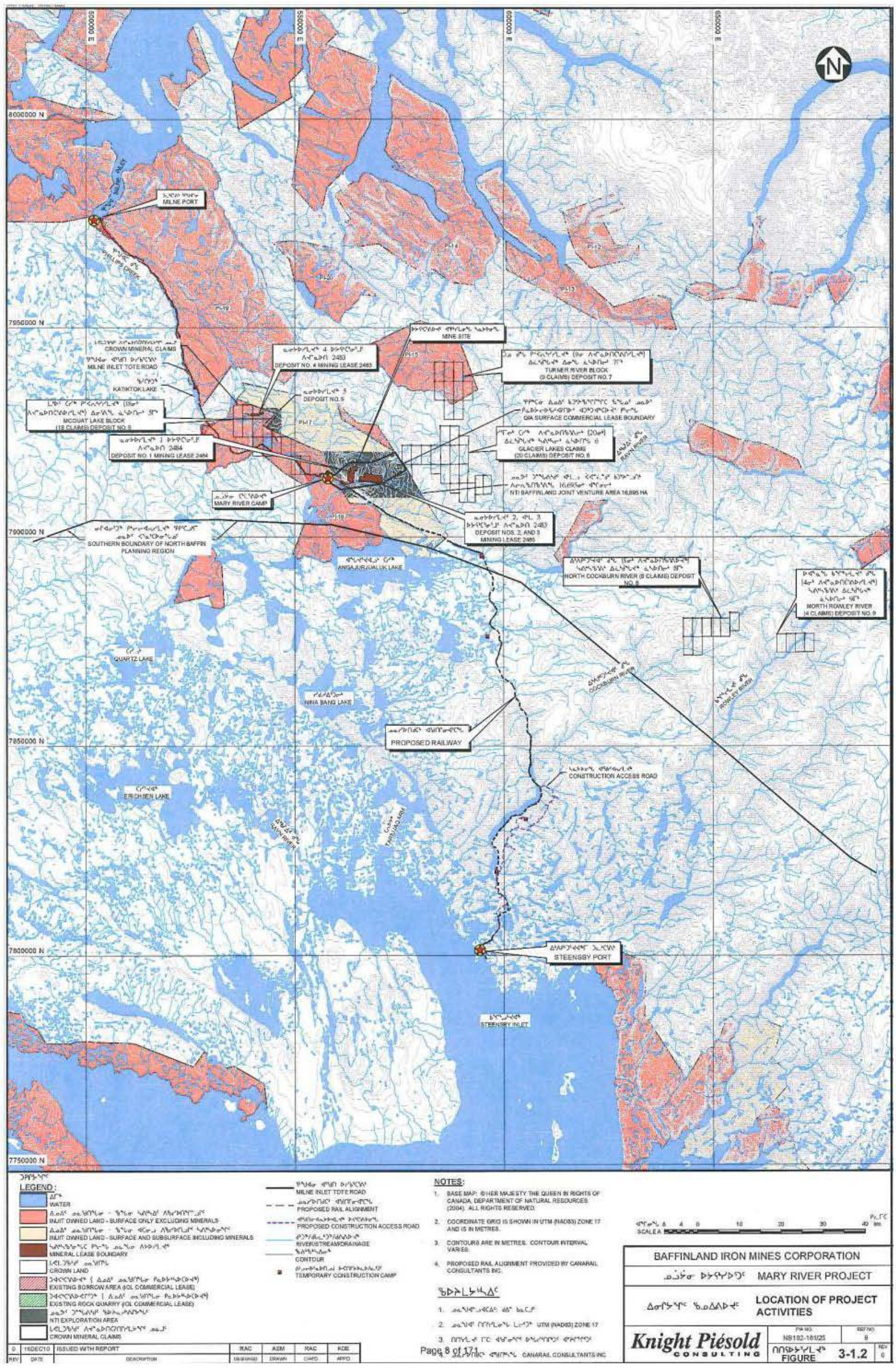

FIGURE 3-1: LOCATION MAP

TABLE 3-1: MAJOR PROJECT COMPONENTS

Major infrastructure Components	Authorized under Project Certificate No 005	Authorized under Project Certificate No 005, ERP Amendment[2]	Status of Development as of March 31, 2014
Milne Port Site			
Ultimate development area	x	-	In progress
Site development, grading, roads, laydown, drainage	x	x	In progress
Water supply (intake, transport, storage and distribution)	x	-	In progress
Quarries and borrow pits	x	-	In progress
Camp	x	-	Completed
Sewage treatment plant and discharge	x	-	In progress
Polishing Waste Stabilization Pont (PWSP)	x	-	Completed
Incinerator	x	-	Completed
Service buildings (filed offices, maintenance shops, vehicle wash stations, ERT, warehouses, concrete batch plant)	x	-	In progress
Waste management facilities including temporary storage areas	x	-	In progress
Landfarm	x	-	In progress
Power generation and distribution	x	-	Differed
Transitional power generation and distribution	x	-	Completed
Hazardous material storage areas	x	-	In progress
Fuel tank farm and fuel dispensing facilities (Arctic Diesel, Jet-A Fuel)	x	-	In progress
Fuel tank farm and fuel dispensing facilities (Marine Diesel)	-	x	Not started
Ore stockpile	-	x	Not started
Ore handling facilities (unloading, transfer and stockpiling, reclaiming, ship loading) and associated surface runoff ponds	-	x	Not started
Ore dock	-	x	Not started
Freight dock	-	x	Not started
Relocated air strip	-	x	Not started
Explosives storage	x	-	Completed
Tote Road			
Realignment and grade improvement	x	-	In progress
Water crossings improvement/replacement	x	-	In progress
Bridge construction	x	-	In progress
Borrow Pits and Quarries	x	-	In progress
Water withdrawal for dust control	x	x	On going

Major infrastructure Components	Authorized under Project Certificate No 005	Authorized under Project Certificate No 005, ERP Amendment[2]	Status of Development as of March 31, 2014
Mine Site			
Mine Site development, grading, service roads, ore haul roads, laydown, drainage and diversions	x	-	In progress
Camp Lake water supply (intake, transport, storage and distribution)	x	-	In progress
Water crossings and surface water diversions	x	-	In progress
Quarries and borrow pits	x	-	In progress
Transitional Camps (early development)	x	-	Completed
Sewage treatment plants, PWSPs and discharge	x	-	In progress
Incinerator	x	-	Completed
Permanent camp and construction camp	x	-	Deferred
Service buildings (field offices, temporary or transitional construction facilities, light vehicles maintenance shops, ore trucks maintenance shops, vehicle wash stations, ERT, warehouses, concrete batch plant)	x	-	In progress
Mining fleet maintenance facilities	x	-	In progress
Mining activities	x	-	Not started
Waste rock storage with associated runoff control structure	x	-	Not started
Waste management facilities including temporary storage areas	x	-	In progress
Landfill	x	-	Completed
Landfarm	x	-	Deferred
Transitional power generation and distribution	x	-	Completed
Power generation and distribution	x	-	Deferred
Hazardous material storage areas	x	-	In progress
Permanent fuel tank farms and fuel dispensing facilities (arctic diesel, jet A fuel – 15.5 ML)	x		Deferred
Transitional fuel storage facilities (multiple fuel storage tanks for construction phase)	x	-	In Progress
Temporary crushing facility (crusher trains)	x	-	Not started
Permanent crushing facilities	x	-	Deferred
Transitional ore stockpile and runoff control		x	Not started
Ore stockpiling (run of mine, crushed ore) and associated runoff control ponds	x	-	Deferred
Ore handling facilities (unloading, transfer, tertiary crushing and screening, stockpiling, reclaiming, railway loading) and associated surface runoff ponds	x	-	Deferred
Air strip extension	x	-	Not started
Explosives storage	x	-	Completed
Emulsion plant	x	-	Deferred

Major infrastructure Components	Authorized under Project Certificate No 005	Authorized under Project Certificate No 005, ERP Amendment[2]	Status of Development as of March 31, 2014
Railway			
Service road	x	-	Deferred
Railway embankment	x	-	Deferred
Winter road	x	-	Deferred
Railway construction and operation	x	-	Deferred
Railway construction camps, sewage treatment facilities, emergency ponds and incinerator	x	-	Deferred
Railway camps associated services facilities	x	-	Deferred
Water crossings (bridges and culverts)	x	-	Deferred
Multiple construction fuel storage units	x	-	Deferred
Mobile explosive units	x	-	Deferred
Tunnel construction and disposal of waste rock	x	-	Deferred
Borrow pits and quarries	x	-	Deferred
Steensby Port Site			
Site development, grading, roads, laydown, drainage	x	-	Deferred
Water supply (intake, transport, storage and distribution)	x	-	Deferred
Water crossings and diversions	x	-	Deferred
Quarries and borrow pits	x	-	Deferred
Camp	x	-	Deferred
Sewage treatment plant, PWSPs and discharge	x	-	Deferred
Incinerator	x	-	Deferred
Service buildings (field offices, temporary construction facilities, light vehicles maintenance shops, ore trucks maintenance shops, vehicle wash stations, ERT, warehouses, concrete batch plant)	x	-	Deferred
Waste management facilities including temporary storage areas	x	-	Deferred
Landfill	x	-	Deferred
Landfarm	x	-	Deferred
Power generation and distribution	x	-	Deferred
Hazardous material storage areas	x	-	Deferred
Fuel tank farms and fuel dispensing facilities (Arctic Diesel, Jet A-Fuel and Marine Diesel)	x	-	Deferred
Railway switch yard	x	-	Deferred
Railway terminal maintenance shop	x	-	Deferred
Ore stockpile	x	-	Deferred

Major infrastructure Components	Authorized under Project Certificate No 005	Authorized under Project Certificate No 005, ERP Amendment[2]	Status of Development as of March 31, 2014
Ore handling facilities (unloading, transfer, tertiary crushing and screening, stockpiling, reclaiming, ship loading) and associated surface runoff ponds	x	-	Deferred
Ore dock	x	-	Deferred
Freight dock	x		Deferred
Air strip	x	-	Deferred
Explosives storage	x	-	Deferred
Explosives plant	x	-	Deferred
Overwintering of fuel barge	x	-	Deferred
Dredged sediment disposal area	x	-	Deferred

Note 1: Includes additional authorizations under Type A Water Licence 2AM-MRY1325

Note 2: Includes additional authorizations under Type A Licence 2AM-MRY1325 and Type B Licence 2BE-MRY142

3.2.2 SITE PLANS

The Mine Site, Milne Port and Steensby Port, final connecting infrastructure and principal camp locations site plans are shown on the series of drawings in Appendix A and as described in TABLE 3-2. These figures represent the intended site layouts at completion of Operation of the Mary River Project including the Railway Execution Phase. Project components that are planned to be reclaimed following the construction phase are quantified separately as are components that are contained on Inuit Owned Land.

There has been no change to the closure strategy for the Railway Execution Phase of the Project (as approved under the Project Certificate No. 005). For drawings to account for interim closure and reclamation adjustments to reflect project development phases until such a time planned closure commences, see documents/figures associated with the Annual Security Review (ASR) process conducted in accordance with Schedule C of Type "A" water license 2AM-MRY1325 and Section 9.2 of the Commercial Lease, No. Q13C301, agreed to between Baffinland and the QIA.

Until such time the Railway Execution Phase commences, Steensby Camp and other explorations camps along the proposed railway corridor and exploration areas will be governed by the Exploration Closure and Reclamation Plan (BAF-PH1-830-P16-0038).

TABLE 3-2: DRAWINGS FOR MINE CLOSURE AND RECLAMATION

Drawing Number	Drawing Title
E349000-2000-07-014-00001	Areas of Reclamation – Milne Port Layout
H337697-4210-07-012-0001	Preliminary Mine Closure and Reclamation Plan – Mine Site Construction Phase
H337697-4210-07-012-0002	Preliminary Mine Closure and Reclamation Plan – Mine Site Final Closure Phase
H337697-0000-07-126-0014	Preliminary Mine Closure and Reclamation Plan – Tote Road
H337697-2000-07-012-0001	Preliminary Mine Closure and Reclamation Plan – Railway Alignment
H337697-7000-07-012-0002	Preliminary Mine Closure and Reclamation Plan – Ravn River Rail Camp
H337697-7000-07-012-0003	Preliminary Mine Closure and Reclamation Plan – North Cockburn Camp – Tunnels
H337697-7000-07-012-0004	Preliminary Mine Closure and Reclamation Plan – South Cockburn Lake Rail Camp
H337697-4510-07-012-0001	Preliminary Mine Closure and Reclamation Plan – Steensby Port Construction Phase
H337697-4510-07-012-0002	Preliminary Mine Closure and Reclamation Plan – Steensby Port Final Closure Phase

3.3 INUIT OWNED LANDS

The Inuit Owned Lands (IOL) surrounding the Project area is shown on FIGURE 3-1. The Commercial Lease, No. Q13C301, to the Project is held by Baffinland and is leased from the Qikiqtani Inuit Association (QIA). In accordance with this and any future surface leases held with the QIA, this MCRP incorporates the guidelines developed for the Qikiqtani lands entitled the Abandonment and Reclamation (A&R) Policy for Inuit Owned Lands (Version 3.0, QIA 2013). The guiding principles of the A&R Policy require that all disturbed IOL be returned to a safe and stable condition capable of supporting human and wildlife needs consistent to social and cultural needs of the Inuit for the undisturbed lands within that area. The QIA guidelines used for this MCRP are summarized in Appendix C. Milne Port and the Mine Site are entirely located on Inuit Owned Land. The first 25 km of the railway and access roads are located on Inuit Owned Land. The remaining sections are located on Crown land.

4 PRE-DEVELOPMENT SITE CONDITIONS

For a detailed description of the pre-construction social, physical, biological and chemical conditions at the Mary River Project site location and impact area please refer to the following volumes of the FEIS:

- Volume 4: Human Environment
- Volume 5: Atmospheric Environment
- Volume 6: Terrestrial Environment
- Volume 7: Freshwater Environment
- Volume 8: Marine Environment

Since 2007, Baffinland has provided annual reports to the Nunavut Impact Review Board (NIRB) summarizing the site work completed, and the work planned for the following year for the activities previously screened and approved by NIRB. These reports also provide a synopsis of compliance performance with explorations licences, permits, approvals and commitments, and include the results of monitoring activities. An update on the existing environmental conditions and progressive reclamation activities are also contained in these reports. The reports are publicly available through NIRB (http://www.nirb.ca/). Appendix D provides site photographs of current conditions onsite.

