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# Baffinland Iron Mines Corporation

## ADAPTIVE MANAGEMENT PLAN

### DRAFT FOR REVIEW PURPOSES

**Note for QIA** - Schedule ID2 obligations do not remain following a Phase 2 rejection, however, the AMP has been revised per Commitment No. 18, Project Certificate Appendix B, “QIA and Baffinland jointly develop and approve, by April 2024, the adaptive management elements for monitoring programs and Inuit Objectives, Indicators, Thresholds and Responses for the Adaptive Management Plan related to narwhal, seal, Arctic char, caribou, dust and culture, resource and land use. “


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# 1 INTRODUCTION

## 1.1 CONTEXT

Adaptive management aims to continually improve environmental and social management processes by monitoring and evaluating their effectiveness and implementing strategies and actions to incorporate learnings quickly and proactively into operational implementation of monitoring and management and in future planning for the Mary River Project (the Project). Monitoring associated with adaptive management as described in this plan will focus on monitoring changes to the environment against established (including but not limited to regulatory) thresholds, beyond which the implementation of action will be necessary to reduce observed impacts where changes are reasonably associated with the Project. Adaptive management will take place within the context of an industrial project, which will operate in an environmentally responsible manner but by nature cannot operate without any effects.

Baffinland commits to efficiently and safely shipping through the pending Tallurutiup Imanga National Marine Conservation Area (NMCA) with a commitment that Project operations can be planned and carried out in a manner that exceeds many government and industry standards, taking into consideration the NMCA's unique aspects.

This Adaptive Management Plan (AMP) for Baffinland's Project provides an overview of the management mechanisms established to identify where mitigation measures may not sufficiently address potential adverse effects, and to address uncertainty or conditions that may occur during operations that were not anticipated during the planning phase. A precautionary approach to managing the Project inclusive of this adaptive management plan acknowledges uncertainties exist while developing systems and approaches for responding to changing conditions, with the goal of avoiding adverse effects by taking action before these occur or, at minimum, responding quickly and meaningfully to observed changes that may be partially to wholly attributable to the Project. It is a particularly useful tool in long-term projects, as it facilitates progressive integration of the collective body of Inuit Qaujimajatuqangit (IQ), improvements in scientific understanding and advances in mitigation measures.

This structured approach to continual improvement expands on the memo titled "Baffinland Environmental Monitoring, Mitigations and Adaptive Management Overview", drafted to address the requirements outlined in the Mary River Project Guidelines (the Guidelines, NIRB 2015) and to integrate the various environmental management and monitoring plans into a consistent adaptive management framework.

A key part of Baffinland's approach to adaptive management is incorporation of community review and feedback; particularly, the incorporation of IQ to improve or extend the effectiveness of the Environmental Management System (EMS) for the Project. In recognition of the critical role that IQ and Inuit play in project monitoring and management, the Adaptive Management Plan has been revised to better incorporate roles for QIA and affected Inuit communities. One key revision is that QIA and

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Baffinland will jointly develop and approve the adaptive management elements for monitoring programs and Inuit Objectives, Indicators, Thresholds and Responses for the Adaptive Management Plan related to narwhal, seal, Arctic char, caribou, dust and culture, resource and land use, per Project Certificate Appendix B, Commitment No. 18. QIA will also play a key role in the direct collection of monitoring information that trigger adaptive management actions where necessary through the Inuit Stewardship Plan, per Project Certificate Appendix B, Commitment No. 19. The Inuit Stewardship Plan, a Project Plan developed by and implemented by QIA, will include mechanisms such as the Culture, Resources and Land Use Monitoring Program and the Social Monitoring Stream. Each of these areas include committees comprised of Inuit from affected communities. The Inuit Stewardship Plan will assist in gathering data, setting thresholds for impacts that are considered to require action under the Adaptive Management Plan, actively monitoring, and gauging the success of these actions. It is recognized and understood finalizing the Adaptive Management Plan requires careful integration of requirements associated with regulatory requirements. A final Adaptive Management Plan will ensure these considerations have been appropriately made.

## 1.2 PURPOSE AND OBJECTIVES

The purpose of the AMP is to:

- Formalize and consolidate the various aspects of adaptive management that are integral to ongoing operations, planned capital projects, and future planning;
- Formalize the relationship between QIA and Baffinland in the development and implementation of adaptive management in relation to the Project;
- Confirm the role IQ and western science plays in adaptive management; and
- Relate adaptive management mechanisms and actions into the overall Environmental Management System, which will include specific mitigation measures and associated management actions to be taken when specified thresholds are approached or exceeded. Mitigation measures may include special studies, operational changes, revised or new water and waste management systems, new or altered conveyance systems, structures and/or facilities, or implementing mitigation activities to prevent, stabilize or reverse a change in environmental conditions or to otherwise protect the receiving environment. Mitigation measures also include the possibility of project activity changes, reductions or suspension.

The objectives of this plan, which at a minimum must reflect the requirements for an AMP from the NIRB Project Certificate (including Appendix B commitments), are as follows:

- Identify the roles and responsibilities of different parties in the development and implementation of adaptive management actions (Section 1.4)
- Describe the approach and commitment to adaptive management by Baffinland in collaboration with Inuit (Section 2)

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- Identify the project activities which are subject to adaptive management actions (Section 3)
- Initiate notification and reporting procedures (Section 4)
- Identify existing adaptive management tools and mechanisms of change, and areas for improvement (Appendix B)
- Confirm that the lived experiences of Inuit impacted by the Project provide a unique and valuable form of information that will be considered and responded to through the AMP and its implementation.

### 1.3 PLAN STRUCTURE

This plan includes the following sections:

- **Introduction** – provides the context, purpose and objectives, plan structure, roles and responsibilities, and the role of IQ and community involvement in adaptive management
- **Adaptive Management Response Framework** – outlines the adaptive management response framework, and includes the relevant management plans and mitigation plans the framework applies to
- **Adaptive Management Integration** – describes the integration of adaptive management into the Project management and mitigation plans and provides descriptions of the various plans
- **Reporting** – summarizes the reporting framework
- **References** – literature and other documentation cited in the AMP

Appendices include:

- Information Sharing Schedule (Appendix A)
- Adaptive Management Checklist Template (Appendix B)
- Adaptive Management Objectives, Indicators, Thresholds, and Responses (Appendix C)

### 1.4 ROLES AND RESPONSIBILITIES

The roles and responsibilities for implementation of the AMP of Baffinland and QIA are described in the following sections.

#### **BAFFINLAND**

Adaptive management involves many phases and, when properly planned and implemented, it permeates many project components and aspects. In the Project, adaptive management is of critical importance to Baffinland, Inuit parties, and regulators. Given this importance, implementation of the AMP is a shared responsibility at all levels of Baffinland's corporate structure. It is imperative that the concept of adaptive management be embraced within the highest levels of management; this will assure it is afforded the

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required priority level within the company, and the necessary resources to plan, implement and maintain the AMP processes.

Baffinland is solely responsible for the resourcing and implementation of this Adaptive Management Plan, and to adhering to the requirements of this Adaptive Management Plan and all Project-related plans that include adaptive management requirements. Other than as specifically designated per Commitment 18 of Appendix B of the Project Certificate, Baffinland is solely responsible for the development of adaptive management actions included in each plan, as well as this overarching AMP.

#### **Vice-President, Sustainable Development**

- Provides corporate resources and overall direction to the implementation of the AMP including all relevant objectives, indicators, thresholds and responses.

#### **Senior Director of Sustainable Development**

- Reports directly to VP Sustainable Development and indirect reporting and coordination with Chief of Operations
- Liaises with the senior management, regulators, Inuit and stakeholders
- Monitors compliance with permits, licenses and authorizations
- Monitors implementation of management plans, including the Adaptive Management Plan
- Ensures all regulatory environmental monitoring and reporting requirements (monthly, annual) are met
- Initiates and oversees environmental studies

#### **Health, Safety, Environment and Security Director**

- Provides resources and overall direction to the implementation of the AMP and on site HSES team
- Provides review and approval of revised versions of the AMP
- Develop Baffinland strategic direction and continuous improvement of the company's HSES objectives and management systems

#### **Health, Safety, Environment and Security (HSES) Manager**

- Provide resources and overall direction to the implementation of the AMP
- Responsible for overall compliance on site for the HSES team
- Oversees regulatory environmental monitoring and reporting requirements (monthly, annual) are met
- Work proactively with HSES team members, Operations, Projects, and Contractors to develop and maintain an integrated HSES management system.



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- Provide review and approval of revised versions of AMP

### **Environmental Superintendent**

- Reports to Health, Safety, Environment and Security Manager and indirect reporting and coordination with Chief of Operations
- Overall accountability for environmental staff and performance at site
- Monitors compliance with permits, licenses and authorizations
- Monitors implementation of management plans, including the Adaptive Management Plan
- Ensures all regulatory environmental monitoring and reporting requirements (monthly, annual) are met
- Initiates and oversees environmental studies
- Coordinates implementation and monitors the performance of the EMS at site
- Provides ongoing environmental education and environmental awareness training to all employees and contract workers including awareness of the adaptive management plan
- Oversees investigations and reporting of environmental incidents to regulatory bodies, stakeholders and senior management
- Reviews updates to management plans

### **Environmental Coordinator - Reports to the Environmental Superintendent**

- Specific accountabilities for environmental monitoring and reporting including that required by the Adaptive Management Plan
- Provides day to day direction to Environmental staff onsite
- Provides ongoing environmental education and environmental awareness training to all employees and contract workers
- Prepare updates to management plans

### **QIA**

Per Commitment 18 of Appendix B of the Project Certificate, QIA and Baffinland are responsible for jointly developing and approving the adaptive management elements for monitoring programs and Inuit Objectives, Indicators, Thresholds and Responses for the Adaptive Management Plan related to narwhal, seal, Arctic char, caribou, dust and culture, resource and land use. This process will be informed by existing EA predictions, outcomes of additional CRLU assessments, the implementation of the Inuit Stewardship Plan (per Commitment 19 of Appendix B of the Project Certificate), and other sources of IQ.