All works and activities proposed to be conducted as part of the Mary River Project have been screened by the NIRB and have been considered in the Project Certificate No. 005 issued by the NIRB on December 28, 2012 and the approved Project Certificate amendment to No.005, received in spring 2014 for the ERP.

The general scope for the 2014 Work Plan included:

- The development and construction of infrastructure required for site capture at Milne Port, consisting of the construction of the ore dock and associated facilities related to the ERP, and the Mine Site for the launching of the Mary River Project.
- Ongoing environmental baseline data collection and geotechnical drilling in order to support the development of the Project. These activities will resume at the Milne Port site, along the Tote Road, at the Mine Site, at numerous quarry sites and at other Project development areas.

5 PROGRESSIVE REHABILITATION

TABLE 5-1: SUMMARY OF THE CURRENT AND PROPOSED PROGRESSIVE REHABILITATION SCHEDULE

Phase:	Construction – ERP		Operation – ERP						Operation - Rail Phase			
Year:	**1**	**2**	**1**	**2**	**3***	**4***	**5***	**6***	**1**	**2**	**3**	**4**
Milne Port												
Stockpile												
Camp Pad												
PWSP (current)												
Bladder Farm												
Quarry (Q1)												
Mary River												
Bladder Farm												
Quarry (QMR2)												
Laydown Areas												
Borrow Pits												
Rail												
Rail access road												

*Rail Phase construction begins

In accordance with the objectives and guidelines presented in Section 2.5, progressive rehabilitation will be implemented to reduce the risk to the environment. In addition to progressive closure activities, observations during operations to identify best practices for promoting natural re-vegetation of disturbed areas will occur and may be incorporated into updates of the Interim MCRP. The experience from closure of the Nanisivik and Polaris mine sites, which are in a similar climate zone, will be used as references.

5.1 PROPOSED PROGRESSIVE REHABILITATION

This section describes the proposed rehabilitation measures that will be progressively completed during the construction and/or operation phases of the mine.

The overall intent of the Interim MCRP, is to achieve Baffinland's desire of restoring the existing conditions of the Mine Site and Milne Port during operation as practicable and on closure, so that areas affected by the proposed Project activities and to a lesser extent the historic exploration, bulk sampling programs, are returned to a state that is compatible with the original undisturbed areas upon completion of mining activities. The progressive rehabilitation measures proposed as part of the Interim MCRP are technically and economically feasible and reflect the objectives of this Plan, found in section 2.5.

Most of the Project areas will be actively used during the construction and operation phases. Where practical, the inactive areas will be progressively reclaimed during construction and operations.

5.1.1 PROGRESSIVE RECLAMATION OF THE MINE SITE

Studies will be undertaken, as needed, to identify if a best practice for promoting natural re-vegetation of disturbed areas can potentially be used for reclamation. This will likely include an examination of colonizing species to previously disturbed areas. It must be noted that in much of the Project Area, vegetation is naturally sparse or nonexistent (e.g., waste rock pile footprint). Therefore, natural growth of vegetation for those areas is expected to be minimal and the reclamation goal for those areas will be long term landform stability.

It should also be noted participation of local communities via QIA representatives and other applicable regulatory agencies in the consideration of alternative reclamation activities to safeguard community values is encouraged. To that end, Baffinland has committed to establish an advisory group focused on reclamation of the Project that will allow for local community input and involvement in future revisions to this document.

The following areas will be progressively reclaimed during the construction and/or operation phases at the Mine Site:

- Laydown areas – un-used areas or areas no longer needed during operations will be re-graded and scarified.
- Quarries and Borrow Pits – once exhausted or no longer required, sites will be graded to maintain safe side slopes and re-establish the natural drainage of the area. Closure and reclamation of these sites will be carried out in accordance the site specific permits as outlined in the individual Borrow Pit or Quarry Operating Plan.
- Landfill – the landfill will be progressively covered with cover consisting of overburden to allow the contents of the landfill to remain permanently frozen.

- Camps – following the construction phase, construction camps will be removed and/or downsized to accommodate the reduced personnel onsite during operations. Associated structures and infrastructure not required for on-going operation will be removed. The affected area will be re-graded, and selectively scarified and contoured to facilitate natural drainage.
- Waste rock stockpile – will be monitored during operations. Based on current investigations it is anticipated that most of the waste rock will not be prone to metal leaching or acid drainage. However, if ongoing work characterization studies show that the minor portion waste rock that is potentially acid generating (PAG) could cause unacceptable impact to runoff and seepage, the waste rock stockpile construction strategy will be modified accordingly.
- Landfarms – hydrocarbon-contaminated soils will be excavated and treated in the landfarms throughout the life of the Project.
- Facilities not in use during the Operations phase will be demolished, removed, and/or disposed of in approved site landfills, the Mine pit, quarries, other approved disposal locations or off-site disposal facilities.
- Roads – roads no longer required during operations, will be decommissioned. Stream crossings will be removed, and drainage channels that are stable in the long-term will be re-established.

5.1.2 Progressive Reclamation of Milne Port

Following the Construction phase the camp facilities will be downsized to accommodate the reduced personnel remaining onsite during the proposed ERP operations and temporarily de-commissioned once the Railway Phase has been commissioned. Once the Railway Phase is commissioned and operational, Milne Port will continue to be used to ship ore..

The following additional activities have or will be undertaken to progressively reclaim Milne Port:

- Removal of fuel bladders (undertaken in Fall 2013).
- Bioremediation of contaminated soils in an engineered land farm (to be undertaken summer/fall 2014).
- Laydown areas which are no longer required will be re-graded and scarified.
- Quarries and borrow areas not used for disposal during final reclamation, will be re-contoured to maintain safe side slopes and re-establish natural drainage.

5.1.3 Progressive Reclamation of Steensby Port

Following the construction phase, the construction docks will be decommissioned. The ballast and caissons will be removed and either reused at either the Mine Site or Milne Port or disposed of at an approved facility. The following additional activities will be undertaken to progressively reclaim Steensby Port:

- The future Steensby Port landfill will be progressively reclaimed using a cover to allow the waste materials to remain permanently frozen and isolated.
- Quarries and borrow areas not used for disposal during final reclamation, will be re-contoured to maintain safe side slopes and re-establish natural drainage.

The construction camp will be downsized to accommodate the reduced personnel remaining onsite during operations.

5.1.4 Progressive Reclamation Associated with the Railway

Following completion of the railway, the following progressive reclamation activities will be undertaken:

- The railway construction camps will be decommissioned and include the following reclamation activities:
  - Dismantling of the water treatment and sewage treatment systems as per the manufacturer's specifications. All remaining infrastructure will either be sea lifted to an approved facility for disposal or disposed of at the Mine Site landfill, Steensby Port landfill, or other approved repositories.
  - Where practical, buildings, equipment and machinery will be reused. Alternatively, buildings, equipment and machinery will be demolished and sent for sealift to an approved facility for salvage/disposal or disposed of at the Mine Site landfill, Steensby Port landfill, or other approved repositories.
  - All fuel storage containers will be drained and removed from the camp sites for disposal at an approved facility. Secondary containment structures such as liners, will also be removed, tested for hydrocarbon content and sent to an approved facility at the Mine Site or Steensby Port for disposal.
  - Soils suspected of hydrocarbon contamination will be tested. It is expected contaminated soils will be bioremediated within landfarms located at either the Mine Site or Steensby Port or alternatively, sent via sealift to an approved facility for disposal.
  - All non recyclable, inert materials (i.e. material having insignificant leachability and pollution content) will be disposed of at the Mine Site landfill, Steensby Port landfill, or other approved repositories. At closure, the onsite landfills located at the Mine Site and Steensby Port will be reclaimed by capping the landfill with overburden or equivalent material. The landfill sites will be allowed to naturally re-vegetate.
  - All disturbed areas will be re-graded to restore the natural drainage of the area and will be scarified.

- The construction access road along the rail alignment with arteries to the camps and quarries will be decommissioned. All water crossings will be removed and the natural drainage of the area will be restored.
- All quarries and borrow areas will be graded to maintain safe side slopes and natural drainage will be restored unless they are an approved disposal location to be used during reclamation.
- All disturbed areas will be will be scarified to encourage natural re-vegetation.
- Areas experiencing thermal disruptions (ponding, settlement and/or subsidence) will be drained of excess water, re-graded and/or insulated with a layer of overburden to restore the natural drainage of the area and maintain an active layer above the permafrost of 1 to 2 m (pers. Comm. Wiseman). The affected areas will be scarified to encourage natural re-vegetation.
- Phase I Environmental Site Assessments (ESA) will be carried out on the rail embankment. Further assessment will follow the ESA protocols.
- Progressive reclamation associated with the railroad will be revised at a later stage in the Project and include measures relative assessing and remediating, if warranted, to:
  - Railroad maintenance facilities that have generated wastes and the potential for spillage of solvents and heavy metals.
  - Railroad fuelling facilities: diesel spillage, diesel recovery, water treatment, soil remediation. Storage of gasoline at fuelling facilities.
  - Ballast geochemistry, potential ML/ARD.
  - Other materials to be hauled on the line such as diesel which have the potential to contaminate ballast and soils.
  - Ore dust from moving trains.
  - Ore spillage into the ballast from movement of trains.
  - Ballast cleaning and disposal of recovered fines.
- Tie replacement and disposal of used ties.

6 TEMPORARY MINE CLOSURE SUSPENSION OF ACTIVITIES

The Mine Site Reclamation Policy for Nunavut (2002) and the Mine Site Reclamation Policy for the Northwest Territories (2002) require that contingency measures be established in the MCRP for Temporary Closure of a mine site. Under the Guidelines for Abandonment and Restoration Planning for Mines in the Northwest Territories (NWTWB, 1990) temporary closure is defined as the planned shutdown of a mine site for a period of less than one year. This section of the report presents the conceptual plans for suspension of activities of less than one year. Section 7 below covers Long-Term Temporary Closure beyond one year.

In the event of temporary closure, care and maintenance of the Project sites will be implemented and executed by operational maintenance staff and other support personnel on site. Access to the Project sites, buildings and structures will be restricted to authorized persons only, as during operations. Buildings where potential hazards exist will be locked or otherwise secured.

6.1 HEALTH AND SAFETY OF WORKERS AND THE PUBLIC DURING TEMPORARY CLOSURE

Health and Safety of workers and the Public will be ensured during Temporary Closure. Infrastructures will be kept secure by routine maintenance and inspections to eliminate any hazard to the public health and safety or material erosion to the terrestrial or aquatic receiving environment at concentrations that are harmful. Access to buildings and infrastructures will be restricted to authorized personnel only (see section 6.2).

Employees on site will have been trained for site-specific health and safety. Baffinland commits to abide by all applicable NWT/Nunavut Mines Safety Act and Regulations, and the Explosives Use Act.

It will be ensured that emergency procedures will be applicable and that all equipment necessary for these procedures will be accessible and kept in good working condition.

6.2 RESTRICTION OF ACCESS AND SITE SECURITY

During Temporary Closure, the Mine Site and Milne Port will be maintained in a secure condition through the provision of continuous site security. Mine dewatering and water treatment where required will be on-going. As a result a number of operational maintenance staff, environmental personnel and other support personnel will be onsite at the Mine Site and Milne Port. Access to buildings and structures will be restricted to authorized persons, as during operations. Buildings where potential hazards exist will be locked or otherwise secured.

Security personnel will carry out routine inspections of security, safety and environmental measures and maintain a record of these inspections. Contact information will be provided to pertinent government and Inuit agencies to facilitate their communication and potential access to the Mine Site and/or Milne Port, if and when necessary.

The explosives contractor will manage explosives in accordance with applicable regulatory requirements as per NRCan Permit and the Mine Safety Act.

During Temporary Closure, reclamation activities such as re-grading and re-vegetation will continue as per the progressive reclamation plan (see section 5). Erosion and discharge streams will be controlled as part of regular maintenance activities. Additionally, care will be taken that lines and pipes do not freeze and rupture.

6.3 Security of Mine Openings

Due to the configuration of Deposit No 1, an open pit is not expected to occur until years 10 to 12 of operation at full production volume (21.5 Mtpa). Once a pit is formed, closure activities will take into consideration access to the mine pit. The entrance ramp to the open pit will be fenced using boulders or other means to prevent inadvertent access. Signage indicating an “Open Hole” will already be in place around the open pit perimeter during operations as per NWT/Nunavut Mines Safety Act Regulations.

6.4 Security of Mechanical, Hydraulic Systems and Electrical Systems

During Temporary Closure, equipment required for the security and safety, including environmental aspects and safety will be maintained in working condition.

Buildings will be locked or otherwise secured to prevent inadvertent access once the Mine Site and Milne Port are evacuated by the majority of the personnel, except as required by the onsite staff for site maintenance and security. Non-essential mechanical and hydraulic systems will be left in a no-load condition. Live electrical systems will be fenced, locked, or otherwise secured against inadvertent entry or contact, and appropriate signs will be placed to warn of potential hazards.

6.5 Waste Management Sites

During or prior to Temporary Closure, an inventory of all hydrocarbon products, chemicals, explosives and hazardous wastes (e.g. used oils, ammonium nitrate and greases) will be updated and stored in a secure and environmentally sound manner.

All storage facilities that contained any such materials will be secured and monitored. Inert waste will be disposed of in the landfill site at the Mine Site or other approved repositories.

During Temporary Closure the non-hazardous waste management facilities at the Project will continue as in normal operations on an as-required basis. If waste management facilities are no longer required, landfills will be covered with 1.5 m of over burden.

6.6 Security of Chemicals

All hazardous materials and wastes may be removed from Project sites via sealift and disposed of at a licensed hazardous waste disposal facility in Southern Canada via sealift if available. Any remaining hazardous materials and wastes will be stored in a secured area and be subject to appropriate inspection programs to ensure environmental sound storage. Any remaining explosives (e.g. ammonium nitrate) will be removed from the site or detonated in a controlled and safe fashion by qualified and licensed personnel at appropriate locations away from sensitive receptors.

During Temporary Closure activities, remaining chemicals and petroleum products will be identified and their quantities will be recorded.

6.7 Docks and Airstrip

During Temporary Closure activities, airstrip and dock infrastructure and equipment will be left in place. All non-essential mechanical and hydraulic systems will be left in a no-load condition. Live electrical systems will be fenced, locked, or otherwise secured against inadvertent entry or contact, and appropriate signs will be placed to warn of potential hazards.

6.8 Control of Effluents

Mine Site and Milne Port water management will be required during Temporary Closure, including:

- Domestic sewage treatment.
- Surface/discharge waters, as per applicable regulatory requirements.

The drainage system established during operation will be retained and surface water will continue to collect in existing settlement ponds and, where required by the Licence, waters will be prior to discharge to the receiving environment.

The waste rock stockpile will be monitored during operations. Based on current investigations it is anticipated that most of the waste rock will not be prone to metal leaching or acid drainage. However, if ongoing work characterization studies show that the minor portion waste rock that is potentially acid generating (PAG) could cause unacceptable impact to runoff and seepage, the waste rock stockpile construction strategy will be modified accordingly. If treatment is required, water will be batch treated with lime dosing for Acid Rock Drainage (ARD) affected water or a treatment plant such as a High Density Sludge (HDS) treatment plant may be required.

The Life-of-Mine Waste Rock Management Plan (BAF-PH1-830-P16-0031) provides treatment options in the event that waste rock run-off requires treatment. The Fresh Water Supply, Sewage, and Wastewater Management Plan (BAF-PH1-830-P16-0010) provide the design criteria and operations and maintenance requirements for the collection and treatment of the site's wastewater.

6.9 Stabilization of Stockpiles

Ore and waste rock stockpiles will be visually assessed for stability at the start of Temporary Closure and stabilized if required. The stockpiles will be periodically inspected during the Temporary Closure.

6.10 Site Inspection Program

The general site areas at the Mine Site, Milne Port and Tote Road will be periodically inspected by onsite security personnel. Visual inspections of the Mine Site and Milne Port will be carried out to verify the physical stability of waste rock stockpiles and pit walls. Chemical analyses of surface water will be conducted monthly by site personnel at the Mine Site, Milne Port and Tote Road. If seepage or drainage locations are identified during the visual site inspections of the open pit, waste rock stockpile and ore stockpiles sampling will be conducted by site personnel.

6.11 Notification of Temporary Closure

Employees, local communities, and the public will be notified in advance of any scheduled short term temporary closure activities.

7 LONG-TERM TEMPORARY MINE CLOSURE CARE AND MAINTENANCE

The Guidelines for Abandonment and Restoration Planning for Mines in the Northwest Territories (NWTWB, 1990) define Long-Term Closure as the state of inactivity resulting from economic considerations or a reduction in ore reserves for a period greater than one year. During Long-Term Closure the Project sites will be maintained in a secure condition. Site personnel will conduct general inspections periodically and may decrease that frequency if the site inspections indicate that the site infrastructure is stable. A record of these inspections will be maintained. The names of contact persons will be provided to the pertinent regulators and government agencies such as Aboriginal Affairs and Northern Development Canada (AANDC) and QIA for their information and to facilitate their access to the site if and when necessary. The Project could reopen when the circumstances requiring the closure change (e.g., when economic or other conditions that caused the temporary cessation of operations is no longer of concern).

Baffinland commits to mobilizing qualified environmental support personnel to complete tasks related to environmental management and monitoring.

7.1 HEALTH AND SAFETY OF WORKERS AND THE PUBLIC DURING LONG-TERM TEMPORARY CLOSURE

Health and safety of workers and the Public will be ensured during Long-Term Temporary Closure. Infrastructures will be kept secure by routine maintenance and inspections to eliminate any hazard to the public health and safety or material erosion to the terrestrial or aquatic receiving environment at concentrations that are harmful.

Access to buildings and infrastructures will be restricted to authorized personnel only (see Section 7.2). Safety will be reinforced by an inspection program (see Section 7.9).

Employees on site will have been trained for site-specific health and safety. Baffinland commits to abide by the NWT/Nunavut Mines Safety Act and Regulations, and the Explosives Use Act.

It will be ensured that emergency procedures will be applicable and that all equipment necessary for these procedures will be accessible and kept in good working condition.

7.2 RESTRICTION OF ACCESS AND SITE SECURITY

During Long-Term Closure, the Mine Site and Milne Port will be maintained in a secure condition. Access to the buildings and structures will be locked and/or fenced/gated. Potentially unsafe areas will be posted with appropriate signage. Unused machinery and equipment will be removed, where practical.

The explosives contractor will manage explosives in accordance with applicable regulatory requirements by NRCan and the Mines Safety Act. On commencement of Long-Term Closure, explosives will be either removed from the Project or/and detonated in a controlled and safe fashion by experienced and licensed personnel at appropriate locations away from sensitive receptors.

During Long-term Closure, reclamation activities such as re-grading and re-vegetation will continue as per the progressive reclamation plan (see Section 5). Erosion and discharge streams will be controlled as part of regular maintenance activities. Additionally, care will be taken that lines and pipes do not freeze and break.

7.3 Security of Open Pit

Following notice of Long-Term Closure the pit walls of the open pit will be inspected by a qualified professional to assess the physical stability. Pit water will be monitored during the course of the operation for any indication of contamination at levels that exceed MMER or may adversely affect the receiving environment. During Long-Term Closure dewatering of the open pit will cease and the open pit be allowed to naturally flood.

It is anticipated that the final configuration of the open pit will take an estimated 85 to 150 years to passively fill with water from natural sources such as direct precipitation and surface runoff (KP 2008). Therefore, it is anticipated that the open pit will not completely flood during Long-Term Closure and drainage from the open pit is not considered to be an issue.

Other Long-Term Closure activities to close out the open pit include:

- Barricading access ramps into the open pit.
- Placing of fencing and “Danger”/”Open Hole” signage as necessary.

7.4 Security of Mechanical, Hydraulic, and Electrical Systems

All buildings will be locked and/or otherwise secured to prevent inadvertent access once the Project is evacuated by the majority of the personnel, except as required by the onsite staff for site maintenance and security. All non-essential mechanical and hydraulic systems will be left in a no-load condition. Live electrical systems will be fenced, locked, or otherwise secured against inadvertent entry or contact, and appropriate signs will be placed to warn of potential hazards.

7.5 Waste Management Sites

Inert waste will first be disposed of in the landfill site at the Mine Site or other approved repositories. During operations the landfills will be covered with an interim soil cover layer to ensure wastes are encapsulated within permafrost. As such, contaminated runoff or seepage from the landfill sites are not anticipated during Long-Term Temporary Closure.

During or prior to the Long-Term Temporary Closure an inventory of all hydrocarbon products, chemicals, explosives and hazardous wastes (e.g. used oils, ammonium nitrate and greases) will be updated and all hazardous materials and wastes will be shipped south to the appropriate hazardous waste disposal facility via sealift. All storage facilities that contained any such materials will be secured and monitored. Inert waste will be disposed of in the landfill site at the Mine Site or other approved repositories.

7.6 Security of Chemicals

All hazardous materials and wastes will be removed from Project sites via sealift and disposed of at a licensed hazardous waste disposal facility in Southern Canada. Any remaining explosives (e.g. ammonium nitrate) will be removed from the site or detonated in a controlled and safe fashion by qualified and licensed personnel.

During Long-Term Closure activities, remaining chemicals and petroleum products will be identified and their quantities will be recorded. Offsite disposal locations will be identified for the products remaining onsite and they will be disposed at approved facilities once no longer required.

7.7 Stabilization of Stockpiles

At the onset of Long-Term Closure the waste rock stockpile may undergo minor re-contouring and the physical and chemical stability of the waste rock stockpile will be assessed. Following this investigation and according to the stockpile geometry at the time of long-term closure, aspects related to erosion, runoff control, slopes, benches, and discharges will be addressed.

All ore stockpiles will be depleted and removed prior to Long-Term Closure. In the event the ore stockpiles remain during Long-Term Closure, they will be monitored.

7.8 Docks and Airstrip

During Long-Term Closure activities, airstrip and dock infrastructure and equipment will be left in place. All non-essential mechanical and hydraulic systems will be left in a no-load condition. Live electrical systems will be fenced, locked, or otherwise secured against inadvertent entry or contact, and appropriate signs will be placed to warn of potential hazards.

7.9 Control of Effluents

Mine Site and Milne Port water management will be required during Long-Term Closure, including:

- Domestic sewage treatment.
- Surface/discharge waters, as per applicable regulatory requirements.

Surface water will be collected in settlement ponds and those for the ore stockpiles and waste rock stockpile will be tested for Mining Metal Effluent Requirements (MMER). The waste rock stockpile will be monitored during operations. Based on current investigations it is anticipated that most of the waste rock will not be prone to metal leaching or acid drainage. However, if ongoing work characterization studies show that the minor portion waste rock that is potentially acid generating (PAG) could cause unacceptable impact to runoff and seepage, the waste rock stockpile construction strategy will be modified accordingly. If treatment is required, water will be batch treated with lime dosing for Acid Rock Drainage (ARD) affected water or a treatment plant such as a High Density Sludge (HDS) treatment plant may be required.

The Life-of-Mine Waste Rock Management Plan (BAF-PH1-830-P16-0031) provides treatment options in the event that waste rock run-off requires treatment. The Fresh Water Supply, Sewage, and Wastewater Management Plan (BAF-PH1-830-P16-0010) provide the design criteria and operations and maintenance requirements for the collection and treatment of the site's wastewater.

7.10 Site Inspection Program

The general site areas at the Mine Site, Milne Port and Tote Road will be periodically inspected by onsite security personnel. Annual Reports are produced by Baffinland and provided to the Nunavut Impact Review Board (NIRB) summarizing the site work completed, and the work planned for the following year for the activities previously screened and approved by NIRB. These reports also provide a synopsis of compliance performance with explorations licences, permits, approvals and commitments, and include the results of monitoring activities. An update on the existing environmental conditions and progressive reclamation activities are also contained in these reports. These reports will continue to be produced based on any ongoing site inspection and monitoring however scope and frequency will be established based on consultation with the QIA and NIRB at such time long-term Temporary Closure commences.

Visual inspections of the Mine Site, Milne Port and Tote Road will be carried out to verify physical stability of the site, waste rock stockpiles and pit walls. Chemical analyses of surface water will be conducted monthly by site personnel at the Mine Site, Milne Port and Steensby Port. If seepage or drainage locations are identified during the visual site inspections of the open pit, waste rock stockpile and ore stockpiles, sampling will be conducted by site personnel.

7.11 Schedule of Rehabilitation Measures – Long-Term Temporary Closure

The following activities will be carried out within approximately six (6) months of the initiation of Long-Term Closure:

- All employees, local communities, and the public will be notified in advance of any scheduled long-term closure activities.

- All buildings and storage compounds will be secured, fenced and gated to prevent inadvertent access.
- All unnecessary machinery and equipment will be removed or placed in a no load condition.
- All unused pipelines will be drained.
- All unnecessary equipment will be removed from the Mine Site and Milne Port or secured in a no load condition onsite.
- A contact person will be designated for authorized site access.
- A schedule will be established for monitoring purposes.
- Fences and/or barriers with signs will be constructed to restrict access as required.
- All explosives, fuel tanks, chemicals and hazardous wastes will be inventoried and secured in a protective environment and/or removed from the site to an approved facility.
- Within one (1) year of the decision to place the Project in Long-Term Closure the following additional activities will be completed, if not already done:
  - All remaining fuels, chemicals, oil, grease and any used oil will be removed for reuse or disposal at an approved facility.

8 FINAL MINE CLOSURE AND RECLAMATION MEASURES

Mining activities are anticipated to be completed when the ore deposit is exhausted and the mine ceases operations without the intent to resume mining activities in the future. Within twelve (12) months prior to the expected end of mining, a Final Mine Closure and Reclamation Plan will be issued to the Land Use Engineer of AANDC (Territorial Land Use Regulations, Sections 33 and 35), to the Lands Director at QIA and to the Nunavut Water Board.

For final mine closure and reclamation, materials and equipment will either be removed from site or disposed of in on-site landfills, and all hazardous materials and wastes will be removed from site to licensed disposal facilities. The open pit and waste rock stockpiles will be inspected for physical and chemical stability. Roads (with the exception of the public Milne Inlet Tote Road), airstrips and development areas will be re-contoured as required to provide long-term stability and reduce the potential for erosion. The ore dock at Milne Port will remain in place but all equipment and associated surface infrastructure shall be removed. The closure phase is expected to be three (3) years, followed by a minimum of five (5) years of post-closure safety and environmental monitoring and treatment, as and if required.

This section describes the measures that will be undertaken for final closure of the Project, based on the current design. As the Project advances through the detailed design phase, changes to the Project may occur that will alter the Interim Mine Closure and Reclamation Plan. Though changes may occur, at this time, it is anticipated that the major components of the Project will remain the same.

Prior to closing out the Mary River Project Baffinland will consult with the QIA and surrounding communities regarding transfer of ownership of structures that may be utilized by the surrounding communities during harvests, camping and other recreational uses or relocated to local hamlets.

8.1 HEALTH AND SAFETY OF WORKERS AND THE PUBLIC

Health and safety of workers and the Public will be ensured during Final Mine Closure. Until final reclamation of infrastructure, all infrastructures will be kept secure by routine maintenance and inspections to eliminate any hazard to the public health and safety or material erosion to the terrestrial or aquatic receiving environment at concentrations that are harmful. Access to buildings and infrastructure will be restricted to authorized personnel only (see Section 8.2). Safety will be reinforced by an inspection program.

Employees on site will have been trained for site-specific health and safety. Baffinland commits to abide by all applicable Northwest Territories and Nunavut Health and Safety Regulations, including the Mine Health and Safety Act and the Explosives Use Act.

Emergency procedures will be revised to ensure they will be applicable during final closure.

8.2 OPEN PIT

Backfilling of open pits at closure is rarely conducted due to the high cost even when sufficient materials are present on the property. As previously mentioned, due to the configuration of Deposit No 1, an open pit is not expected to occur until years 10 to 12 of operation at full production volume (21.5 Mtpa). The proposed closure activities for the open pit suggest that the open pit be allowed to naturally flood to form a "pit lake". At closure inert wastes (i.e. material having insignificant leachability and pollution content) may be disposed of in the open pit. It is anticipated that the open pit will take an estimated 85 to 150 years to passively fill with water from natural sources such as seepage into the pit, direct precipitation and surface runoff (KP 2008). There are a number of different potential scenarios for accelerating the pit filling which are presented below in Section 8.2.1. These will be further assessed prior to final closure.