To accomplish the above, QIA and Baffinland will create an Adaptive Management Plan working group to oversee the advancement of all activities associated with coming to joint agreement on adaptive

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management elements for monitoring programs and Inuit Objectives, Indicators, Thresholds and Responses related to narwhal, seal, Arctic char, caribou, dust and culture, resource and land use. The working group will remain as a “standing working group” that can be convened to support the implementation of the Adaptive Management Plan. This working group will be comprised of individuals with decision making authority for QIA and Baffinland, to enable effective working relationships and Adaptive Management Plan development.

QIA responsibilities include:

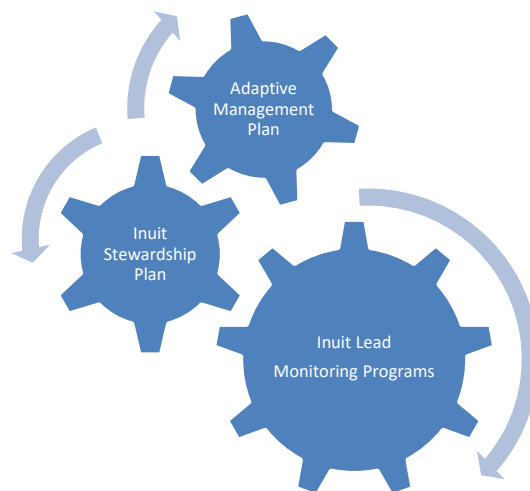
- Establish the above-mentioned working group with Baffinland to:
  - evaluate relevant management plans within the EMS system against the Adaptive Management Checklist (Appendix B)
  - develop (which will be informed by but may go beyond those required by regulatory approvals) objectives, indicators, thresholds and appropriate response requirements for all relevant management plans within the EMS system
  - oversee the implementation of approved adaptive management plans
  - review results of Adaptive Management responses completed by Baffinland on an annual and as needed basis
  - develop any Adaptive Management objectives, indicators, thresholds and responses to relevant management plans, including any brought forward for consideration by other groups (e.g., MEWG, TEWG). For clarity, this does not include instances where specific direction is provided by a regulator under an applicable authorization or legislation that Baffinland must implement.
- Provide timely results of relevant monitoring programs carried out under the Inuit Stewardship Plan, to inform the adaptive management system
- Engage in additional investigations in circumstances where adverse changes merit adaptive management interventions, for relevant management plans, as required
- Identify appropriate interventions for Baffinland to apply in circumstances requiring adaptive management for which there are no pre-defined thresholds and actions, subject to approval by Baffinland
- Support the monitoring and reporting of effectiveness of remedial actions, as per the adaptive management feedback loop, through the Inuit Stewardship Plan’s mechanisms
- Review updates to the adaptive management components of relevant management plans within the EMS system, as required to improve upon adaptive management over the life of the project.

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## 1.5 THE ROLE OF IQ AND COMMUNITY INVOLVEMENT IN ADAPTIVE MANAGEMENT

As identified in Baffinland's IQ Framework (IQ Framework)<sup>1</sup> and QIA's Inuit Stewardship Plan, IQ and community involvement in environmental management are critical to the identification and understanding of potential project effects. This relationship between IQ (collected through community involvement) and project adaptation is outlined in Figure 1 and described further below.

The Adaptive Management Plan provides overall guidance on the approach to adaptive management and the role of IQ and community involvement. Each individual environmental management and/or monitoring plan in Baffinland's Environmental Management System (EMS) integrates this guidance particularly under plans for which QIA and Baffinland have joint approval of adaptive management elements of monitoring programs and OITRs as specifically designated by Commitment 18 of Appendix B of the Project Certificate . Adaptive management is also anticipated to benefit from formal Inuit oversight, whether direct (e.g., the Inuit Committee), or indirect through various levels of involvement in the EMS (participation in monitoring programs, environmental working groups, public engagements, etc.). Through this system, it is anticipated that IQ will be integrated along with western science into project planning, operation, and monitoring. Further, transparent and accountable feedback mechanisms will exist for IQ to inform, change and improve the Project.



**FIGURE 1      RELATIONSHIP OF IQ AND INUIT TO PROJECT ADAPTATION**

**\*\*FIGURE TO BE REPLACED\*\***

### *Environmental Working Groups Terms of Reference*

Working groups such as the Marine Environment Working Group (MEWG), the Terrestrial Environment Working Group (TEWG), and the Socio-economic Working Group (SEWG) have specific mandates

<sup>1</sup> Title of this IQ Framework is subject to change.

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described under and pursuant to Project Certificate 005 and will continue to rely on, and be a separate stream of, IQ and community input as well as western science. Any recommended revisions to the adaptive management elements of management plans may be superseded by Commitment 18 of Appendix B of the Project Certificate.

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## 2 ADAPTIVE MANAGEMENT RESPONSE FRAMEWORK

The Project-wide adaptive management process begins with a planning phase, followed by iterative phases of implementing and monitoring the actions included in the plan(s), evaluating the effectiveness of actions included in the plans based on results of monitoring and other feedback mechanisms, and adjusting management strategies and actions and responses based on monitoring. The cycle begins anew with implementation and monitoring of a revised plan, which integrates the outcomes of the previous cycle. This cycle can occur, in real-time or over an extended period according to the nature of the situation or area of focus. In this way, a properly designed and well-implemented adaptive management process progressively diminishes uncertainty, as management strategies and processes are refined throughout a project's operational lifecycle. Figure 2 is an illustration of this cyclical, phased process, and identifies the key steps involved in each phase.



**FIGURE 2 BAFFINLAND'S ADAPTIVE MANAGEMENT PROCESS**

**\*\*FIGURE TO BE REPLACED\*\***

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The adaptive management process is a guide to facilitate planning and action. In some instances, adaptive management will necessitate more immediate action, in which case strict adherence to the adaptive management cycle may not be prudent.

Adaptive management links the results of environmental monitoring programs (in this case Baffinland-led and Inuit-led) to management responses and changes in regulatory, environmental, or operational conditions. It requires timely evaluation of monitoring results to compare these against pre-determined objectives and thresholds, ongoing assessment of applicable management practices and, where appropriate, identification of responses such as adjusting mitigation measures and management actions in order to improve their effectiveness. The process then starts anew with implementation and monitoring of the modified measures. Taking a precautionary approach, adaptive management can be evoked in response to data and information that suggests triggers and thresholds are being approached. In other words, adaptive management is intended to take a precautionary approach when making decisions as to whether to undertake adaptive management actions. Responding to exceedances in thresholds, after they occur, can be an indication that the adaptive management system is not functioning according to its purpose and objectives, and may merit its own investigation. An adaptive management plan that includes tiered responses aimed at avoiding exceedance of predictions is inherently precautionary.

This Adaptive Management Plan functions as a framework that integrates results from multiple monitoring and management programs while maintaining effective communication amongst the proponent, regulators, stakeholders, QIA and Inuit communities. Ongoing communication with community members and stakeholders as outlined in the amended Inuit Impact and Benefit Agreement, and, Community and Stakeholder Engagement Plan (BAF-PH1-830-P16-0025) may result in updates to management and monitoring plans throughout mine operations.

Table 1 outlines the primary components and key mechanisms involved in each phase of adaptive management. The initial planning phase for the Mary River Project occurred during the effects assessment processes and during development of the individual management plans. The AMP focuses on the implementation and monitoring, evaluation and learning, and adjusting phases.

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**TABLE 1 ADAPTIVE MANAGEMENT PHASES, COMPONENTS AND MECHANISMS**

<b>Adaptive Management Phases</b>	<b>Components</b>	<b>Proposed Adaptive Management Mechanisms</b>
<b>Plan</b>	Objectives	Determine objectives and define key desired outcomes based on scientific, regulatory and cultural (IQ) inputs
	Indicators	Identify performance indicators
	Thresholds and responses	Define thresholds and responses based on scientific, regulatory, and cultural (IQ) inputs
	Attendant components	Plan adaptive management attendant components (monitoring program, data evaluation processes, notification and reporting mechanisms, documentation and updates, etc.)
	IQ integration and influence	Identify mechanisms for IQ integration and influence.
<b>Implement and Monitor</b>	Resourcing	Ensuring there are adequate resources for implementation of monitoring and response actions (as required), including but not limited to resources defined through agreements between QIA and Baffinland
	Management strategies and response implementation	Implement planned management strategies and responses (e.g., notification, review, evaluation, action) to achieve objectives
	Monitoring	Implement monitoring program to identify requirements for adaptive management responses (e.g., threshold exceedances)
	Implementation Timelines	Ensuring that adaptive management responses and the overall adaptive management cycle occur within appropriate time frame to avoid or minimize the effect
<b>Evaluate and Learn</b>	Reviewing data and feedback	Review and evaluate management effectiveness based on monitoring data and feedback. This includes verification of both Baffinland and ISP monitoring results with IQ holders (e.g., the Inuit Committee)
	Revised mitigation	Determine need for additional mitigation and/or new or revised management strategies
	Input from IQ holders	Provide opportunities for IQ holders to review results and input into adaptive management responses / mitigations

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<b>Adaptive Management Phases</b>	<b>Components</b>	<b>Proposed Adaptive Management Mechanisms</b>
<b>Adjust</b>	Addressing unanticipated effects or issues	Action and resolve unanticipated effects or issues
	Revising strategies and responses	Revise management strategies and responses to enhance effectiveness
	Reporting on adaptive management strategies and responses	Report on new and revised strategies and responses per requirements, as defined in the management plan
	Scheduled updates	Update the management plan per scheduled updates as identified in the management plan

The intent of the Adaptive Management Plan is to develop and implement a single set of objectives, indicators, thresholds and response actions for each sub-plan that are based on an appropriate weighting of IQ and western science. However, in certain circumstances, there may be a need for a single plan to have multiple objectives. For example, there may be separate regulatory objectives, Baffinland operational objectives, and Inuit environmental or socio-cultural objectives in a single adaptive management plan. Baffinland and QIA respect that the basis for developing objectives, indicators, thresholds, response strategies and requisite monitoring may rely upon different perspectives and inputs, and agree to discuss and consider such differences when jointly approving objectives, indicators, thresholds and responses.