Once the open pit fills to the point of overflow, pit drainage will enter the natural environment through the spillway and natural drainage from the southeast corner of the open pit (KP 2008). It is currently anticipated that the discharge from the open pit will not require treatment (AMEC 2010). However, if treatment is required several effective technologies are currently available to manage Acid Rock Drainage and/or Metal Leaching (ARD/ML). If ARD/ML drainage were to develop, batch treatments will be carried out to adjust the pH and/or metal concentrations of the water in the pit so that it meets discharge requirements before overflow into the environment. The overflow location at the southeast area of the pit will provide emergency access to and from the open pit/pit lake.

Conceptual modelling of the pit water quality is presented in the FEIS. Open pit monitoring will be done throughout of the life of the Project as per the Surface Water, Aquatic Ecosystems, Fish and Fish Habitat Management Plan (BAF-PH1-830-P16-0026) and the Comprehensive Environmental Monitoring Plan, in accordance to all MMER requirements. Predictions of pit water quality will be updated throughout the life of the Project as more information comes available on the geochemistry of the waste rock and the pit wall. Although indications to-date demonstrate a low probability of ARD/ML, if monitoring results during Operations suggest a potential ARD/ML it shall be dealt with at that time and any associated impacts that ARD and/or ML would have on closure and reclamation planning, monitoring, long-term maintenance and bonding will be addressed. If there are no indications from test programs or ongoing monitoring of ARD/ML throughout the Operation Phase, at final closure, the open pit will be inspected by a qualified engineering professional to assess the physical stability of the pit walls and pit lake and to reconfirm no indicators of ARD/ML.

ARD and ML will be periodically reassessed as a potential issue in the future Interim MCRP revisions and in the Final MCRP. The Final MCRP will present a time frame for the potential development of ARD/ML conditions, if any, and discuss the impact of ARD/ML release on final closure identifying the need for ongoing monitoring, treatment, and potential mitigations

Other activities to close and reclaim the open pit will include:

- Barricading access ramps into the open pit.
- Removal of any dewatering infrastructure (i.e., pumps, surge box and pipelines).
- Clean up of any soil contamination (i.e., hydrocarbon).
- Placing of boulder fencing or equivalent and hazard signage as necessary.
- At closure inert wastes may be disposed of in the open pit.

8.2.1 Accelerated Pit Filling

The mining plan and the ongoing waste characterization plan (2012-2014) will inform the prediction modeling of the mine pit water quality at the end of mine life. Should the modeling indicate potential exceedance of water quality objectives, alternative pit closure scenarios will be considered, including accelerated pit filling.

The filling of the pit can be accelerated via pumping water from a nearby water source – thereby complementing the accumulation of natural precipitation and ground water accumulation. The pit has an estimated "fill volume" of 43,400,000 m^3 until the overflow lip is reached, at which point the pit will drain into Mary River.

Assisted pit filling is governed by two parameters – pumping costs and water source drawdown limits. Water source drawdown limits are designed to ensure that the volume of water extracted from a given source does not significantly lower the water table and has minimal impact on the aquatic ecosystem. Key factors to consider when calculating maximum acceptable drawdown of a lake include: potential spawning habitat as well as the residency time of the water body. According to current best management practices and per The Canadian Department of Fisheries and Oceans (DFO) – Protocol for Winter Water Withdrawal from Ice-covered water bodies in the Northwest Territories and Nunavut, 2010 - the water source from which the pit is filled should have a draw rate of approximately 10% of the water bodies' total volume per annum. In addition to this the water body chosen should be as close to the pit and over as level terrain as is reasonably practical in order to reduce pumping costs.

The Project pit has four potential water sources that can be used for filling the pit – Sheardown Lake, Camp Lake, Mary Lake and Mary River. This information is summarized in TABLE 8-1

TABLE 8-1: POTENTIAL WATER SOURCE PIT FILL DATA

Water Source	Pumping Distance	Total Volume/ Annual Flow (m3)	Permissible Annual Water Take (m3)	Number of Years to Fill Pit
Sheardown Lake (NW Basin)	2 km	8,175,410	820,000	53
Camp Lake	4.7 km	29,690,200	3,000,000	15
Mary Lake (Main Basin)	12 km	112,000,000	11,200,000	4
Mary River (at MR-12, east pond discharge location)	< 1 km	78,185,678 (mean) 53,166,261 (10-year dry)	25,000,000 (difference between mean and low flow)	2

Sheardown Lake and Camp Lake are significantly closer to the proposed final pit at a distance of 2 km and 4.7 km respectively, as opposed to Mary Lake which sits at a distance of 12 km from the pit. This results in Sheardown and Camp Lakes having significantly lower pumping costs than Mary Lake. Unfortunately Sheardown and Camp Lakes have total volumes of 8,175,410 m^3 and 29,690,200 m^3, allowing to draw a maximum volumes of only 820,000 m^3 and 3,000,000 m^3 per annum, thus resulting in a total pit fill times of 53 and 15 years respectively. In addition to this Sheardown and Camp Lakes have a very long "residence" time for the water in the lake to completely recycle itself. As a result it may be necessary to draw even less than 10% of the total lake volume in order to ensure no significant impact to the Sheardown or Camp Lake ecosystem.

The main basin of Mary Lake has a volume of 112,000,000 m^3 providing a total draw volume of 11,200,000 m3 per annum. Assuming the maximum available volume of water is drawn this will result in a pit fill time of approximately four (4) years. In addition to this Mary Lake has a very high recharge rate completely "recycling" approximately every 1.5 years – resulting in minimal impact to the lakes ecosystem. Unfortunately Mary Lake is located 12 km from the pit, which would result in substantial pumping costs – which are not expected to be economically feasible.

The Mary River offers the fourth pit filling alternative. It has been calculated that the Mary River can run at the "10-year-dry" conditions, which runs approximately 67% less than the mean flow, with no loss of habitat or damage to the aquatic ecosystem. The difference between the mean flow and the 10-year-dry flow provides us with a volume of 25,000,000 m^3 (please refer to TABLE 8-1). Drawing a volume of 25,000,000 m^3 of water from the Mary River over a four month period each year would enable the pit to be filled in two (2) years. Although there will be substantial pumping costs to draw this volume of water over a four month period – given the reduced length of pipe line, the shortened fill pit time and the limited effect on habitat – drawing from the Mary River is considered the preferred option for pit filling at this time.

8.2.1.1 PERIODIC PUMPING

Periodic pumping involves pumping from the Mary River during the summer months only, when ice cover is not an issue. This period, June to September provides us with a maximum four month pumping window. Pumping during this time is essential as Mary River is expected to freeze solid during the winter months. Warm weather pumping also reduces the cost of constructing and maintaining a pipe line.

Assuming pumping continues 24 hours a day for the entire period this would require a pumping rate of 8700 m^3/hour, over approximately a 1 km distance. During the winter months the pump and pipeline would be drained and locked out to ensure that the equipment is not damaged by the winter conditions.

8.2.1.2 CONTINUOUS PUMPING

Continuous pumping assumes that water will be pumped to the Mine Site pit 24 hours a day all year long. Mary River is not an option for this scenario as it freezes during the winter, leaving Mary Lake the only practical choice for continuous pumping although economic feability is a challenge due to distance and site conditions.

Assuming pumping continues 24 hours a day with no delays or malfunctions for the entire year this would require a pumping rate of 1,300 m^3/hour, over a 12 km distance.

In addition to pumping costs there are numerous other factors that must be accounted for during winter pumping including: the heating of pipe lines, snow removal, ice removal from discharge and intake points, extreme weather conditions, increased maintenance costs and risk to personnel. Given these conditions it is expected that continuous pumping would not be an economically feasible option.

8.3 REMOVAL OF BUILDINGS AND INFRASTRUCTURE

Specific criteria for the buildings and infrastructure include:

- Decommissioning and decontaminating before removal, as appropriate to contamination type.
- Ensure buildings do not become a source of contamination or a safety hazard to wildlife and humans.
- Ensure infrastructure does not become a source of contamination.
- Return area to its natural state or to a state compatible with the desired end use.
- Restore natural drainage patterns where surface infrastructure has been removed.
- Restore the natural use by wildlife.
- Buildings and infrastructure located at the Mine Site and Milne Port will be removed and either:
  - Transported to Milne Port for shipment to the mainland for either disposal or salvage.
  - Disposed of in the open pit.

- Disposed of in the onsite landfills or other approved repository.
- Donated to local communities.

The water supply system at the Mine Site and Milne Port will be demolished, removed and either:

- Sealifted to the mainland for disposal or salvage.
- Disposed of in the onsite landfills or other approved repository.

The sewage treatment plants located at the Mine Site and Milne Port will be decommissioned as per the manufacturer's specifications. The remaining sewage treatment plant components will be either transported for sealift to the mainland for disposal or salvaged or disposed of in the onsite landfill.

The Mine Site utilidor/corridor will be dismantled and disposed of in either the Mine Site landfill or transported offsite to the mainland via sealift for disposal at an approved facility.

8.4 Removal of Machinery, Equipment, and Storage Tanks

Salvageable machinery, equipment and other materials (incinerator, crusher, screen, stacker etc.) will be dismantled and taken offsite for sale or reuse if economically feasible. If not, they will be cleaned of oil and grease, where appropriate, and deposited within onsite landfills, the open pit or other approved repositories. Gearboxes or other equipment containing hydrocarbons that cannot readily be cleaned will be removed and sent to Milne Port for sea-lift to an approved disposal facility.

Empty fuel storage tanks, drums and other fuel storage containers will be drained and removed from the Mine Site and Milne Port for disposal at an approved facility or will be decontaminated and deposited within onsite landfills, the open pit or other approved repository. Secondary containment structures such as liners will also be removed, tested for hydrocarbon content and sent to an approved offsite facility for disposal or will be decontaminated and deposited within onsite landfills, the open pit or other approved repository , as required.

8.5 Transportation Corridors

Bridges, culverts and other water crossings along the Milne Inlet Tote Road will remain in place until all the closure activities requiring Milne Port access at the Mine site are completed. This road is part of the Inuit-Owned Lands referenced in the Nunavut Land Claims Agreement. It is designated for public use and the road will be left intact with the road crossings removed. Final decision on the water crossings will remain with the Land Owner, but the removal cost of bridge spans has been included for closure planning. Bridge abutments will be left in place to maintain long term stability however this strategy will be reviewed based on performance of the structure throughout the Project life cycle.

The bridges, culverts and other water crossings associated with the Steensby Port rail alignment will be decommissioned and the natural drainage and water flows will be restored. Tunnel portals will be backfilled and plugged with rock or equivalent material as available and the openings at each end sealed with concrete.

The steel rails and rail ties will be removed from the railway and transported to Steensby Port for sealift and offsite salvage. The embankment will remain.

The reclamation measures for the rail alignment will be carried out on the entire length of the rail and on a width of 10 m. Reclamation for these transportation corridors will take place on both Inuit Owned Land and Crown Land.

The railroad embankment is to be left in place upon closure. However, the rail ballast will be tested to determine if it can be left in place at closure. If found unacceptable (from an environmental perspective), the ballast will be cleaned. The resultant fines material will be hauled away for more controlled disposal.

Locomotives and cars will be sea lifted offsite for resale, salvage or disposal at an approved facility.

As more information becomes available, the discussion of railroad closure will be expanded to include the following:

- Railroad maintenance facilities – wastes and releases. Solvents are often an issue at maintenance facilities, as are heavy metals.
- Railroad fuelling facilities – diesel spillage, diesel recovery, water treatment, soil remediation. Storage of gasoline at fuelling facilities.
- Bioremediation of diesel contaminated soils in the Arctic.
- Quarries and their reclamation: 27,000,000 tonnes of rock will be quarried for railroad use from 63 quarries.
- Phase I Environmental Site Assessment (ESA) will be carried out on the rail embankment. Further assessment will follow the ESA protocols.
- Other materials to be hauled on the line such as diesel which may ultimately contaminate ballast and soils.

The shelters and communication towers along the rail alignment will be dismantled and disposed of in either the Mine Site or Steensby Port landfills or transported offsite via sealift for disposal at an approved facility.

8.6 Docks and Airstrip

The causeway and docks at Milne Port will be left in place. Dock infrastructure at Milne Port will be removed and either recycled, shipped offsite to an appropriate facility for disposal, or deposited within onsite landfill, the open pit or other approved repositories.

The docks at Steensby Port will be left in place. The rock causeway connecting Steensby Port and Steensby Island will be left in place. Dock infrastructure at Steensby Port will be removed and either recycled, shipped offsite to an appropriate facility for disposal, or deposited within onsite landfill, the open pit or other approved repositories.

The lighting associated with the airstrips will be removed. The airstrips will be left in place unless otherwise directed by regulatory agencies or the Land Owner, to provide emergency/rescue landing spots for regional aircraft, when no other options are available.

8.7 Concrete Structures

Concrete foundations will be demolished and exposed rebar will be cut to ground level to prevent safety hazards. Concrete and rebar will be disposed of in the open pit, waste rock stockpile or landfill, and the concrete foundation areas will be drilled to allow for water infiltration. The area will be re-graded to restore the natural drainage. Any remaining concrete piles will be cut to grade and covered with overburden.

8.8 Removal of Chemicals

At final closure, Baffinland will undertake a comprehensive site Phase 1 Environmental Site Assessment (ESA) to determine extent of contaminated areas and appropriate techniques and methods to deal with such sites.

The stock of explosives will be depleted towards the end of the operations phase and any remaining explosives will be securely contained and shipped from the site by a licensed contractor to an approved facility for disposal or reuse or detonated in a controlled and safe fashion by experienced and licensed personnel at appropriate locations away from sensitive receptors.

Oil, grease, ammonium nitrate and chemicals will be transported offsite for disposal at an approved facility or where applicable for reuse. All batteries and hazardous waste will be removed and disposed of or recycled at an approved facility offsite.

8.9 Waste Management Sites

Combustible non-hazardous wastes will be incinerated at the Project incinerators. Once the incinerators are no longer required, they will be managed as described in Section 8.4. Sewage treatment facilities disposal is also addressed in Section 8.4.

Liners will be removed from polishing ponds and Polishing Waste Stabilization Ponds (PWSPs), and berms will be re-graded and levelled.

The onsite landfill located at the Mine Site will be reclaimed by capping the landfill with 1.5 m of overburden or equivalent material to freeze the core of the landfill. The landfill sites will be scarified to encourage natural re-vegetation.

A list of non-salvageable materials has been developed and will be provided annually as part of the Annual Security Review process conducted in accordance with Schedule C of Type "A" water licence 2AM-MRY1325. Any additional disposal locations identified as the project progresses, shall align with the disposal location criteria outlined in Section 8.10.1.