The following terminology and definitions have been adopted for the Baffinland Mary River Project AMP:

- **Indicators:** Measurable or observable environmental, physical or social parameters to be monitored and assessed, which can indicate changes in conditions. IQ, social sciences and biophysical sciences provide a basis for indicators development and integration.
- **Monitoring requirements:** Specifics related to monitoring of indicators, such as frequency, type of data required and interpretation of results. IQ, social sciences and biophysical sciences are all sources of data that support monitoring requirements.
- **Thresholds:** Specified performance indicators that define the conditions and triggering actions – these may be staged such that specific actions are associated with different levels of concern, including early warning thresholds to initiate precautionary responses, thereby avoiding adverse effects associated with higher thresholds. The AMP will defer confirmation of thresholds to individual management plans which address topics specific thresholds.
- **Responses:** Specific actions to be implemented, or changes to be made to the Project when risks emerge or thresholds are approached, ideally staged in accordance with specified performance thresholds. Responses may include notifications and further reviews or evaluations, or actions to



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be implemented. There are two types of responses: investigative and remedial. Whenever possible, responses shall be triggered prior to exceedances in thresholds (i.e., as they are approached), rather than afterward.

- **Investigative responses:** Investigative level responses are designed to identify the presence or absence, extent and (where possible) the cause of the change predicted or observed. Investigative responses will rely upon IQ, social sciences and biophysical sciences as sources of data.
- **Remedial responses:** Remedial level responses are interventions. As a general principle, remedial level responses prioritize the avoidance and minimization of impacts and take into account the nature and scale of the impact in comparison to the remedial response. In the event initial remedial responses prove ineffective or incapable of addressing the issue, consideration for alteration of project activities and compensation shall be considered, again, taking into account the nature and scale of the issue in comparison to the consequences of alteration of project activities and compensation.

**Precautionary Principle:** “A rule or principle of environmental management denoting that if there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent environmental and/or socio-economic degradation.”

The definition of precautionary principle has been adopted from the NIRB’s Terminology and Definition Guide (2018).

A critical part of the AMP is a systematic approach to responding to results of monitoring programs. The response framework identifies pre-determined level(s) of an effect, defined through quantitative or qualitative thresholds, by which point specific responses need to be implemented. Management responses are ideally defined for early warning thresholds, with the goal of avoiding adverse effects that would result should higher threshold levels be approached or exceeded.

While some AMPs define specific responses to be implemented for a range of identified possible yet unexpected situations or events, Baffinland has or will include, as appropriate, such specifics in the individual Mary River Project management plans which comprise the EMS. This approach enables seamless integration of outcomes from the adaptive management process into the individual management plans, for continual implementation of management adaptations and facilitating updates as required. This approach will involve ongoing revision and refinement of the environmental management plans, including consultation and engagement with stakeholders and Inuit communities.

The below sections provide further detail on the following key elements of Baffinland’s adaptive management process:

- Management plans

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- Thresholds
- Monitoring programs
- Responses

## 2.1 MANAGEMENT PLANS

Baffinland has developed an EMS for the Mary River Project comprised of a suite of complimentary and interlinked management plans that operationalize Baffinland's approach to mitigation and management of potential environmental and socio-economic effects and incorporate input from Inuit communities and stakeholders. The management plans include the following:

- Environmental Protection Plan
- Borrow Pit and Quarry Management Plan
- Interim Closure and Reclamation Plan
- Explosives Management Plan
- Fresh Water Supply, Sewage and Wastewater Management Plan
- Snow Management Plan
- Waste Management Plan
- Hazardous Materials and Hazardous Waste Management Plan
- Phase 1 Waste Rock Management Plan
- Interim Waste Rock Management Plan
- Life of Mine Waste Rock Management Plan
- Landfill Maintenance and Operations Manual
- Health and Safety Management Plan
- Emergency Response Plan
- Spill Contingency Plan
- Oil Pollution Emergency Plan – Milne Inlet
- Railway Emergency Response Plan
- Polar Bear Safety Plan
- Spill at Sea Response Plan
- Metal and Diamond Mining Effluent Regulations Emergency Response Plan
- Surface Water and Aquatic Ecosystems Management Plan

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- Shipping and Marine Wildlife Management Plan
- Air Quality and Noise Abatement Management Plan
- Community and Stakeholder Engagement Plan
- Human Resources Management Plan
- Cultural Heritage Resource Protection Plan
- Inuit Human Resources Strategy Procedure
- Inuit Procurement and Contracting Strategy
- Roads Management Plan
- Railway Operation and Maintenance Plan

Additionally, QIA will develop the Inuit Stewardship Plan, which is Inuit-led and administered, per Commitment 19 of Appendix B of the Project Certificate.

Where applicable, these management plans include mitigations to be applied to prevent or mitigate environmental effects. In some cases, they also include accommodation measures for exceedance of specified thresholds. The plans are linked to the monitoring programs and the Adaptive Management Response Framework; as monitoring results identify unforeseen changes or exceed thresholds, then the appropriate management plan is updated or created to include the necessary mitigation. Information on these management plans is provided in Section 3.

## 2.2 THRESHOLDS

Each management and monitoring plan that is part of the Mary River EMS identifies mitigation and requirements for the protection of valued components. In many cases, these plans include thresholds based on ecological, social or cultural requirements, and may include action levels whereby monitoring results require specific responses (e.g., reporting, response plan development, additional mitigation). The Project AMP applies to a wide range of types of management plans; while some of these lend themselves to clearly-defined, step-based quantitative thresholds with associated action levels (e.g., low, moderate, high) that may be defined in regulation or conditions of authorization, others may be based taking into account qualitative risk assessments, IQ, and evaluations of potential outcomes. To account for this diversity, the AMP does not dictate a global approach to threshold types and levels. Qualitative or quantitative data, scientific or IQ evidence, can be the basis upon which adaptive management actions are initiated.

Where it is necessary and appropriate to include specific measurable thresholds, these may be developed with Action Levels over and above ongoing typical mitigation and monitoring for the Project. Action Levels are established to prevent adverse effects above certain thresholds from occurring or, where they are encountered, to reduce impact loads back below those thresholds. Low Action Levels are focused on improving the understanding of the situation that is causing the noted changes and to plan for more

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substantive responses (i.e., Moderate and High Action Levels) if/as required, and may include relatively minor remedial actions (mitigation measures). In some instances, Moderate and High Action Levels may not be defined until a Low Action Level is reached, and then defined during the subsequent planning stage. Moderate Action Levels are typically designed to halt - and ideally reverse – an adverse trend so as to avoid the need for High Level Actions. High Level Actions are typically designed to reverse a trend away from potentially serious/significant harm, and include changes to project activities such as rate and intensity of project operations. High Level Actions also include the possibility of activity suspension.

The following provides potential – non-exclusive - management actions associated with each of the action levels. Action levels will be derived taking into account both IQ and scientific knowledge. For greater clarity, the thresholds may not be solely or entirely reliant on EA predictions, and will take into account other forms of information (e.g., CRLU, IQ), where appropriate.

For each management plan there may be a number of regulatory authorities and/or interested parties with technical expertise that contribute to the development of adaptive management components, including setting thresholds. In some cases, there may also be supporting working groups, that have mandates provided for under the terms of approval. For the Mary River Project, there are three formal working groups established to support specific monitoring and management objectives, including the Terrestrial Environment Working Group, the Marine Environment Working Group, and the Mary River Socio-Economic Working Group. These groups have a key role to play in adaptive management. Advice and submissions from these groups shall be appropriately considered in any process to establish or modify relevant thresholds and associated responses.

Using the principle of precautionary action, most impacts encountered should be dealt with at Low Action Levels. As a result, few Moderate Action Levels scenarios are expected to occur, and using the same principle, High Action Levels should be required on an even rarer basis. Consideration of activity changes and/or reductions in project activities are expected to occur in conjunction with High Action Levels and may also occur in relation to some Moderate Action Levels. Additionally, it is understood that the progression from Low to Moderate and finally High Action Levels is predicated on there being evidence that reasonably links project activities to the impact(s) in question. In many cases work associated with implementation of action levels will generally require engagement and participation of QIA, particularly where QIA has responsibilities for adaptive management plan approvals.

### 2.2.1 LOW ACTION LEVEL

Low Action Levels are designed to respond to situations where monitoring results indicate a change in environmental benchmarks, or where data or observations indicate a move away from background or predicted impact levels (including but not limited to, impacts above what is predicted in the environmental assessment and subsequent project assessments). For greater clarity, Low Action Levels are applied once an identified Low Action Level threshold is passed. Low Action Levels will be set at levels that are precautionary, but allow for agreed upon variation as the Project transitions from predictions

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made during planning stages, into operations. Low Action Levels may include changes to regular operational project monitoring and mitigation activities.

Low level actions may include:

- Update of an existing Management or Monitoring Plan, or when necessary, development of a standalone Response Plan, as warranted
- Investigate change to confirm it is real and, when possible, identify cause
- Evaluate ecological, social, cultural and economic implications
- Review Moderate and High Action Level objectives, indicators, thresholds, and response actions, if not already pre-defined, and consider possible adjustments to them if pre-defined
- Identify, rationalize, and implement pre-defined or agreeable alternative mitigation in response to the change
- Identify if additional monitoring is required

#### 2.2.2 MODERATE ACTION LEVEL (SITUATION OF CONCERN)

Moderate Action Levels are those where effects are outside the range predicted by the EA or by subsequent assessments (e.g., CRLU Assessment) and/or where a consistent trend is identified toward approaching and possibly exceeding a defined threshold. In a formal EEM program, Moderate Action Levels are triggered when there is a measurable difference between reference and exposure areas that exceeds a pre-determined amount, and there is a reasonable degree of certainty that the Project is at least partially causing the effect. Moderate Action Level responses should be scaled to reverse the trend observed, and will be implemented and monitored to assess if they have the intended remedial consequence. Inuit observations, brought forward through the Inuit Stewardship Plan or Community Based Monitoring, may trigger Moderate Action Levels particularly when such observations differ markedly from the range predicted by the EA or by subsequent assessments and/or approach or exceed defined thresholds.

If not already confirmed through a Low Action Level response (i.e. a Low Action Level was not previously triggered), efforts must be expended to verify and confirm the effect is real and reasonably attributable to the Project. The need to undertake initial or additional investigative efforts will not preclude implementation of response actions from occurring. Investigative efforts will assist in assessing connections to project activities and whether responses selected and implemented have the intended remedial consequence.

Responses to Moderate Action Levels may include but would not be limited to:

- updating the Management, Monitoring or Response Plan,
- confirming and investigating the effect further, in unison with implementing reasonable response actions,

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- Increasing the mitigation level applied to reduce the observed change, or introducing another mitigation approach to increase effectiveness (for example, covering of ore cars to reduce dust deposition, or initial alterations to project activity levels),
- evaluating the effectiveness of mitigation through enhanced monitoring, and
- detailed context-specific consideration for what actions will be taken should Moderate Action Level actions prove unsuccessful (e.g., revisiting the plan).

Wherever possible, given both the environmental and economic implications of High Action Levels, Moderate Action Levels will be aggressive enough (including potentially altering project activities) to prevent High Action Levels from being approached, by halting and reversing an impact trend.

### 2.2.3 HIGH ACTION LEVEL (HIGH RISK SITUATION)

Exceeding benchmarks above predictions made in NIRB processes or subsequent assessments (e.g., CRLU Assessment) and beyond defined thresholds as agreed to in the Adaptive Management Plan specific to High Action Levels, require High Action Level responses, taking into account Inuit views on unacceptable change. Without delaying implementation of the required High Level Action(s), where uncertainty remains as to the cause of the effect, investigations can continue alongside actions. In instances where Low and Moderate Action Levels have not previously been triggered, parties may agree an investigation may still be required prior to full implementation of High Level Actions, however, parties may also agree Moderate or High Action Level responses may be applied during this interval. These serious actions include measures designed to reverse trends and improve conditions. This may require more intensive mitigation measures with less regard for economic implications, including reducing or suspending Project activities. Those Project activities may remain reduced or suspended for extended periods of time, or permanently, until such time as trends are reversed or conditions improved to acceptable levels (at minimum back to “moderate” impact levels), viable alternative High Action Level responses are proposed and jointly agreed upon, or other evidence, including monitoring, indicates with a high level of certainty that the Project activity is not a contributing source.

Understanding High Action Level responses may challenge the overall scope, scale and viability of the Project, a higher degree of certainty that the Project is reasonably associated with the effect and that the High Action Level response has a reasonable likelihood of reversing the effect is required. Subject to confirmation by QIA considering the advice of the Inuit Committee(s) under the Inuit Stewardship Plan, it shall be presumed that Inuit favor avoidance of environmental harm over economic considerations, especially in the context of High Action Levels. For High Action Levels, Baffinland and QIA will develop a list of specified Project activities that could be affected and to what degree, and associated impact thresholds.

It is also recognized and agreed that High Action Levels may also require implementation of compensation which could include restoration/offset measures.

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It is recognized that compensation alone may not be a satisfactory means of addressing a circumstance at a High Action Level. Compensation will be considered and applied in the context of other responses including changes to project activities.

## 2.3 MONITORING PROGRAMS

Baffinland has developed an environmental and socio-economic monitoring program for the Project to address regulatory requirements (e.g., Project Certificate and license conditions), as well as guidance from Project working groups. These monitoring programs and their components include the following:

- Aquatic Effects Monitoring Plan (AEMP)
  - Phase 1 Environmental Effects Monitoring (EEM) Study
  - Core Receiving Environment Monitoring Program (CREMP)
  - Lake Sedimentation Monitoring Program
  - Dustfall Monitoring Program
  - Initial Stream Diversion Barrier Study
- Terrestrial Environmental Mitigation and Monitoring Plan
  - Vegetation Monitoring
  - Birds Monitoring
  - Terrestrial Wildlife Monitoring
- Marine Monitoring Plan
  - Benthic Habitat
  - Sediment Quality
  - Water Quality
  - Finfish Species
  - Aquatic Invasive Species
  - Marine Mammals (Ship-based, Shore-based, Aerial, and Acoustic)
- Socio-economic Monitoring Plan
  - Population Demographics
  - Education and Training
  - Livelihood and Employment
  - Contracting and Business Opportunities
  - Human Health and Well-Being
  - Community Infrastructure and Public Services
  - Resources and Land Use
  - Economic Development and Self-Reliance
  - Benefits, Royalty, and Taxation

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- Air Quality and Noise Abatement Management Plan
  - Meteorology
  - Air Quality Monitoring (Gaseous Criteria Air Contaminant Monitoring, Dustfall Monitoring, Particulate Matter Monitoring, Incinerator Emission Testing, Noise and Vibration)

In addition to Baffinland-led monitoring, the Inuit Stewardship Plan will include a number of monitoring programs.

Other management plans include inspections and compliance monitoring and other monitoring programs and will be updated with respect to the adaptive management response framework.

Additional information regarding the monitoring plans above are provided in Section 3.

## 2.4 RESPONSES

The individual management plans will identify specific appropriate management to be implemented at various threshold levels, with the goal of preventing or minimizing adverse effects either during a presently-occurring or ongoing situation or condition, or when similar situations or conditions may occur in the future. Responses may include notifications, reviews, evaluations, actions or modifications (i.e. reductions, suspensions) of Project Activities to be implemented.

Adaptive management planning includes identifying and defining responses for specific thresholds and incorporating these into management and monitoring plans. Responses may include notifications or reporting through applicable regulatory filings, such as the NIRB Annual Report. Stakeholders, QIA, Inuit communities and regulators will be afforded an opportunity to review and comment on this information as can be reasonably accommodated. Responses may also be immediate notification to stakeholders through various means of communication including those prescribed under the IIBA.

Where Baffinland is implementing pre-determined responses, consistent with approved management plans, no approval is required of QIA, however, Baffinland will communicate response actions to QIA prior to implementation unless this is not possible due to the expediency required by the circumstance. Baffinland will apply equivalent efforts and resources to address all thresholds and responses, including those developed by Inuit and agreed to by Baffinland.

The protection of the environment, Inuit culture, resources and land use, technical feasibility and response effectiveness will be subject to due consideration together with other factors in response planning. The cost effectiveness of response actions is also a consideration, but may be of lower priority when Moderate and, especially, High Level Actions are required. Should a mitigation not be technically feasible under any circumstance, that must be factored into response planning accordingly. Assertions of technical feasibility must be supported by evidence. Ultimately, the development of adequate and appropriate responses depends on the consideration of all criteria, regardless of their relative weighting.



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Baffinland commits to follow the measures to reduce project activity levels and potentially reduce or suspend Project activities if set out in the final agreed Adaptive Management Plan and related plans as described in this document. Baffinland agrees to sharing the risks and burdens of project impacts, especially those relating directly to Inuit and communities, by acknowledging they will reduce Project activity levels and potentially suspend Project activities to purposefully protect the environment and Inuit culture with a reasonable degree of confidence that the actions will be effective.

Events or situations (including accidents or malfunctions) may occur that do not fall within the scope of existing monitoring programs and may not have established thresholds but still require a management response. Ideally, these responses will be facilitated through an update to the associated monitoring program(s) and environmental management plan(s) to allow for future monitoring and management of similar issues. In cases where it is determined that the issue or effect is of sufficient magnitude or complexity that it cannot be readily addressed or accommodated within the existing EMS framework, a separate standalone response plan may be developed and will be distributed to working groups, Inuit communities, stakeholders and regulators for review and comment.

Existing permits require that Baffinland solicit input from the QIA, the impacted communities and other regulators on the results of annual monitoring programs to confirm the predictions of the Final Environmental Impact Statement for the Project. In addition, Baffinland will continue to gather feedback directly from the impacted Inuit communities and other concerned parties to inform operational planning. This feedback is gathered by establishing several different avenues for two-way information sharing.