8.9.1 Quality Assurance and Quality Control Program for Waste Management sites

Quality assurance (QA) procedures will be implemented at final disposal sites to ensure all activities will result in meeting reclamation objectives and closure criteria defined in Section 11. To ensure QA is being met at final disposal sites, quality control (QC) systems will be implemented to evaluate QA procedures and identify any deviations or non-compliance and make the require correction prior to having an undesired result.

A comprehensive Quality Assurance and Quality Control (QA/QC) Program will be developed prior to final disposal of any final closure material based in part on the Project's current approved onsite landfilling operating procedures and aligned with industry best practices for Arctic conditions. Procedures for managing the demolition landfill and other waste disposal areas will be captured therein. Operating instructions and maintenance procedures shall be adhered to and documented to ensure that activities function safely and meet reclamation objectives.

The QA/QC Program shall, at a minimum, include the details of the proposed methods and standards of inspections and testing, reporting by the designated QA/QC personnel and decisions regarding any necessary corrective actions taken.

The plan may consist of the following, QA procedures:

- Waste tracking and documentation. Waste streams will be sorted, stacked, and/or piled within designated laydown areas to create distinct areas of like materials for loading and transportation, as directed based on Project waste streams.
- Pre-demolition review. Identified work areas shall be reviewed for specific hazards from an engineering survey and/or site characterization.
- Daily work activity tracking log
- Periodic work activity review meetings
- Regularly track the turn-around time for trucks hauling waste to each disposal facility.

- Compliance with project specifications, traffic laws, permits, best management practices etc.
- Samples and measurements of the physical parameters of landfill test areas.

8.10 SOILS TESTING

A site investigation will be conducted at the onset of closure to identify soils that may be contaminated with hydrocarbons or chemicals. Soil materials found to exceed the appropriate cleanup criteria for hydrocarbons (based on Government of Nunavut Environmental Guideline for Site Remediation, 2010) will be remediated onsite in the landfarm units or removed offsite to a licensed waste management facility.

If there is reason to suspect an area of soil has been contaminated by chemicals other than hydrocarbons (such as explosives), samples will be collected and the soil will be tested. If the applicable regulatory requirements are exceeded, an appropriate method of disposal will be sought in consultation with the appropriate authorities.

8.10.1 MATERIALS SUITABILITY FOR CLOSURE NEEDS

Reclamation activities shall restore the physical, chemical and biological stability of areas where material was removed or altered for Project purposes (i.e. excavation activities). Reclamation activities may include, but are not limited to, replacing those affected areas with suitable cover materials sourced locally, importing/producing fill, restoring drainage to limit unnatural standing water through regrading, routing of any trapped surface water and scarification. All such reclamation activities shall be performed in a manner that will reduce the risk of erosion and sedimentation to the surrounding environment and limit disturbance to the permafrost.

Criteria for sourcing suitable materials for closure needs requires consideration of several chemical (i.e.: pH, sodicity, salinity, saturation, etc.) and physical (i.e.: texture, moist consistency, content, etc.) properties. A comprehensive assessment of suitable materials for closure needs will be completed prior to the use of any material for cover purposes focusing on the following objectives:

- Identifying and mapping suitable locations of material as well as its distribution. Locations will be evaluated for chemical and physical stability, impact to natural environment, etc.
- Geochemical and physical characteristics for suitability for reclamation such as the consistency to prevent erosion, porosity, ability to alter natural snow and water runoff conditions, stability, etc.
- Determining depth and volumes of material types.
- Development of a schedule of availability.

8.11 WASTE ROCK STOCKPILE

At closure the principal objectives of the waste rock stockpiles are the safety of the public and maintaining the physical and chemical stability of the permanent structure to ensure that there is no long-term environmental impact. Mine planning will ensure that at closure the exterior of the dump consists of a layer of non-PAG material up to 50 m thick. To minimize active layer thickness, a stockpile of overburden will be retained to spread a layer of less permeable material over the top of the dump.

Studies of waste rock in permafrost demonstrate that permafrost forms an effective long-term barrier to water and oxygen, thereby preventing significant oxidation of sulphidic waste rock located below the surficial active zone. The surficial "active" zone, which will be subject to seasonal freeze-thaw, will not reach the 50m thickness of non-PAG material in the long-term (within 200 years) under the influence of climate change (Intergovernmental Panel on Climate Change, 2007). Therefore, over the long term, runoff water quality which is influenced by contact water that flows through the active layer in the waste rock stockpile will not be affected.

8.11.1 WASTE ROCK CHARACTERIZATION PROGRAM

At the onset, the waste rock pile design will consider final closure considerations. A detailed sampling and testing program for the characterization of the waste rock for the period of 2012-2014 is in progress and involves:

- Devising a representative sampling program for the waste rock based on the configuration of the ore body and the mining plan.
- Analysis of the lithology, morphology and mineralogy of the waste rock.
- Additional testing (both static and humidity cell).

This program has been reviewed with guidance by independent experts. The objective of this program is to inform prediction of expected runoff quality over time. Contingencies will be put into place if there are acid rock drainage issues and treatment if necessary. The characterization program will be ongoing for the Life of the Project and will guide the development of adaptive management strategies for waste rock management. Regular updates on waste rock characterization and prediction of runoff water quality will be provided in future updates of the Life-of-Mine Waste Rock Management Plan (BAF-PH1-830-P16-0031) as they are developed.

8.11.2 CLOSURE OF THE WASTE ROCK STOCKPILE

The waste rock stockpile at final closure is expected to have a total volume of about 640 Mt with average side slopes of 2H: 1V. The physical stability of the waste rock stockpile will be investigated at the onset of closure. This investigation will take into account the final geometry of the stockpile, including the aerial extent, height, cross-sections and the volume in place. A preliminary assessment of this geometry and its impact on erosion, runoff control, slopes, benches, and discharges will be done, and be included in future Interim and Final Closure and Reclamation Plans. If geo-technical

investigations indicate it necessary, the waste rock stockpile may undergo re-contouring to ensure physical and chemical stability. Following re-contouring and stabilization investigations and activities, as required, the waste rock stockpiles will be considered closed. Based on the current state of the Mine Site prior to mining activities, the Mine Site is characterized by a rugged rocky terrain with minimal vegetation. Therefore, an uncovered waste rock stockpile is considered environmentally compatible with the current undisturbed surrounding areas.

8.11.3 Runoff from the Waste Rock Stockpile

Runoff from the Waste Rock Stockpile will be discharged from two runoff ponds that will be left in place and monitored as described in Section 9. Following closure, generation of ARD/ML is not anticipated. During operations drainage from the waste rock stockpile will be monitored and should ARD/ML be identified the waste rock will be segregated based on acid generating potential. If treatment is required following closure a variety of ARD/ML treatment technologies are available. If treatment is required the waste rock stockpile drainage will be treated with batch lime doses. During operations total suspended solids (TSS) may be identified as being a potential problem. If TSS is identified as a concern following operations the surface water from the waste rock stockpiles will be directed to additional settlement ponds for treatment prior to discharge to the surrounding environment. Please refer to the Mary River Waste Rock Management for further discussion on potential treatment methods.

8.12 Quarries and Ore/Aggregate Stockpiles

Each quarry permit application presents a quarry development plan, drainage information as well as a closure plan. All borrow areas and quarries will be progressively reclaimed maintaining stable side slopes in accordance with the individual site permit. At the onset of closure the borrow areas and quarries will be investigated to assess for potential thermal damage and instability due to thaw impacts. At closure re-contouring and filling with overburden may be required to ensure slope stability and restore the natural drainage due to thermal disruptions.

The ore/aggregate stockpiles will be depleted upon closure. Soils below the ore stockpiles will be sent for testing and treatment, if required, as discussed in Section 8.10. The ore/aggregate stockpile bases will be re-contoured as necessary scarified and allowed to naturally re-vegetate. If ore/aggregate stockpiles remain at closure, they will be graded and re-contoured to ensure long-term physical stability.

8.13 Watercourses and Drainage Ways

Disturbances to the surrounding areas of the Project may cause thermal disruptions to the permafrost zone resulting in ponding, settlement and/or subsidence due to changes in the active zone (the upper 1 to 2 m of soil). During closure these areas will be drained of excess water, filled with clean material to re-establish the active layer and graded, restoring the natural drainage of the area as necessary.

Water crossings (bridges and culverts) will be decommissioned and the drainage channels restored to natural drainage conditions.

8.14 RE-VEGETATION

It is anticipated that re-vegetation will be difficult to re-establish due to the arctic environment. The present re-vegetation strategy is to encourage disturbed areas to naturally re-vegetate. Natural re-vegetation for the Project will include:

- Re-grading and scarifying disturbed and compacted areas.
- Allowing vegetation to re-establish through natural processes.
- As noted in Section 5.1.1, studies will be undertaken to determine which plant species, if any, are better suited to colonizing disturbed and graded areas. Results of this studies will inform any potential efforts for re-vegetation.

8.15 SCHEDULE OF REHABILITATION MEASURES – FINAL CLOSURE

All employees, local communities, and the public will be notified in advance of any scheduled final closure activities.

Once the decision has been made to permanently close the mine, it is anticipated that the major closure activities, as described in the above sections, will be completed within a period three (3) years. Closure works will be carried out between July and October every year for three (3) years, if not already completed progressively.

The ongoing monitoring and management of ARD/ML (if any) is expected to be required until such time as it can be demonstrated that site drainage no longer poses a negative impact to downstream receiving waters.

Monitoring of various site aspects such as water quality, natural re-vegetation and landform stability are expected to continue over an extended period of time until such time that monitoring is no longer required. It is estimated that this period will last five (5) years.

8.15.1 PROPOSED ORDER OF REHABILITATION MEASURES – FINAL CLOSURE

The following summary provides a general description of the tasks to be completed in each year of the MCRP implementation process. The schedule has been 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 MCRP and the regulatory framework established by the Inuit, Federal and Territorial governments.

Year 0

- During the first year, activities will be limited to pre-closure shutdown tasks and post-closure inspection by QIA and any other relevant stakeholders.

Year 1

- Year 1 freshet management field activities;
- Monitoring of road and borrow areas;
- Organizing decommissioned on site contractor equipment and material for shipment through Milne Port;
- Excess fuel return from Mary River Mine Site to Milne Port;
- Phase 1, 2 and 3 Environmental Assessments for hydrocarbon contaminated soils;
- Activities to begin the decommissioning of the Milne Port Fuel Storage Facility;
- Activities to begin the decommissioning of sewage storage areas at Mary River Camp;
- Site contractor decommissioning and demobilization of Mary River and Milne Port (as required);
- Decommissioning and demobilization of Baffinland owned equipment identified for salvage;
- Mobilization sealift of third party contractor to Milne Port and demobilization sealift of current site contractors and Baffinland equipment and material to the Port of Valleyfield;
- Environmental monitoring.

Year 2

The majority of closure and reclamation activities will occur in Year 2, including:

- Freshet management field activities;
- Decommissioning of the open pit, mineral exploration areas, remote sites, and stockpiles;
- Regrading and contouring of borrow sites and quarry areas;
- Mary River Mine Site Camps are demobilized, demolished as appropriate, landfilled or packaged and shipped;
- During the decommissioning of Mary River Camp, Deposit No. 1 haul road and airstrips are inspected, graded and contoured as required;
- Fuel storage facilities will be fully decommissioned at Mary River and Milne Port;
- Waste management including:
  - Closure of the Mary River landfill;
  - Packaging of hazardous waste for future shipment to disposal facilities in the south;
  - Appropriate disposal and closure of sewage and sewage lagoons at Mary River and Milne Inlet.

- Initiate removal of all culverts from the Milne Inlet Tote Road if the complete decommissioning and reclamation of Mary River is completed in time. This will be completed following complete decommissioning of the Mary River Camp. Inspections for erosion along the road embankment will be completed and repairs made, as required;
- Environmental monitoring.

Year 3

- Complete the removal of Milne Inlet Tote Road culverts and stabilization of the road for final closure;
- Final site cleanup of Milne Port and Mary River Mine Site; including grading and contouring of the site;
- Treatment of contaminated soil;
- Application of soil cover to any permanent disposal areas;
- Support for landfarm operations;
- Freshet management;
- Environmental monitoring;
- Demobilization sealift from Milne Port to Valleyfield of third party equipment and residual reclamation equipment, material and supplies;
- Bulk fuel demobilization sealift.

Year 4

- Treatment of contaminated soil;
- Support for landfarm operations;
- Environmental monitoring.

Year 5

- Treatment of contaminated soil;
- Support for landfarm operations;
- Environmental monitoring.

Year 6

- Treatment of contaminated soil;
- Support for landfarm operations;
- Environmental monitoring.

Year 7

- Treatment of contaminated soil;
- Support for landfarm operations;
- Environmental monitoring.

Year 8

- Treatment of contaminated soil;
- Support for landfarm operations;
- Environmental monitoring;
- Final demobilization sealift of third party contractor equipment, remaining small capacity camp that was present for t monitoring, material and supply from Milne Inlet to Valleyfield (if required).

9 POST MINE CLOSURE MONITORING

The Post Mine Closure Monitoring Plan will be developed and submitted as part of the Final MCRP twelve (12) months prior to final closure. The monitoring section of the Final MCRP will be based upon the knowledge gained through studies during the design, construction and operational phases of the Project. Achieved performance will be assessed against the detailed specific objectives and criteria for major Project components that will be established.

A post-closure monitoring program compliant with the applicable guidelines and regulations will be implemented to ensure the reclamation measures remain effective and continue to provide a high level of protection for the public and the environment. This monitoring program will assess the effectiveness of the restoration and will be undertaken between Baffinland, AANDC, QIA and any other applicable regulators or government agencies.

The monitoring presented in the subsequent sections is conceptual and focuses on the post-closure monitoring objectives. The program will be revisited following the completion of the detailed design phase of the Project at which time a more specific monitoring program will be developed.

Monitoring and follow-up inspections will be conducted to assess the physical and chemical stability of various components after closure and reclamation of the facilities.

Biological monitoring and follow-up inspections will assess the effectiveness of the reclamation.

Ongoing monitoring and management of ARD and ML (if necessary) is required until such time as it can be demonstrated that site drainage does not pose a threat to downstream receiving waters. This includes an assessment of long-term water quality of the pit lake.

Monitoring of site aspects such as water quality is expected to continue until such time that the monitoring is no longer required.

Further updates will redefine what mitigation measures will be implemented, how these measures will be monitored to confirm their performance, the data gaps and uncertainties identified in the FEIS and how these will be addressed through monitoring or mitigation.

Post closure monitoring is expected to last five (5) years, which will be revised if necessary as the Project progresses.

9.1 PHYSICAL STABILITY

The post-closure physical stability monitoring objective will be to demonstrate the physical safety of the Mine Site, Milne Port and Tote Road and to ensure that all lands and structures remaining on the Mine Site, Milne Port and Tote Road are left in a long term stable condition. The physical stability monitoring will also be utilized to identify any physical instability issues and to take appropriate corrective measures. The physical stability of the following items will be monitored on annual bases for the first five years following final closure:

- Exposed pit slopes.
- Waste rock stockpiles.
- Remaining road easements.
- Remaining rail alignment.

The stability of the pit walls with regard to the presence of the pit lake and its impact on stability will also be investigated during post-closure.

9.1.1 ON-GOING PHYSICAL STABILITY MONITORING

A third-party 6th Annual Water License Geotechnical Inspection Report was prepared in August 2013 (completed by Barry H. Martin Consulting Engineer and Architect), inspecting the on-site containment structures and soil structure at both the Mary River and the Milne Port sites. The structures were inspected for conformance with the design basis as presented in as-constructed and as-built drawings, settlement, cracking and seepage through berms, surrounding areas around the sites were examined for seepage, and photographs were taken to document any observations made during the inspection.

Stability results for the Mary River site reported that there were no visible signs of cracking, or any indication of seepage, from the structures for all inspected facilities. The structures and the soil structure, for all inspected facilities, were considered to be stable in the present condition, as well as in conformance with the design basis' for the inspected facilities. It was noted in the inspection report that the weather conditions are such that little or no erosion has taken place from wind or rain and the dykes constructed of the sand/gravel soil remain stable at slopes of 3:1 and 4:1. The dykes, after a 5 year period, still have only minor vegetation growing on the horizontal surfaces and it shall most certainly take a long period of time for the natural vegetation to form a stabilized surface, however, there is no sign of erosion to the surfaces over this period.

Stability results for the Milne Inlet site reported that there were no visible signs of cracking, or any indication of seepage, from the structures for all inspected facilities. The structures and the soil structure, for all inspected facilities, were considered to be stable in the present condition, as well as in conformance with the design basis' for the inspected facilities.

9.2 CHEMICAL STABILITY

Once mining operations have been completed chemical monitoring programs will be initiated to monitor the surface and groundwater quality (in the active layer). Groundwater in the Project area is shallow seepage through the active layer and maybe monitored as surface water. The chemical stability programs will be utilized to monitor the effectiveness of the reclamation undertaken at the Mine Site, and Milne Port. The programs will be updated to consider any results indicating implications of water balance or water quality model predictors, as well as, any adaptive management measure that may be required. Sample stations recommended at this time will be re-evaluated as the Project continues to develop and are therefore, subject to change in location, quantity and/or frequency of monitoring. In addition, any seeps which develop downstream of the open pit or waste rock stockpile will be monitored.

Monitoring programs will continue until it has been shown that the objectives of the Final MCRP have been achieved and a monitoring program is no longer required. The proposed parameters to be monitored are summarized in TABLE 9-1. The parameters represented in TABLE 9-1 may change as the Project develops through detailed design, construction and operations. Discharges from the Mine Site and Milne Port stockpiles, open pit and waste rock stockpile are expected to be consistent with the Mining Metal Effluent Regulations (MMER).

9.2.1 MILNE PORT

The following sample stations present the approximate post-closure monitoring to be conducted at Milne Port. As the Project continues to develop the post-closure sample locations will be re-evaluated and a more detailed monitoring program will be developed. The post-closure monitoring will include the following sample stations:

- One marine sample located by the ore dock.
- One background marine sample location.
- One to two surface water or seepage locations within the Milne Port area (one monitoring location is to be located down gradient from the former ore stockpiles) and one background surface water sample location.

9.2.2 MINE SITE

Surface water monitoring at the Mine Site will include a minimum of the following samples:

- One surface water background sample location.
- One to two surface water samples located in the upstream of Sheardown Lake, the primary receiver for the Mine Site.
- One to two surface water samples located in the secondary receiver (Camp Lake tributaries) for the Mine Site

- One surface water location to monitor the waste rock stockpile and open pit.
- One seepage location from the toe of the waste rock stockpile to monitor.
- One to two samples to monitor seepage in the active layer down gradient from the waste rock stockpile.

9.2.3 STEENSBY PORT

The following sample stations present the approximate post-closure monitoring to be conducted at Steensby Port. As the Project continues to develop the post-closure sample locations will be re-evaluated and a more detailed monitoring program will be developed. The post-closure monitoring at will include the following sample stations:

- One marine sample located by the freight dock.
- One marine sample located by the ore dock.
- One background marine sample location.
- One to two surface water or seepage locations within the Steensby Port area (one monitoring location is to be located down gradient from the ore stockpiles) and one background surface water sample location.

9.3 BIOLOGICAL MONITORING

A biological monitoring program was conducted as part of environmental baseline studies. Biological monitoring will be conducted during the operation and closure phase at the Mine Site and Milne Port to assess the effectiveness of the reclamation and potential impact to the biological environment, in accordance with the MMER Technical Guidance Document on Aquatic Environmental Effects Monitoring and as otherwise required.

The monitoring section of the Final MCRP will be based upon the knowledge gained through studies during the design, construction and operational phases of the Project. Achieved performance will be assessed against an agreed set of specific biological objectives and criteria for areas to be returned for wildlife use.

The list of parameters to be monitored will be revisited as construction and operation activities continue, based on what is used and disposed of on site. Petroleum hydrocarbons, diesel range organics, additional metals and nitrates are examples of parameters that will be considered for future monitoring. Similarly, after investigation of the materials that have been disposed in the landfills, a list of parameters will be established and monitoring activities will be planned accordingly.

TABLE 9-1: PROPOSED POST-CLOSURE MONITORING PARAMETERS

General Parameters	Metals
pH	Arsenic
Total Suspended Solids	Aluminum
Total Ammonia	Cadmium
Total Dissolved Solids	Calcium
Sulphate	Molybdenum
Conductivity	Copper
Alkalinity	Iron
Acidity	Lead
Hardness	Nickel
Ammonium	Zinc

10 EXPECTED SITE CONDITIONS FOLLOWING FINAL CLOSURE

10.1 LAND USE

The overall intent of the final closure is to restore the Project to a productive land use, that is self-sustaining and to mitigate impacts from mining activities. In such a condition, the site areas will provide wildlife and aquatic habitat.

Creeks and rivers will be returned to natural drainage by removing bridges and culverts located on the railway alignment and its access roads, and by removing culverts from Tote Road. A new lake will be created from the water inflow into the open pit.

10.2 SITE TOPOGRAPHY

10.2.1 MINE SITE

Relative to predevelopment site conditions, the principal topographic changes to the site will include the following:

- The waste rock stockpile will remain at closure with a maximum elevation of 810 masl.
- The open pit will naturally flood at closure ultimately forming a pit lake that will naturally drain in a designed manner.
- Remnants of other infrastructure at the Mine Site, including the crusher and buildings will be demolished and laydown areas re-graded and scarified to enhance natural re-vegetation at closure.
- The airstrip at the Mine Site will remain, but not otherwise scarified or actively reclaimed unless otherwise directed by regulatory agencies or Land Owner, because abandoned airstrips can provide emergency landing locations for regional aircraft, when no other options are available. The airstrips will also be required to conduct ongoing Long-Term monitoring.

10.2.2 MILNE PORT AND MILNE INLET TOTE ROAD

Relative to predevelopment conditions at Milne Port the remnants of infrastructure including buildings will be removed and laydown areas re-graded and scarified to allow for natural re-vegetation at closure. The airstrip at Milne Port will remain but otherwise left intact to provide an emergency landing spot for aircraft. Milne Port ore dock will remain in place to provide on-going fish habitat. The water crossings along the Milne Inlet Tote Road will be removed. Otherwise the Milne Inlet Tote Road will remain intact.

10.2.2.1 Steensby Port and Rail Alignment

Relative to predevelopment conditions at Steensby Port, the remnants of infrastructure including buildings will be demolished and laydown areas re-graded and scarified to enhance natural re-vegetation at closure. The future airstrip at Steensby Port will be abandoned but otherwise left intact to provide an emergency landing location for aircraft. All dock structures will be left intact at Steensby Port but infrastructure will be removed.

Steel rails and ties will be removed from the railway. All water crossings will be removed. The railway embankment will remain intact.

Tunnels will be sealed. The portals will be backfilled and plugged with rock and sealed with concrete.

10.3 Local Surface Water

Disturbances to the surrounding areas of the Project may cause thermal disruptions to the permafrost zone resulting in ponding, settlement and/or subsidence due to changes in the active layer (approximately the upper 1 to 2 m of soil). During closure these areas will be drained of excess water, filled with clean material to insulate and re-establish the active layer and graded, restoring the natural drainage of the area as necessary.

The natural drainage of water courses will be re-established for long term stability.

11 CLOSURE CRITERIA

The Project shall plan and execute reclamation activities in accordance with applicable guidelines and regulations. The overall goal for the closure and reclamation of the Mary River Project is to leave the Project site in way the results in zero harm to people or the environment.

This MCRP is written with a view to address all project-related activity areas and infrastructure. Specific contingency measures for all reclamation components, including action thresholds that are in linked to the closure monitoring programs outlined in Section 9, will be defined to meet the closure goals, objectives and criteria.

Specific criteria for the Final Closure of Project components were selected based on evaluation of method ability to meet closure goals, objectives and criteria. Closure criteria for Project components include:

Project Component	Closure Criteria
Open Pit	• Minimize access to protect human and wildlife safety. • Allow emergency access and escape routes from flooded pits. • Implement water management strategies to minimize and control migration and discharge of contaminated drainage, and if required, collect and treat contaminated water. • Meet water quality objectives for any discharge from pit. • Stabilize slopes to minimize erosion and slumping. • Meet end land use target for resulting surface expression. • Establish original or desired new surface drainage patterns. • Ensure physical stability of residual earth structures for environmental, human, and wildlife safety. • Physical stability of remaining earth structures is compatible with, and will not be compromised by, the post-closure land use.
Removal of Buildings and Infrastructure	• Ensure buildings do not become a source of contamination or a safety hazard to wildlife and humans. • Ensure other infrastructure does not become a source of contamination. • Return area to a state compatible with the desired end use. • Restore natural drainage patterns where surface infrastructure has been removed. • Restore the natural use by wildlife.
Removal of Machinery, Equipment and Storage Tanks	• Ensure equipment do not become a source of contamination or a safety hazard to wildlife and humans.

Project Component	Closure Criteria
Transportation Corridors	• Return area to a state compatible with the desired end use. • Restore natural drainage patterns where surface infrastructure has been removed. • Restore the natural use by wildlife. • Remediate any sources of contamination that may have been created during the development and operation of the mine site in order to protect humans, wildlife, and environmental health.
Waste Management Sites	• Dismantle and remove/dispose of as much of the system as possible. • Stabilize and protect from erosion and failure for the long term. • Achieve approved water quality limits, and in the case of existing mines, implement long term treatment (if required).
Stabilization of Stockpiles	• Minimize erosion, thaw settlement, slope failure, collapse or the release of contaminants or sediments. • Build to blend in with current topography, be compatible with wildlife use, and/or meet future land use targets. • Develop and implement preventive and control strategies to effectively minimize the potential for ARD and ML to occur. • Where ARD and ML are occurring as a result of mine activities, mitigate and minimize impacts to the environment. • Assist with providing physical stability of mine components. • Ensure physical stability of residual earth structures for environmental, human, and wildlife safety. • Physical stability of remaining earth structures is compatible with, and will not be compromised by, the post-closure land use.
Watercourses and Drainage Ways	• Dismantle and remove/dispose of as much of the system as possible and restore natural drainage patterns. • Stabilize and protect from erosion and failure for the long term. • Achieve approved water quality limits.
Re-vegetation	• Re-establish the pre-mining ground cover, which may involve encouraging self-sustainable indigenous vegetation growth (natural re-vegetation). • Provide wildlife habitat where appropriate and feasible. • Assist with providing physical stability of mine components.

12 ESTIMATED CLOSURE AND RECLAMATION COSTS

The financial cost of the Mary River Project closure and reclamation has been estimated using The Mining RECLAIM spreadsheet provided by Aboriginal Affairs and Northern Development Canada (AANDC) (formerly Department of Indian Affairs and Northern Development). This model identifies several reclamation components:

- Open pit
- Waste Rock pile
- Buildings and Equipment
- Chemicals
- Water
- Mobilization
- Post Closure
- Ongoing water monitoring.

Several reclamation strategies ("Objectives") are listed for each component, and broken down into lists of actions that can be priced separately. A unit cost spreadsheet provides a range of prices for most actions it has been completed where possible with the most accurate available or Project-specific costs. To best estimate the total reclamation cost, some actions were modified or adapted to the strategies defined in the MCRP.

The financial cost obtained is based on the information available at the time of publishing. Several assumptions and estimations have been made and are described in Appendix D. To make up for uncertainties, the highest prices of the range provided by the MINING RECLAIM unit costs spreadsheet were systematically chosen.

It should be noted this estimate of the financial cost of final closure and reclamation measures required are for the fully developed Project as described in the original FEIS. It addresses Project-related activity areas and infrastructure related to the original Mary River Project proposed in the FEIS including mobilization and post-closure monitoring. This estimate is intended to represent Baffinland's estimated closure and reclamation security for the Project, based on the information available at the time, at a planned closure scenario occurring at end of mine life. In order to account for interim closure and reclamation security adjustments to reflect project development phases until such a time planned closure commences, an updated determination of Project closure and reclamation security is captured on an annual basis in Annual Security Review (ASR) process to account for such cases Baffinland would not be able to reach its planned closure phase. The ASR process is conducted in accordance with Schedule C of Type "A" water license 2AM-MRY1325 and Section 9.2 of the Commercial Lease, No.

Q13C301, agreed to between Baffinland and the QIA and includes consultation with Land-owners and other key stakeholders. The results of this ASR process should be considered on the interim basis to asses Project closure and reclamation liability until such time planned closure commences.