The adaptive management process allows for Project-effects monitoring to be assessed at two levels. First, Project-effects monitoring is conducted and assessed by either Baffinland or independently by QIA-administered bodies, depending on the administration of the monitoring program. The results of the monitoring programs are then shared with and assessed by external reviewers and technical specialists, including Baffinland, QIA and local community members. The table in Appendix A illustrates the review process for the various monitoring reports and other information-sharing activities.

### 3 ADAPTIVE MANAGEMENT INTEGRATION

The adaptive management framework provides common terminology and processes to be incorporated within each of the management and monitoring plans and will provide a platform to aggregate information on the application of adaptive management throughout the life of the Project.

Descriptions of the management and monitoring plans applicable to the Project are provided in the following subsections. Baffinland's Management and Monitoring Plans include aspects of adaptive management. Through the adaptive management process, it is Baffinland's intention to standardize these mechanisms across the EMS in order to provide increased consistency, and to facilitate the review and updating of the plans. The specific components of adaptive management required in each management or monitoring plan will be determined based on the goals and objectives of the plan; for example, a monitoring plan may have different goals than a management plan which focuses on mitigation measures.

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To facilitate the identification of adaptive management mechanisms, identify gaps and areas of improvement, and increase transparency about the level of adaptive management, the Adaptive Management checklist has been developed (Appendix B). This checklist will be included in each Management and Monitoring plan. For any management or monitoring plan with components subject to QIA approval, the checklist will be applied jointly by Baffinland and QIA.

Included as Appendix C to this Adaptive Management Plan shall be a compilation of all objectives, triggers, thresholds and actions included in each topic specific plan. While this information will also reside in individual plans, including them as part of this Adaptive Management Plan provides all parties and users one common point of reference for interactive work related to adaptive management.

Where Baffinland and QIA have agreed under Commitment No. 18, Project Certificate Appendix B, to jointly develop and agree to the adaptive management elements of a mitigation and/or monitoring plan, the scope of that approval is indicated in each sub-section. Specifically, it has been identified which VEC or VSEC may be present in a plans adaptive management framework that requires a heightened level of collaboration with QIA, including narwhal, seal, Arctic char, caribou, dust and/or culture, resource and land use. Under Commitment No. 22, Project Certificate Appendix B, Baffinland is to provide, by December 31, 2022, a timeline and plan for development of monitoring and AMP plans, and consistent with Commitment No. 18, this work plan should be designed to conclude by April 30, 2024. Through this process it is possible adaptive management frameworks for some VECs or VSECs may be consolidated under one plan, rather than spread out between multiple plans, which would have a corresponding effect on the scope of plans that require heightened collaboration with QIA. These changes will be reflected in regular updates to this Plan.

### 3.1 CONSTRUCTION, OPERATION, RECLAMATION AND CLOSURE

#### 3.1.1 ENVIRONMENTAL PROTECTION PLAN

The purpose of the Environmental Protection Plan (EPP) is to ensure that a high level of importance is placed on the protection of the environment throughout the lifecycle of the Project. The EPP provides Operational Environmental Standards (OESs) to identify and address Project environmental issues and concerns and to provide guidance and control measures (which may be field fit as required), to reduce/limit potential adverse effects to the environment and/or minimize or mitigate these impacts to the extent necessary to prevent undue harm. The EPP is developed in recognition of applicable permits, authorizations, and approvals, and provides operational measures that comply with these approvals. Where possible, IQ is also integrated into the EPP.

The specific purposes of the EPP are as follows:

- Provide a reference document to ensure that commitments to minimize adverse environmental effects will be met.
- Document and identify environmental concerns and ensure appropriate protection measures are implemented.

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- Provide concise guidance to Project Personnel regarding the implementation of appropriate standards for protecting the environment and minimizing adverse environmental effects.

### 3.1.2 INTERIM CLOSURE AND RECLAMATION PLAN

The Interim Closure and Reclamation Plan (ICRP) outlines the closure objectives, activities and criteria associated with the closure and reclamation of the Project. The ICRP addresses the activities expected to be required to ensure the Project closure goal, principles, objectives, and criteria are met. Participation of local communities and other stakeholders in the consideration of alternative reclamation activities to safeguard community values is encouraged as the Project proceeds. The ICRP considers the complete development of the Project and describes expected closure activities at the end of the Project Life. As planned final closure is decades away, the ICRP is thus a conceptual benchmark for the intended reclamation and closure activities associated with all components of the Project. The ICRP will be updated as required throughout the life of the Project.

The ICRP is subject to QIA approval, including adaptive management elements.

### 3.1.3 BORROW PIT AND QUARRY MANAGEMENT PLAN

The Borrow Pit and Quarry Management Plan (BPQMP) identifies the objectives and measures to maintain and enhance environmental performance of the quarries while avoiding to the extent practical, remedying, and mitigating any potential adverse environmental effects associated with quarrying. In accordance with the terms and conditions of Baffinland's Type A Water License, a site-specific management plan will be developed and submitted for approval for each quarry and borrow pit required for the construction and maintenance of infrastructure. The goal of the Borrow Pit and Quarry Management Plan is to provide regulators with a selection of quarry operations necessary for the Mary River Project.

The BPQMP is subject to QIA approval, including adaptive management elements.

### 3.1.4 EXPLOSIVES MANAGEMENT PLAN

In supporting the overall Project development, the use of explosives will be required to produce construction aggregates and during ore mining. The use of bulk and pre-packaged emulsion explosives will be used based on the expected site conditions. The purpose of the Explosives Management Plan is to outline the systems, procedures and best practices that will minimize environmental impacts, specifically impacts to water quality and wildlife during the period where blasting operations are conducted.

## 3.2 WATER USE AND MANAGEMENT

### 3.2.1 FRESH WATER SUPPLY, SEWAGE AND WASTEWATER MANAGEMENT PLAN

The Fresh Water Supply, Sewage and Wastewater Management Plan describes the plan to manage the fresh water supply and wastewater for the various camp sites to be developed for the Project during the Project's construction and operation phases. Specifically, this plan focuses on freshwater supply and wastewater treatment and disposal at Milne Port, the Mine Site, Steensby Port, and various rail camps.

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### 3.2.2 SNOW MANAGEMENT PLAN

The Snow Management Plan provides specific procedures to effectively manage snow accumulation around the Project area in a manner that minimizes risk to site personnel while ensuring compliance with Baffinland's Type A Water License Amendment No. 1, July 21, 2015 and EPP. It is critical to maintain the safety and wellbeing of site personnel as well as protection of the environment and compliance with conditions of permits and regulations. Baffinland recognizes that there are safety risks associated with snow accumulation around the Mary River Mine Site, Milne Port as well as along the Tote Road (Project Area) and therefore, effective snow management is imperative.

### 3.2.3 AQUATICS EFFECTS MONITORING PLAN

The Aquatic Effects Monitoring Plan describes how monitoring of the aquatic environment will be undertaken at the Project. The Aquatic Effects Monitoring Plan focuses on the key potential impacts to freshwater environment valued ecosystems components which are water quantity; water and sediment quality; and freshwater biota and fish habitat.

The Aquatic Effects Monitoring Plan is a monitoring program designed to:

- detect short-term and long-term effects of the Project's activities on the aquatic environment;
- evaluate the accuracy of impact predictions;
- assess the effectiveness of planned mitigation measures; and
- identify additional mitigation measures to avert or reduce unforeseen environmental effects.

The Aquatic Effects Monitoring Plan is focused on monitoring the aquatic environment in the immediate mine area to detect effects from multiple stressors (e.g., effluent discharges, dust deposition, sedimentation, streamflow reductions from diverted catchments).

QIA will jointly approve with Baffinland adaptive management objectives, indicators, thresholds and responses listed in this Plan for Arctic char.

## 3.3 WASTE MANAGEMENT

### 3.3.1 WASTE MANAGEMENT PLAN

The purpose of the Waste Management Plan is to identify Baffinland's framework for effective waste management. This includes identifying the roles and responsibilities of its employees and contractors as well as procedures for handling, storing and disposing of solid wastes generated at Project sites to ensure that it is conducted in a safe, efficient and environmentally compliant manner that minimizes the potential for adverse effects to the environment. This Plan identifies management for inert and non-hazardous solid wastes, construction debris, and domestic waste. This Plan also identifies the various disposal methods prescribed to waste types generated at the Project in addition to providing monitoring controls and strategies for adaptive management and continuous improvement.

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### 3.3.2 HAZARDOUS MATERIALS AND HAZARDOUS WASTE MANAGEMENT PLAN

The purpose of the Hazardous Materials and Hazardous Waste Management Plan is to identify Baffinland's framework for effective hazardous materials and hazardous waste management by providing instruction for the prevention, detection, containment, response, and mitigation of accidents that could result from handling hazardous materials. It also identifies the roles and responsibilities of its employees and contractors and as well as procedures for handling, storing, and disposing of hazardous materials and hazardous waste generated at Project sites to ensure that it is conducted in a safe, efficient, and environmentally compliant manner that minimizes the potential for adverse impacts to the environment.

### 3.3.3 PHASE 1 WASTE ROCK MANAGEMENT PLAN

The waste rock disposal area is located north-west of the open pit and designed for the storage of waste rock from Deposit No. 1 in perpetuity. The first iteration of the Phase 1 Waste Rock Management Plan was meant to cover the first four years of operation (2015-2019); however, unexpected conditions relating to the acid generating potential of waste rock required immediate revisions. The Phase 1 Waste Rock Management Plan is currently being updated and will extend its application to 2020.

### 3.3.4 INTERIM WASTE ROCK MANAGEMENT PLAN

The Interim Waste Rock Management Plan was developed in 2018 to manage unexpected conditions encountered in 2017 and direct the deposition of waste rock in 2018 and winter of 2019. This interim plan considers waste rock quantities and nature of the materials generated (potentially acid generating and non-acid generating) from February 2018 to April 2019. This interim plan focuses on actions to help freeze the waste rock stockpile in place, limit acid generation, and limit release of acidic water. This plan may be considered a Response Plan in the Adaptive Management Framework.

### 3.3.5 LIFE OF MINE WASTE ROCK MANAGEMENT PLAN

The Life of Mine Waste Rock Management Plan was developed because waste rock and ore will require environmentally acceptable management, storage locations and practices. These materials have been characterized and grouped based on geochemical static and kinetic test work. Environmental management plans are developed for each material group based on projected chemical reactivity and physical properties to ensure long-term environmentally acceptable storage. The Life of Mine Waste Rock Management Plan addresses the issues of siting, deposition of the waste rock, inspection, potential release of contaminants to the receiving environment, geotechnical stability, as well as closure considerations. As additional geochemical, geotechnical, and geological data are collected, and detailed engineering is completed, the management plan will be further optimized using an approach that protects the environment and Inuit land use while operating in a cost-effective manner. Baffinland's Waste Rock Management Plan satisfies the requirements of the Mine Site Reclamation Policy for Nunavut (INAC 2002).

### 3.3.6 LANDFILL MAINTENANCE AND OPERATIONS MANUAL

The purpose of the Landfill Maintenance and Operation Manual is to ensure that non-hazardous solid wastes are disposed of in compliance with all environmental permits, licences, and authorizations, and in an efficient and safe manner. The procedures in this manual applies to the handling, storage and disposal

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of all non-hazardous solid industrial waste at the Mine Site Landfill. This procedure does not apply to hazardous and liquid industrial wastes, hauled sewage or domestic waste. Baffinland's Waste Sorting Guidelines differentiates landfill waste from non-hazardous putrescible wastes and hazardous wastes.

### 3.4 HEALTH, SAFETY, EMERGENCY RESPONSE AND CONTINGENCY

#### 3.4.1 HEALTH AND SAFETY MANAGEMENT PLAN

Baffinland's Health and Safety Management Plan is in place to control health and safety risks of company activities in order to protect the safety and health of their employees and contractors, and the communities in which they operate. The plan includes hazards identification to document ongoing identification of hazards and classification of risks for routine and non-routine events associated with activities, occupations, and facilities for all phases of the Project. It also includes health and safety targets and objectives, roles and responsibilities, training and reporting and documentation, emergency preparedness and response and performance measurement and monitoring. The plan also discusses the written operational controls for handling and investigating potential accidents, incidents, and non-conformance.

#### 3.4.2 EMERGENCY RESPONSE PLAN

The Emergency Response Plan identifies potential environmental, health and safety emergencies that could arise during the construction and operation phases of the Project. This plan establishes the framework for responding to these situations and applies to all aspects of the operation. The Emergency Response Plan also defines Baffinland's organizational roles and responsibilities, internal and external contact information, training, resources, and reporting requirements, to which all Project personnel are directed.

#### 3.4.3 SPILL CONTINGENCY PLAN

The purpose of the Spill Contingency Plan is to identify the potential for an accidental release (i.e., spill) of a hazardous material to the environment (i.e., land, ice, or fresh water) throughout the lifecycle of the Project. This plan provides spill scenarios and identifies protocols for their prevention, response to, and recovery.

#### 3.4.4 OIL POLLUTION EMERGENCY PLAN – MILNE INLET

The Oil Pollution Emergency Plan (OPEP) was developed to specifically assist in implementing measures to protect the marine environment and minimize impacts from potential spill events. The Plan outlines potential spill scenarios and provides specific procedures for responding to spills while minimizing potential health and safety hazards, environmental damage, and clean-up costs. The OPEP provides instructions to guide all personnel in emergency spill response situations, defines the roles and responsibilities of management and responders and outlines the measures taken to prevent spills, the related exercise and evaluation program, and the mechanism for regular updates to the plan.

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### 3.4.5 RAILWAY EMERGENCY RESPONSE PLAN

The Railway Emergency Response Plan provides procedures to be carried out in the event of an emergency related to railway operation, specifically in the event of a train accident or derailment, the spill of a hazardous material or in the case of an earthquake. The plan also includes a copy of an accident report form that the dispatcher would complete in the event of a train accident or derailment. (Related to Steensby only)

### 3.4.6 POLAR BEAR SAFETY PLAN

Polar bear encounters at the Project pose an immediate threat to life, health, safety, environment and property and therefore, the Polar Bear Safety Plan provides procedures to be followed in the case of an encounter. The plan also provides information on polar bears behaviour, and elements to incorporate into Project operation to minimize the impacts of activities on polar bears and to reduce risks to people.

### 3.4.7 SPILL AT SEA RESPONSE PLAN

The Spill at Sea Response Plan (SSRP) provides guidance on the actions and reporting requirements during a fuel spill from Baffinland's shipping operations. The SSPR offers guidance on the necessary actions to prevent and/or minimize accidental discharge of fuel and to mitigate any negative effects. Specifically, it supplies Baffinland's Mine Rescue Teams and Emergency Management Teams with the tactical and strategic response strategies, main procedures and information required during a fuel spill response. The SSPR covers the following vessel operations in the Nunavut region off Baffin Island:

- Shipping Operations: Fuel spills arising from the transit of vessels along the Northern Shipping Route, within Nunavut waters.
- Ship to Ship hydrocarbon transfers: Fuel spill arising from the transfer of fuel from ship to ship.
- Milne Port: Fuel spills arising from activities associated with vessel movements in proximity of the Port.

### 3.4.8 METAL AND DIAMOND MINING EFFLUENT REGULATIONS EMERGENCY RESPONSE PLAN

The Metal and Diamond Mining Effluent Regulations (MDMER) Emergency Response Plan provides a guide for preventing and controlling the release of water outside of the normal course of events for the waste rock stockpile pond and Crusher Ore Stockpile Pond operations and has been prepared in accordance with MDMER. This plan and is to be used in conjunction with Baffinland's Emergency Response Plan and the Spill Contingency Plan.

## 3.5 BIOPHYSICAL AND ATMOSPHERIC ENVIRONMENT

### 3.5.1 SURFACE WATER AND AQUATIC ECOSYSTEMS MANAGEMENT PLAN

The purpose of the Surface Water and Aquatic Ecosystems Management Plan is to describe the processes and procedures through which Project activities and infrastructure influence the quality and quantity of surrounding waters throughout the lifecycle of the Project. Such processes and procedures include best management practices implemented to limit the potential for adverse impacts to receiving waters,



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aquatic ecosystems, fish and fish habitat. This plan details the systems in place to mitigate and manage drainage and runoff at Project facilities, address point and non-point discharges to surface waters, and assess those discharges on water quality and quantity relative to their receiving water systems.

The Surface Water and Aquatic Ecosystems Management Plan identifies Project roles and responsibilities, specific requirements, and mitigation and management actions for erosion and sedimentation controls which include methods for controlling erosion pertaining to both temporary and long-term stabilization efforts.

### 3.5.2 TERRESTRIAL ENVIRONMENT MITIGATION AND MONITORING PLAN

The Terrestrial Environment Mitigation and Monitoring Plan (TEMMP) describes mitigation and monitoring actions Baffinland uses so the Project does not create undue or unanticipated harm to the terrestrial environment. The TEMMP provides guidance to protect and limit disturbances to vegetation, birds, and terrestrial wildlife from Project activities. The TEMMP is a “living” document and is revised regularly as new information becomes available, methods are developed, or management issues become apparent and need to be addressed. Further details will continue to be developed in continued discussion with the management agencies, QIA, community HTOs, the Terrestrial Environment Working Group (TEWG) and other involved parties.

QIA will jointly approve with Baffinland adaptive management objectives, indicators, thresholds and responses listed in this Plan for caribou.

### 3.5.3 SHIPPING AND MARINE WILDLIFE MANAGEMENT PLAN

The Shipping and Marine Wildlife Management Plan (SMWMP) has been developed to:

- address the issues of concern to Inuit with respect to shipping;
- establish rules and procedures applicable to open water and winter shipping during the construction, operational and decommissioning phases of the Project; and
- provide for Inuit involvement in the planning, environmental management and decision-making processes related to shipping.

Specifically, the SMWMP:

- describes the means whereby Baffinland ships construction materials and equipment to the site, and exports iron ore from Milne and Steensby Port;
- describes the management of the shipping operation, including the specification and procedure in place for charter and operation of suitable vessels to export iron ore on a seasonal basis;
- addresses the management, routing, and operation of ships and describes how the vessels will navigate through and in the vicinity of ice; and



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- describes the monitoring and mitigation measures, and adaptive management procedures to be employed in addressing concerns related to marine wildlife, including marine mammals, fish, and seabirds.

#### 3.5.4 MARINE MONITORING PLAN

The Marine Monitoring Plan (MMP; formerly called the Marine Environment Effects Monitoring Plan) describes how monitoring of the marine environment will be undertaken at the Project level. The MMP focuses on key potential Project-related effects on identified valued ecosystems components for the marine environment, which include marine water quality; marine sediment quality, marine habitat, and biota (marine fish habitat and Arctic char health), and marine mammals.