12.1 Final Mine Closure Cost

MINING RECLAIM calculates the grand total capital costs required for the Project closure and reclamation. The cost is split into land and water liability. Additionally, the cost associated to Inuit Owned Land (IOL) and Federal Owned (FOL) has been differentiated from North to South, Milne Port, Tote Road, Mine Site, and the first 25 km of the railway are located on Inuit land. The remaining section of the railway and Steensby Port are located on federally owned land. Costs relating to the infrastructure, equipments and remediation actions on these sites were attributed to the corresponding category. Less tangible components, such as chemicals and soil management, water management and post-closure monitoring and maintenance were attributed on a basis of two thirds (2/3) to IOL and one third (1/3) to FOL. This was based on two of the main sites (Milne Port, Mine Site) being in IOL and one site (Steensby Port) located in FOL.

The Ultimate Project closure and reclamation is estimated to cost $518,711,208. The break down between land and water liability and IOL/FOL is summed up in TABLE 12-1.

TABLE 12-1: TOTAL COST AND BREAKDOWN FOR MARY RIVER PROJECT CLOSURE AND RECLAMATION

	Total Cost	Percentage	Land Liability	Water Liability
Inuit Owned Land	$411,234,800	79.2	$405,430,454	$6,106,421
Federal Owned Land	$107,476,408	20.7	$105,391,574	$2,160,637
Total	$518,711,208	100	$510,822,029	$8,267,058

12.2 Interim Mine Closure Cost

Under the Annual Security Review process conducted in accordance with Schedule C of Type “A” Water Licence 2AM-MRY1325 and Commercial Lease No. Q13C301 an interim mine closure cost (or ‘Security Estimate’) is developed annually prior to work being commenced. This estimate reflects the current project understanding and strategy and is developed in concert with relevant stakeholders.

13 CONCORDANCE TABLES

TABLE 13-1 has been prepared to characterize the content of the MCRP and updated with reference to this Interim MCRP. The concordance table is consistent with the principles of the Qikiqtani Inuit Association (QIA) Abandonment and Reclamation Policy for Inuit Owned Lands ('the Policy') and structured in accordance with Appendix C of the QIA Security Policy (2010).

TABLE 13-1: QIA ABANDONMENT AND RECLAMATION POLICY FOR INUIT OWNED LANDS CONCORDANCE TABLE

Item	QIA Abandonment and Reclamation Policy for Inuit Owned Lands (2010)	Baffinland Response
1	Have **all** reports and plans including addendums and responses been submitted?	Yes
2	Are the submitted reports and plans executable standalone documents with adequate rational and detail?	Yes
3	Do all reports and plans contain appropriate referencing (document name, author, section, and page number) to all supporting information?	Yes
4	Do the reports and plans demonstrate a firm understanding, of QIA's *Guiding Principles on Reclamation* and provide rationale on how these principles have been satisfied?	Yes
5	Has Inuit Qaujimajatuqangit and consultation with Community Land and Resources Committee(s) been applied?	Not at this stage, commitment to do so in the future but closure was discussed at hearings related to the Project Certifcate.
6	Are **all** the components that are considered in the abandonment and reclamation plan listed?	Yes
7	Does each component of the Project have an abandonment and reclamation objectives and criteria?	Yes
8	Has an A&R plan been provided with a financial security estimate?	Yes
9	Have Tables 1, 2, 3 and 4 of the Security Policy (Appendix C) been used in completing the financial security estimate?	Yes
10	Has evidence been provided to support the Policy assumptions for all reports and plans?	Yes

TABLE 13-2 has been prepared to show all the Project Certificate No. 0005 commitments outlined in that apply to this MCRP. Where the Project Certificate Conditions have requirements for Construction, Operations, Temporary Closure/Care and Maintenance, Closure and Post Closure Monitoring the requirements are dealt with by a current Management Plan that will be updated regularly throughout the life of the Project. These Management Plans will still be applicable during Closure and, as necessary, Post Closure Monitoring.

TABLE 13-2: NIRB PROJECT CERTIFICATE CONDITIONS – APPENDIX A

Commitment Number	NIRB Project Certificate - Appendix A	MCRP Section
38	Baffinland is committed to undertaking a phased approached to any abandonment and restoration, as well as final abandonment and restoration, of the Mary River Project site(s) and relevant monitoring activities in a manner that is consistent with applicable guidelines and regulations.	5
39	Baffinland is committed to investigating and exploring the potential for native species of flora to be used for re-vegetating areas disturbed within the project area.	8.13
40	Baffinland is committed to undertaking environmental effects monitoring during the mine life mine as well as after closure.	9
42	Baffinland is committed to establishing a working/ advisory group consisting of stakeholders of the Mary River Project to identify and address issues surrounding abandonment and restoration activities associated with the Mary River Project. The terms of reference, as well as information on all issues identified to be resolved by the working group, will be made available to the NIRB and interested persons for information and/or review purposes.	2.3 and 2.5

Table 13-3 has been prepared to show concordance with Part J, Number 2 of the Type A Water Licence, 2AM-MRY1325.

TABLE 13-3: TYPE 'A' WATER LICENCE 2AM-MRY1325, PART J, ITEM 2

TYPE 'A' WATER LICENCE 2AM-MRY1325, Schedule J	MCRP Section
a. Detailed description, including maps and other visual representations, of the preconstruction conditions for each site, accompanied by a detailed description of the proposed final landscape, with emphasis on the reclamation of surface drainage over the restored area;	Sections 4, 10
b. A description of how progressive reclamation will be employed and monitored throughout the life of the mine, plus reclamation scheduling and coordination of activities with the overall sequence of the project; details of reclamation scheduling and procedures for coordinating reclamation activities within the overall mining sequence and materials balance;	Section 5
c. Implications of any updated water balance and water quality model prediction results and any adaptive management measures that may be required;	Section 9.2
d. An evaluation of closure and reclamation measures for each mine component, including the goals, objectives, closure criteria and the rationale for selection of the preferred measures;	Section 11
e. A comprehensive assessment of materials suitability, including geochemical and physical characterization and a schedule of availability for reclamation needs. Particular attention shall be given to cover materials, including maps showing sources and stockpile locations of all reclamation construction materials;	Section 8.10.1

TYPE 'A' WATER LICENCE 2AM-MRY1325, Schedule J	MCRP Section
f. An assessment and description of any required post-closure treatment for pit water that is not acceptable for discharge, taking into consideration further studies completed and updated modeling information;	Section 8.2
g. Contingency measures for all reclamation components including action thresholds that are linked to the monitoring programs;	Section 11
h. Monitoring programs to assess reclamation performance and environmental conditions including monitoring locations for surface water and Ground Water, parameters;	Sections 9, 9.2
i. Monitoring schedules and overall timeframes;	Sections 9.2
j. QA/QC procedures for managing the demolition landfill and other waste disposal areas;	Section 8.9.1
k. A list of non-salvageable materials and disposal locations;	Section 8.9
l. Rock storage facility closure design plans and sections including the types of material placed and volumes;	Section 8.11.1
m. Protocol for the disposal of any contaminated soil;	Section 8.10
n. An assessment of the long-term physical stability of all remaining project components;	Section 9.1
o. A revised closure and reclamation cost estimate; and	Section 12.2
p. A detailed implementation schedule for completion of reclamation work	Sections 8.14, 8.14.1

14 GLOSSARY OF TERMS, ACRONYMS, OR ABBREVIATIONS

14.1 GLOSSARY OF TERMS

Term	Meaning
Abandonment	The permanent dismantlement of a facility so it is permanently incapable of its intended use. This includes the removal of associated equipment and structures.
Acid-Base Accounting (ABA)	Acid-Base Accounting (ABA) is a screening procedure whereby the acid-neutralizing potential and acid-generating potential of rock samples are determined.
Acid generating (AG)	Production of acidity irrespective of its effect on the adjacent pore water or whether the material is net acid producing or neutralizing.
Acid rock drainage (ARD)	Acidic drainage stemming from open pit, underground mining operations, waste-rock or tailings facilities that contains free sulphuric acid and dissolved metals sulphate salts, resulting from the oxidation of contained sulphide minerals or additives to the process. The acid dissolves minerals in the rocks, further changing the quality of the drainage water.
Acid Potential (AP)	Maximum potential acid generation from a sample. The calculation of AP (or MPA) is an integral part of acid/base accounting.
Acidity	Measure of the capacity of a solution to neutralize a strong base.
Active layer	The layer of ground above the permafrost which thaws and freezes annually.
Alkalinity	Measure of the capacity of a solution to neutralize a strong acid.
Backfill	Material excavated from a site and reused for filling the surface or underground void created by mining. Reinsertion of materials in extracted part(s) of the orebody. Materials used for backfilling can be waste-rock or overburden. In most cases backfill is used to refill mined-out areas in order to: • Assure ground stability. • Prevent or reduce underground and surface subsidence. • Provide roof support so that further parts of the orebody can be extracted and to increase safety. • Provide an alternative to surface disposal. and • Improve ventilation.
Background	An area near the site under evaluation not influenced by chemicals released from the site, or other impacts created by onsite activity.
Baseline	A surveyed condition and reference used for future surveys.
Benign	Having little or no detrimental effect.
Berm	A mound or wall, usually of earth, used to retain substances or to prevent substances from entering an area.

Term	Meaning
Best Management Practices	Any program, technology, process, operating method, measure, or device that controls, prevents, removes, or reduces pollution and impact on the environment.
Biodiversity	The variety of plants and animals that live in a specific area.
Bioremediation	The use of microorganisms or vegetation to reduce contaminant levels in soil or water.
Borrow Pit	A source of fill or embanking material.
Care and Maintenance	A term to describe the status of a mine when it undergoes a temporary closure.
Closure	When a mine ceases operations without the intent to resume mining activities in the future.
Closure Criteria	Detail to set precise measures of when the objective has been satisfied.
Comminution	Size reduction of an ore by crushing and/or grinding to such a particle size that the product is a mixture of relatively clean particles of mineral and gangue. In order to produce a relatively pure concentrate, it is necessary to grind the ore fine enough to liberate the desired minerals.
Contaminant	Any physical, chemical, biological or radiological substance in the air, soil or water that has an adverse effect. Any chemical substance with a concentration that exceeds background levels or which is not naturally occurring in the environment.
Contouring	The process of shaping the land surface to fit the form of the surrounding land.
Cumulative Effects	The combined environmental impacts that accumulate over time and space as a result of a series of similar or related actions or activities.
Crushing	Comminution process that reduces the particle size of run-of-mine ore to such a level that grinding can be carried out. This is accomplished by compression of ore against rigid surfaces, or by impact against surfaces in rigidly constrained motion path.
Cryoconcentration	Concentration of solutes due to exclusion by ice.
Decommissioning	Process by which a mining operation is shut down i.e.: permanently closing a site. removing equipment, buildings and structures. Rehabilitation and plans for future maintenance of affected land and water are also included.
Dewatering	Process of removing water from an underground mine or open pit, or from the surrounding rock or non-lithified area. The term is also commonly used for the reduction of water content in concentrates, tailings and treatment sludges.
Disposal	The relocation, containment, treatment or processing of unwanted materials or materials that are not reusable. This may involve the removal of contaminants or their conversion to less harmful forms.
Drainage	Manner in which the waters of an area exist and move, including surface streams and groundwater pathways. A collective term for all concentrated and diffuse water flow.
Drainage Chemistry	Concentrations of dissolved components in drainage, including element concentrations, chemical species and other aqueous chemical parameters.
Effluent	Treated or untreated liquid waste material that is discharged into the environment from a structure such as a settling pond or a treatment plant.

Term	Meaning
End Land Use	The allowable use of disturbed land following reclamation. Municipal zoning and/or approval may be required for specific land uses.
Environment	Interrelated physical, chemical, biological, social, spiritual and cultural components that affect the growth and development of living organisms.
Erosion	The wearing away of rock, soil or other surface material by water, rain, waves, wind or ice, the process may be accelerated by human activities.
Evaporation	Physical process by which a liquid is changed into a gas.
Existing Operation	An installation in operation or, in accordance with legislation existing before the date on which this Directive is brought into effect, an installation authorized or in the view of the competent authority the subject of a full request for authorization, provided that that installation is put into operation no later than one year after the date on which this Directive is brought into effect.
Frost Heave	Annual ground displacements and differential ground pressures due to the freezing of water within soils.
Geochemistry	Science of the chemistry of geological materials and the interaction between geological materials with the environment.
Geology	Study of the earth, its history and the changes that have occurred or are occurring, and the rocks and non-lithified materials of which it is composed and their mode of formation and transformation.
Grade	Dimensionless proportion of any constituent in an ore, expressed often as a percentage, grams per tonne (g/t) or parts per million (ppm).
Ground Thermal Regime	Temperature conditions below the ground surface. A condition of heat losses and gains from geothermal sources and the atmosphere.
Groundwater	All subsurface water that occurs beneath the water table in rocks and geologic formations that are fully saturated. Distinct from surface water.
Humidity Cell Test	Kinetic test procedure used primarily to measure rates of acid generation and neutralization in sulphide-bearing rock.
Hydrogeology	Science of the groundwater circuit (interrelationship of geologic materials and processes with water).
Hydrology	The science that deals with water, its properties, distribution and circulation over the Earth's surface.
Inert Waste	Material having insignificant leachability and pollution content which will not require laboratory analysis.
Infiltration	Entry of water into a porous substance.
Inukshuk	A stone representation of a person, used as a milestone or directional marker by the Inuit of the Canadian Arctic.
In Situ Treatment	A method of managing or treating contaminated soils, sludges and waters "in place" in a manner that does not require the contaminated material to be physically removed or excavated from where it originated.

Term	Meaning
Landfill	An engineered waste management facility at which waste is disposed by placing it on or in land in a manner that minimizes adverse human health and environmental effects.
Leachate	Solution obtained by leaching e.g. water that has percolated through soil containing soluble substances and that contains certain amounts of these substances in solution.
Leaching	Passage of a solvent through porous or crushed material in order to extract components from the liquid phase. For example, gold can be extracted by heap leaching of a porous ore, or pulverized tailings. Other methods are tank leaching of ore, concentrates or tailings and in-situ leaching.
Lithology	Composition of rocks, including physical and chemical characteristics such as colour, mineralogical composition, hardness and grain size.
Migration	The movement of chemicals, bacteria, and gases in flowing water or vapour.
Mineral Resource	Concentration or occurrence of natural, solid, inorganic or fossilized organic material in or on the Earth's crust in such form and quantity and of such a grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics and continuity of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge.
Mining	Methods and techniques to extract ore from the ground, including support facilities (e.g. stockpiles, workshops, transport, ventilation) and supporting activities in the mine itself or in the vicinity.
Mining Operation	Any extraction of ore from which mineral substances are taken, where the corporate intent is to make an operating profit or build continuously toward a profitable enterprise.
Mitigation	The process of rectifying an impact by repairing, rehabilitating or restoring the affected environment, or the process of compensating for the impact by replacing or providing substitute resources or environments.
Monitoring	Observing the change in geophysical, hydrogeological or geochemical measurements over time. Process intended to assess or to determine the actual value and the variations of an emission or another parameter, based on procedures of systematic, periodic or spot surveillance, inspection, sampling and measurement or another assessment methods intended to provide information about emitted quantities and/or trends for emitted pollutants.
Naturally Re-vegetate or Natural Re-vegetation	For the purposes of the Mary River Project natural re-vegetation will include 75 ypersthenes and covering with overburden as required and allowing the surrounding natural vegetation to encroach and be re-established on the disturbed area.
Neutralization	Raising the pH of acidic solutions or lowering the pH of alkaline solutions to near-neutral pH (about pH 7) values through a reaction in which the hydrogen ion of an acid and the hydroxyl ion of a base combine to form water.
Neutralization Potential (NP)	General term for a sample's or a material's capacity to neutralize acidity.

Term	Meaning
Objectives	Objectives describe what the reclamation activities are aiming to achieve. The goal of mine closure is to achieve the long-term objectives that are selected for the site.
Open Pit Mining	Mining operation takes place on the surface. Mining operation and environment are in contact over an extended area.
Operator	Any natural or legal person that is responsible for the control, operation, and maintenance of the mine, mineral processing plant, tailings dam and/or related facilities including the after-closure phases.
Ore	Mineral or variety of accumulated minerals of sufficient value as to quality and quantity that it/they may be mined at a profit. Most ores are mixtures of extractable minerals and extraneous rocky material.
Orebody (mineral deposit)	Naturally occurring geological structure consisting of an accumulation of a desired mineral and waste-rock, from which the mineral can be extracted, at a profit, or with a reasonable expectation thereof.
Overburden	Layer of natural grown soil or massive rock on top of an orebody. In case of open pit mining operations it has to be removed prior to extraction of the ore
P	Phosphate
Passive Treatment	Treatment technologies that can function with little or no maintenance over long periods of time.
Permafrost	Ground that remains at or below zero degrees Celsius for a minimum of two consecutive years.
Permafrost Aggradation	A naturally or artificially caused increase in the thickness and/or area extent of permafrost.
Permeability	The ease with which gases, liquids, or plant roots penetrate or pass through soil or a layer of soil. The rate of permeability depends upon the composition of the soil.
Phreatic Surface	The term phreatic is used in Earth sciences to refer to matters relating to ground water below the water table (the word originates from the Greek phrear, phreat- meaning “well” or “spring”). The term ‘phreatic surface’ indicates the location where the pore water pressure is under atmospheric conditions (i.e. the pressure head is zero). This surface normally coincides with the water table.
Potentially Acid Generating (PAG)	Rock or overburden material that has the potential to produce acidity irrespective of its effect on the adjacent pore water or whether the material is net acid producing or neutralizing.
Progressive Reclamation	Actions that can be taken during mining operations before permanent closure, to take advantage of cost and operating efficiencies by using the resources available from mine operations to reduce the overall reclamation costs incurred. It enhances environmental protection and shortens the timeframe for achieving the reclamation objectives and goals.
Primary Crushing	Process of reducing ore into smaller fragments to prepare it for further processing and/or so that it can be transported to the processing plant. In underground mines, the primary crusher is often located underground, or at the entrance to the processing plant.

Term	Meaning
Quarry	Whole area under the control of an operator carrying out any activity involved in the prospecting, extraction, treatment and storage of minerals, including common related infrastructures and waste management activities, being not a mine. It is distinguished from a mine because it is usually open at the top and front, and used for the extraction of building stone, such as slate, limestone, gravel and sand.
Reclamation	The process of returning a disturbed site to its natural state or one for other productive uses that prevents or minimizes any adverse effects on the environment or threats to human health and safety.
Rehabilitation	Activities to ensure that the land will be returned to a form and productivity in conformity with a prior land use plan, including a stable ecological state that does not contribute substantially to environmental deterioration and is consistent with surrounding aesthetic values.
Remediation	The removal, reduction, or neutralization of substances, wastes or hazardous material from a site in order to prevent or minimize any adverse effects on the environment and public safety now or in the future.
Restoration	The renewing, repairing, cleaning-up, remediation or other management of soil, groundwater or sediment so that its functions and qualities are comparable to those of its original, unaltered state.
Re-vegetation	Replacing original ground cover following a disturbance to the land.
Risk Assessment	Reviewing risk analysis and options for a given site, component or condition. Risk assessments consider factors such as risk acceptability, public perception of risk, socio-economic impacts, benefits, and technical feasibility. It forms the basis for risk management.
Run-of-mine (ROM)	Run of mine. Unprocessed conveyed material (ore) from the mining operation.
Runoff	Part of precipitation and snowmelt that does not infiltrate but moves as overland flow and drains off the land into bodies of water.
Scarification	Seedbed preparation to make a site more amenable to plant growth.
Screening	Separating material into size fractions.
Security Deposit	Funds held by the Crown or designated owner of the land that can be used in the case of abandonment of an undertaking to reclaim the site, or carry out any ongoing measures that may remain to be taken after the abandonment of the undertaking.
Sediment	Solid material, both mineral and organic, that has been moved by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.
Seismic	Relating to an earthquake or to other tremors of the Earth, such as those caused by large explosions.
Solubility	Quantity of solute that dissolves in a given volume and type of solvent, at given temperature and pressure, to form a saturated solution. The degree to which compounds are soluble depends on their ability, and that of the other dissolved species, to form ions and aqueous complexes in particular drainage chemistry.
Sump	An underground catch basin in a mine where water accumulates before being pumped to the surface.

Term	Meaning
Supernatant	The clear liquid that floats about the sediment or precipitate.
Surface Water	Natural water bodies such as river, streams, brooks, ponds and lakes, as well as artificial watercourses, such as irrigation, industrial and navigational canals, in direct contact with the atmosphere.
Sustainable Development	Industrial development that does not detract from the potential of the natural environment to ensure benefits for future generations.
Tailings	Material rejected from a mill after most of the recoverable valuable minerals have been extracted.
Taliks	Unfrozen zones that can exist within, below, or above permafrost layers. They are usually located below deep water bodies.
Temporary Closure	When a mine ceases operations with the intent to resume mining activities in the future. Temporary closures can last for a period of weeks, or for several years, based on economical, environmental, political, or social factors.
Thermokarst	A landscape characterized by shallow pits and depressions caused by selective thawing of ground ice, or permafrost.
Topsoil	Natural huminous layer on top of the orebody, which has to be stripped prior to start-up of ore extraction.
Traditional Knowledge	A cumulative, collective body of knowledge, experience, and values built up by a group of people through generations of living in close contact with nature. It builds upon the historic experiences of a people and adapts to social, economic, environmental, spiritual and political change.
Ultramafic	Igneous rock composed chiefly of mafic minerals, e.g. monomineralic rocks composed of 78 ypersthenes, augite, or olivine.
Waste-rock, Discard, or Spoil Material	All rock materials, except ore and tailings that are produced as a result of mining operations.
Watershed	A region or area bordered by ridges of higher ground that drains into a particular watercourse or body of water.
Water Table	The level below where the ground is saturated with water.
Weathering	Processes by which particles, rocks and minerals are altered on exposure to surface temperature and pressure, and atmospheric agents such as air, water and biological activity.

14.2 ACRONYMS AND ABBREVIATIONS

The following are acronyms or abbreviations that may be used in this document.

Abbreviation	Description
General	
A&R	Abandonment and Reclamation
ARD	Acid Rock Drainage
Baffinland	Baffinland Iron Mines Corporation
CCME	Canadian Council of Ministers of the Environment
DEIS	Draft Environmental Impact Statement

Abbreviation	Description
EA	Environmental Assessment
EHS	Environmental Health and Safety
EIS	Environmental Impact Statement
EMMP	Environmental Mitigation and Monitoring Plans
ERP	Proposed Early Revenue Phase
ESA	Environmental Site Assessment
FEIS	Final Environmental Impact Statement
FOL	Federal Owned Lands
HADD	Harmful Alteration, Disruption, or Destruction
HTA/HTO	Hamlets, Hunters, and Trappers Association/Organization
HTO	Hunters and Trappers Organization
IIBA	Inuit Impact and Benefits Agreement
IOL	Inuit Owned Lands
IQ	Inuit Qaujimajatuqangit (Inuit knowledge, or traditional knowledge)
KI	Key Indicator
LAC	Land Advisory Committee
LSA	Local Study Area
MASL	Metres above Sea Level
Mary River	Nuluujaak
MC&RP	Mine Closure and Reclamation Plan
MDAG	Mineral Development Advisory Group
MERA	Mineral and Energy Resource Assessment
ML	Metal Leaching
MOU	Memorandum of Understanding
Mt/a	Million Tonne-Per-Annum
NLCA	Nunavut Land Claims Agreement
NSA	Nunavut Settlement Area
NWT	North West Territories
PAG	Potential Acid Generating
PDA	Potential Development Area
PDW	Pre-Development Works
PLA	Production Lease Area
PPR	Personal Property Registry
RA(s)	Responsible Authority(ies)
RMO	Resource Management Officer
RSA	Regional Study Area
TC-NWPP	Transport Canada Navigable Waters Protection Program
the Project	Mary River Project
TK	Traditional Knowledge
VC	Valued Component
VEC	Valued Ecosystem Component
VSEC	Valued Socio-Economic Component

Abbreviation	Description
Federal And Territorial Acts	
AWPPA	Arctic Waters Pollution Prevention Act
BCANU	Business Corporations Act (Nunavut)
CEAA	Canadian Environmental Assessment Act
CEPA	Canadian Environmental Protection Act, 1999
CLA	Commissioner's Land Act
CNPA	Canada National Parks Act
CWA	Canada Wildlife Act
EG&GANU	Engineers, Geologists and Geophysicists Act (Nunavut)
EMAANU	Emergency Medical Aid Act (Nunavut)
EPANU	Environmental Protection Act (Nunavut)
EUANU	Explosives Use Act (Nunavut)
EXA	Explosives Act
FA	Fisheries Act
FPANU	Fire Prevention Act (Nunavut)
LSANU	Labour Standards Act (Nunavut)
MBCA	Migratory Birds Convention Act, 1994
MH&SANU	Mine Health and Safety Act (Nunavut)
NW&NSRTA	Nunavut Waters and Nunavut Surface Rights Tribunal Act
PHANU	Public Health Act (Nunavut)
TDGA	Transportation of Dangerous Goods Act, 1992
TDGANU	Transportation of Dangerous Goods Act (Nunavut)
TLA	Territorial Lands Act
TPANU	Territorial Parks Act (Nunavut)
WANU	Wildlife Act (Nunavut)
WCANU	Workers' Compensation Act (Nunavut)

Abbreviation	Description
Federal And Territorial Regulations	
AWPPR	Arctic Waters Pollution Prevention Regulations
CFAEAP&R	Regulations Respecting the Coordination by Federal Authorities of Environmental Assessment Procedures and Requirements
CLR	Commissioner's Land Regulations
CMR	Canada Mining Regulations
CRFR	AECB Cost Recovery Fees Regulations, 1996
CSLR	Comprehensive Study List Regulations
CSLRNU	Comprehensive Study List Regulations (Nunavut)
CSRNU	Camp Sanitation Regulations (Nunavut)
ELR	Exclusion List Regulations
EURNU	Explosives Use Regulations (Nunavut)
EXR	Explosives Regulations
FPRNU	Fire Prevention Regulations (Nunavut)
ILR	Inclusion List Regulations
LLR	Law List Regulations
MBSR	Migratory Bird Sanctuary Regulations
MH&SRNU	Mine Health and Safety Regulations (Nunavut)
MMER	Metal Mining Effluent Regulations
NA&PSR	Nunavut Archaeological and Palaeontological Sites Regulations
NBRLUP	North Baffin Regional Land Use Plan
NPWR	National Parks Wildlife Regulations
NWTFR	Northwest Territories Fishery Regulations
NWTWR	Northwest Territories Waters Regulations
PCSRNU	Propane Cylinder Storage Regulations (Nunavut)
SCP&RRNU	Spill Contingency Planning and Reporting Regulations (Nunavut)
TDGR	Transportation of Dangerous Goods Regulations
TDGRNU	Transportation of Dangerous Goods Regulations (Nunavut)
TDR	Territorial Dredging Regulations
TLR	Territorial Lands Regulations
TLUR	Territorial Land Use Regulations
TPRNU	Territorial Parks Regulations (Nunavut)
TQR	Territorial Quarrying Regulations
WAR	Wildlife Area Regulations
WCRNU	Workers' Compensation Regulations (Nunavut)
WSRNU	Wildlife Sanctuaries Regulations (Nunavut)
Federal Government Departments And Agencies	
AANDC	Aboriginal Affairs and Northern Development Canada
CTA	Canadian Transportation Agency
DFO	Fisheries and Oceans Canada
DOJ	Department of Justice Canada
EC	Environment Canada
INAC	Indian and Northern Affairs Canada (recently renamed Aboriginal Affairs and Northern Development Canada)
NRCan	Natural Resources Canada

Abbreviation	Description
PCH	Parks Canada Agency (Canadian Heritage)
TC	Transport Canada
Territorial Government Departments And Agencies	
CGSNU	Department of Community and Government Services
CLEYNU	Department of Culture, Language, Elders and Youth
DOJNU	Department of Justice
DOENU	Department of Environment
ED&TNU	Economic Development & Transportation
GN	Government of Nunavut
H&SSNU	Department of Health and Social Services
WCBNU	Workers' Compensation Board of the Northwest Territories and Nunavut
Institutions Of Public Government	
CLARC	Community Land and Resource Committee
CLO	Community Liaison Officer
IPGs	Institutions of Public Government
NIRB	Nunavut Impact Review Board
NPC	Nunavut Planning Commission
NSRT	Nunavut Surface Rights Tribunal
NWB	Nunavut Water Board
NWMB	Nunavut Wildlife Management Board
Inuit Organizations	
DIO	Designated Inuit Organizations
MHTO	Mittimatalik Hunters and Trappers Organization
NTI	Nunavut Tunngavik Incorporated
QIA	Qikiqtani Inuit Association
RIA	Regional Inuit Association
RWO	Regional Wildlife Organization

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