The MMP is a monitoring program designed to:

- Address regulatory requirements related to the marine environment, especially those listed in NIRB Project Certificate No. 005.
- Coordinate all aspects of project-related marine monitoring.
- Detect short-term and long-term effects of the Project's activities on the marine environment resulting from the Project.
- Evaluate the accuracy of impact predictions.
- Assess the effectiveness of planned mitigation measures.
- Identify additional mitigation measures to avert or reduce unforeseen environmental effects.

QIA will jointly approve with Baffinland adaptive management objectives, indicators, thresholds and responses listed in this Plan for narwhal, seal and Arctic char.

#### 3.5.5 AIR QUALITY AND NOISE ABATEMENT MANAGEMENT PLAN

The Air Quality and Noise Abatement Management Plan provides guidance on the management of air emissions and noise from construction and operation activities. The plan includes action to control airborne particulates and noise hazards. It also defines actions to mitigate, prevent, or avoid to the extent practical noise nuisance to site personnel and nearby populations. The plan addresses greenhouse gas emissions and includes an assessment of emissions from the complete lifecycle of the Project, aimed at improving management of energy and greenhouse gas emissions, building emissions abatement and energy saving considerations into the business decision-making processes.

The plan also includes monitoring of air quality, including:

- Compliance inspections
- Gaseous criteria air contaminant monitoring
- Dustfall monitoring

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- Particulate matter monitoring
- Incinerator emission testing

QIA will jointly approve with Baffinland adaptive management objectives, indicators, thresholds and responses listed in this Plan for dust.

## 3.6 SOCIO-ECONOMIC

### 3.6.1 SOCIO-ECONOMIC MONITORING PLAN

The Socio-Economic Monitoring Plan addresses existing socio-economic monitoring requirements for the Project. The plan describes how the monitoring of socio-economic issues identified in the FEIS, FEIS Addendums and Project Certificate will occur. Monitoring results will be reviewed on a regular basis by Baffinland and relevant stakeholders, and a process has been developed for the adaptive management of performance issues that are identified. The plan addresses all Valued Socio-economic Components assessed in the FEIS and supports comprehensive socio-economic monitoring for the Project.

In consideration of the above, this Plan will assist Baffinland in meeting the following objectives:

- Evaluate the accuracy of selected socio-economic effect predictions presented in the FEIS and identify any unanticipated effects.
- Identify areas where Baffinland's existing socio-economic mitigation and management programs may not be functioning as anticipated.
- Assist regulatory and other agencies in evaluating Baffinland's compliance with socio-economic monitoring requirements for the Project.
- Support adaptive management, by identifying potential areas for improvement in socio-economic monitoring and performance, where appropriate.

In the event that socio-economic concerns are identified through monitoring, Baffinland may:

- Describe these issues in its annual report.
- Describe how these issues will be addressed or investigated further, if appropriate, in its annual report.
- Consult with relevant stakeholders (e.g., SEMWG, QSEMC, NIRB), if appropriate, on these issues and consider their feedback in any plans being developed.
- Report on the success of any actions taken in subsequent annual reports and/or adjust plans as necessary.

QIA will jointly approve with Baffinland adaptive management objectives, indicators, thresholds and responses listed in this Plan for culture, resources and land use.

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### 3.6.2 COMMUNITY AND STAKEHOLDER ENGAGEMENT PLAN

Baffinland's approach to Inuit community and stakeholder engagement emphasizes the importance of informing Inuit community and stakeholders, establishing effective communication strategies, and collecting feedback from them on potential issues and concerns. This approach has informed the development and implementation of the Stakeholder Engagement Plan for the Project, which is intended to outline a systematic program for effective communication. It is a best practice standard and a cornerstone of corporate responsibility. The Stakeholder Engagement Plan is a living document and is reviewed and updated as needed.

### 3.6.3 HUMAN RESOURCES MANAGEMENT PLAN

Baffinland's Human Resources Management Plan ensures that the needs of Baffinland personnel are addressed throughout the life of the Mary River Project (the Project). The plan consists of the following elements:

- human resources management principles and policies;
- organizational planning;
- human resource information systems;
- employee communications;
- recruitment programs;
- training and development;
- medical program;
- employee relations;
- compensation plans;
- benefit programs;
- health and safety programs; and
- incorporation of relevant Inuit Impact and Benefits Agreement (IIBA) terms and conditions.

### 3.6.4 CULTURAL HERITAGE RESOURCE PROTECTION PLAN

The Cultural Heritage Resource Protection Plan has been developed to support the construction, operation and closure of the Project considering that Archaeological resources are non-renewable, finite resources and are of value not only to local communities, but to the territory of Nunavut, Canada, and to the entire world and the North Baffin Region and the Project area have a very rich archaeological history. The Cultural Heritage Resource Protection Plan describes the processes by which ground disturbing activities can be carried out with appropriate assessments by Project archaeologists and identifies procedures for addressing chance finds of archaeological resources during construction activities.

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QIA will jointly approve with Baffinland adaptive management objectives, indicators, thresholds and responses listed in this Plan for culture, resources and land use.

### 3.7 TRANSPORTATION

#### 3.7.1 ROADS MANAGEMENT PLAN

The Roads Management Plan (RMP) outlines measures for the protection of people, wildlife and the environment by establishing the proper management of Project roads in recognition of applicable best practices, permits, authorizations, approvals and Inuit Knowledge. The purpose of the RMP is to provide controls for a safe and efficient road network for use by the Project and to set out the responsibilities, policies and procedures adopted by the Project to achieve project objectives.

The RMP applies to the entire Mary River Project road network including service roads around Milne Port facilities, the road between Milne Port and Mine Site (the “Tote Road”) and service roads around the Mine Site facilities, including the mine haul and waste rock haul roads.

The RMP provides a practical way to facilitate field implementation of safety, operational, or environmental related regulations, practices, and procedures required to eliminate or reduce potential risks. The plan is a working document for use in the workplace by Project personnel and Contractors, as well as at the corporate level for ensuring commitments made in policy statements are implemented and monitored.

QIA will jointly approve with Baffinland adaptive management objectives, indicators, thresholds and responses listed in this Plan for caribou and dust.

#### 3.7.2 RAILWAY OPERATION AND MAINTENANCE PLAN

The Railway Operation and Management Plan includes procedures and guidance for operations of the railway, including rolling stock management, safety measures, worker training, and emergency response procedures.

Before operations start, the railway will have a fully developed set of operating rules and standard procedures for inspection and maintenance of both rolling stock and infrastructure. These will be documented, and copies of the rules and procedures will be provided to pertinent employees and hard copies provided for reference purposes at both the Mary River terminal and the maintenance and operating centre at Steensby. All employees will be briefed on the rules and procedures before operations start.

### 3.8 INUIT STEWARDSHIP

#### 3.8.1 INUIT STEWARDSHIP PLAN (QIA ADMINISTERED)

Nothing is of higher importance to Inuit than the ability to conduct independent, proactive monitoring of the Project for the purpose of mitigating adverse impacts and enhancing beneficial outcomes in a manner that captures the direct experiences of Inuit in impacted communities. Per Commitment 19 of Appendix

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B of the Project Certificate, the Inuit Stewardship Plan (ISP) is a Project monitoring and management plan authored and administered by QIA, with input from the Inuit Committee and the Inuit Social Oversight Committee for the Mary River Project (the Project), impacted communities, and Baffinland, resourced by Baffinland, and implemented by Inuit.

Inuit and Inuit institutions responsibly manage Inuit monitoring interests in the Project. The ISP details the ways Inuit will monitor the Project over the life of the mine. The ISP describes how Inuit monitoring activities tie into the adaptive management system and other management, mitigation, and monitoring plans, and how Inuit monitoring relates to the protection and promotion of Inuit rights defined under the Nunavut Agreement and described under legal agreements with Baffinland related to management and stewardship of Inuit owned lands and resources. The concept of community-based monitoring will be an integral pillar of the ISP.

The ISP is constructed around two separate but linked streams:

- Culture, Resources and Land Use (CRLU) Stream – Issues and monitoring activities related to Inuit use of the land and harvesting, conducted through a Culture, Resources and Land Use Monitoring Program and overseen by the Inuit Committee; and
- Social Stream – Issues and monitoring activities related to changes in community life, conducted through a Community Action Research Team (CART) and overseen by the Inuit Social Oversight Committee (ISOC). A focal point but not the entirety of the social stream will be Inuit food sources, food security, and food sharing.

Each stream requires unique oversight, monitoring and information management systems. This does not mean that “on the land” and “in the communities” issues do not interact. For example, food security is intrinsically associated with harvesting ability and success, distribution systems, transmission of cultural knowledge, and local infrastructure to support food harvesting and processing. The two streams of the ISP naturally converse with one another to inform Inuit research, monitoring, recommendations and decisions.

The Inuit Committee and the Inuit Social Oversight Committee, as well as QIA, contribute to the development and refinement as needed over time, of Inuit adaptive management plan objectives, indicators, thresholds and responses.

Inuit-led monitoring comes in four primary forms:

1. Inuit stewards (Nauttiqsuqtiit) working directly in the Culture, Resource and Land Use Monitoring Program;
2. QIA’s on-site Mary River Project monitors;
3. Community-based socio-economic monitoring associated with the Inuit Stewardship Plan; and
4. Community-based monitoring programs supported by Baffinland.

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In addition to on-territory monitoring, the CRLU Monitoring Program includes collection of land use and IQ data from Inuit on an intermittent basis, including an extensive update of this database at intervals of no longer than three years. The ISP has communication ties into the impacted Inuit communities that allow it to be sensitive to community observations of change that may require investigation.

QIA will jointly approve with Baffinland adaptive management objectives, indicators, thresholds and responses listed in this Plan.

### 3.9 ADDITIONAL BAFFINLAND COMMITMENTS

Project Certificate 005 Amendment No 004 contains several new terms and conditions and commitments that may require additional monitoring and mitigation programs, which may be recognized in stand along management plans, procedures or policies. As these terms and conditions and commitments are implemented Baffinland will make necessary revisions to the Adaptive Management Plan.

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## 4 REPORTING

Environmental management and monitoring plans will be updated as appropriate and necessary (e.g., when circumstances change) as outlined in each plan. The various monitoring programs generate annual reports and the Management Plans produce reports according to their individual schedules; the results of both will feed into the Adaptive Management Response Framework.

The outcomes of the adaptive management process (e.g., new or modified strategies and mitigations) will be reported annually to the NIRB, NWB and QIA through existing annual reports. The content of reporting will consider the following:

- a summary of all new monitoring, mitigation and adaptive management measures and actions taken over the previous year to mitigate, reduce or eliminate any variations or unanticipated negative impacts.
- a discussion on the timing of such actions and whether further steps are needed and how QIA's input was incorporated into the measures and actions taken.
- a description of what steps BIM took to incorporate IQ in all monitoring, mitigation and adaptive management measures.
- A "Concordance Table" for all references to other reports submitted to the NIRB, the NWB or other regulators to describe monitoring, mitigation and adaptive management measures taken during the past year or any other instance when a reference is required

Current Baffinland-written annual reports of existing management and monitoring plans include the following:

- IIBA Annual report
- NIRB Annual Report
- QIA and NWB Annual Report for Operations
- Annual Project Review Forum Report
- Marine Environment Annual Monitoring Reports
- Terrestrial Environment Annual Monitoring Report
- Fish Habitat Monitoring Report
  - Construction and Turbidity Monitoring
  - Water Quality Monitoring of Baseline Fisheries Culverts
  - Fish Use Assessments at Select Crossings and Compensation Sites.
- Lake Sedimentation Monitoring Report
  - Monitoring of mine area waterbodies form fugitive dust deposition and surface runoff

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- Core Receiving Environment Monitoring Program Report
  - Aquatic Effects Monitoring Plan reporting
- ECCC MDMER Annual Report
  - Effluent and water quality monitoring
- Fish Offset Monitoring Report
  - Milne Ore Dock (Authorization 14-HCAA-00525)
  - Ambient Air Quality Monitoring
- Annual Socio-economic Monitoring Report
- Annual Archaeology Status Report

In addition to Baffinland-written reports, the Inuit Stewardship Plan will see Inuit-developed Annual Monitoring Reports, administered by QIA, including for, at minimum:

- The Culture, Resources and Land Use Monitoring “stream”
- The Social Monitoring “stream”



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## 5 REFERENCES

NIRB (Nunavut Impact Review Board). 2015. Guidelines for the Preparation of an Environmental Impact Statement for Baffinland Iron Mines Corporation's Mary River Project (NIRB File No. 08MN053) Information Sharing Schedule

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# Appendix A Information Sharing Schedule

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**Appendix A – Information Sharing Schedule [Note this is subject to further revision based on feedback on timing of sharing of draft/final reports solicited through the working group TOR update process]**

Information Sharing Activity	Description	Annual Schedule	Key Organization								
			Nunavut Impact Review Board (NIRB)	Nunavut Water Board (NWB)	QIA	Regulatory Authorities	Working Group	Technical Experts	MHTOs	Hamlets	Inuit Committees <sup>2</sup>
<b>Annual Monitoring Program Reports - Draft</b>	Draft report – Results from annual monitoring program for terrestrial and marine monitoring efforts	TBD based on final MEWG & TEWG ToR	✓		✓	✓	✓	✓	✓		
<b>Annual Monitoring Program Reports - Final</b>	Final report – Results from annual monitoring program for terrestrial and marine monitoring efforts. Incorporates feedback received from Working Groups on the draft report	TBD based on final MEWG & TEWG ToR	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>NIRB/NWB Annual Reports</b>	Summarizes annual operational activities, monitoring programs and compliance with regulatory permits	No later than April 30	✓	✓	✓	✓	✓	✓	✓	✓	
<b>Topic Specific Meetings – Shipping etc.</b>	Face-to-face meetings held with MHTO, Hamlets and QIA Representatives to discuss specific issues and concerns and/or key components of Project operations	End and beginning of shipping season, As needed			✓			✓	✓	✓	✓

<sup>2</sup> The Inuit Committee and/or the Inuit Social Oversight Committee for the Project, as per the Inuit Stewardship Plan. Both institutions are in the development phase, and specific information sharing procedures and schedules would be developed as part of its terms of reference

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Information Sharing Activity	Description	Annual Schedule	Key Organization								
			Nunavut Impact Review Board (NIRB)	Nunavut Water Board (NWB)	QIA	Regulatory Authorities	Working Group	Technical Experts	MHTOs	Hamlets	Inuit Committees <sup>2</sup>
<b>General Project Update Meetings</b>	Annual meetings held with Inuit to update interested parties on ongoing operations or any proposed changes to the Project, including NIRB bi-annual community meetings	Bi-annual	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>Site Visits</b>	Visit to the Mary River and Milne Port site to see live operations and discuss issues on the ground	As needed or requested						✓	✓	✓	✓
<b>Inspections/ Audits</b>	Regulatory audits or inspections to ensure compliance with existing permits and approvals	Typically during summer (July to September)	✓	✓	✓	✓					
<b>Participation in Monitoring Programs</b>	Contract employment opportunity or joint-collaboration on environmental monitoring programs	Summer Field Season (July to October)			✓	✓		✓	✓		
<b>Input into additional mitigation measures</b>	Submission of technical comments and responses or face-to-face meetings to discuss proposed revisions or additions to existing mitigation measures	As needed	✓	✓	✓	✓	✓	✓	✓	✓	✓

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Information Sharing Activity	Description	Annual Schedule	Key Organization								
			Nunavut Impact Review Board (NIRB)	Nunavut Water Board (NWB)	QIA	Regulatory Authorities	Working Group	Technical Experts	MHTOs	Hamlets	Inuit Committees <sup>2</sup>
<b>CRLU Monitoring (Inuit-led)</b>	Regularly scheduled IQ collection to support ongoing adaptive management	Annual; additional communication on an as needed basis			✓		✓		✓	✓	Note: Inuit reporting goes to Baffinland as well
<b>Social Monitoring under ISP (Inuit-led)</b>	Regularly scheduled community-level data collection to support ongoing adaptive management	Annual; additional communication on an as needed basis			✓		✓		✓	✓	Note: Inuit reporting goes to Baffinland as well
<b>Qikiqtaaluk Socio-Economic Monitoring Committee Meetings and Report</b>	Government of Nunavut coordinated meetings that bring together Hamlet mayors, QIA, government, and mining Proponents annually to discuss general socio-economic trends	Annual	✓		✓	✓	✓	✓		✓	✓
Notes: 1. Marine Environment Working Group, Terrestrial Environment Working Group, Mary River Socio-Economic Working Group											

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## Appendix B

# Adaptive Management Checklist Template

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## Appendix B – Adaptive Management Checklist Template

Adaptive Management Phases	Components	Questions to Guide Decision-Making	Status of Management Plan (i.e., complete, in progress, undergoing revisions)	Status of QIA and Baffinland Approval Plan (i.e., complete, in progress, undergoing revisions) (where specifically required by Commitment 18 of Project Certificate Appendix B)
Plan	Objectives	Are objectives clear and key desired outcomes defined? Do they include Inuit objectives?		
	Indicators	Are performance indicators adequately identified? Do they include Inuit indicators?		
	Identification of Thresholds	Are thresholds for specific responses identified (e.g., early warning triggers, action levels, quantitative metrics or qualitative descriptions)?		
	IQ Integration / Influence	Are mechanisms for IQ integration/influence identified?		
Implement and Monitor	Management Strategies and Responses	Are management strategies and response options clearly identified?		
	Resourcing	Are all phases of the adaptive management cycle properly resourced (in accordance with Inuit Agreements) to be fully implemented?		
	Monitoring	Does the monitoring program provide the information needed to determine the effectiveness of management strategies and responses?		
	Timeline for implementation	Is the possibility that rapid response may be necessary, taken into account in the implementation plan/process?		
Evaluate and Learn	Review Data and Feedback	Is the process for reviewing and evaluating management effectiveness (based on		

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<b>Adaptive Management Phases</b>	<b>Components</b>	<b>Questions to Guide Decision-Making</b>	<b>Status of Management Plan (i.e., complete, in progress, undergoing revisions)</b>	<b>Status of QIA and Baffinland Approval (where specifically required by Commitment 18 of Project Certificate Appendix B)</b>
		monitoring data and feedback) articulated?		
	Additional Mitigation	Are mechanisms for determining the need for additional mitigation described?		
	Input of IQ Holders	Are opportunities identified for IQ holders to review results and provide input into adaptive management responses / mitigations?		
Adjust	Unanticipated Effects or Issues	Is it apparent how unanticipated effects or issues will be actioned and resolved?		
	Reporting	Are reporting mechanisms for new / revised strategies and response actions established?		
	Scheduled Updates	Is the frequency of scheduled updates to the management plan identified?		

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# **Appendix C** **Adaptive Management Objectives, Indicators, Thresholds, and Responses\***

\*To be appended once TARP's are finalized

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