
# Discussion Paper

# in support of the development of a

# Cumulative Effects Assessment Framework

# for Baffinland Iron Mines Corp.'s Mary River Project

NIRB File No. 08MN053

April 30, 2026

Prepared by Red Clay Environmental Solutions Inc.


## Disclaimer:

*This Discussion Paper has been prepared by Red Clay Environmental Solutions Inc. (RCES) on behalf of the Nunavut Impact Review Board (NIRB). The analysis, opinions, and conclusions shared in this document represent the independent professional judgment of the consultant and not the official position of RCES or the NIRB. RCES makes no representation or warranty as to the accuracy or completeness of the information contained herein and assumes no responsibility for any errors or omissions.*

*The author extends gratitude to the CEAF Steering Committee for the advice and feedback provided on general contents and an initial draft of the document; any errors or omissions are the sole responsibility of the author and are not to be attributed to members of the CEAF Steering Committee.*

# Table of Contents

# 1 What is a CEAF?

## 1.1 Introduction

The Nunavut Impact Review Board (NIRB) is developing a Cumulative Effects Assessment Framework (CEAF) to set a scope and methodology for an evaluation of current cumulative effects monitoring (both project-based and regional) and to guide future impact assessments associated with Baffinland Iron Mines Corporation's (Baffinland) Mary River Project. The CEAF will facilitate an updated approach to cumulative effects assessment for future applications and may identify potential improvements for the monitoring, mitigation and management of cumulative effects, and potentially inform updates to the monitoring program and associated reporting for the approved Mary River Project (see Appendix 6.1 for an overview of the approved Project).

The experience gained by Baffinland and parties to date through the assessment, operation and monitoring of the Mary River Project provides valuable insights and creates a unique opportunity for evaluation. While the monitoring program for the approved Mary River project is designed to address direct, indirect and cumulative impacts, there is a recognition that to better understand the potential for the Mary River Project to contribute to overall regional cumulative effects it is necessary to consider the other monitoring programs and information sources across the receiving environment or region. As the Mary River Project has been developed and operated the receiving environment has also been changing, with the effects of climate change becoming increasingly apparent in the Arctic. The development of a CEAF is an opportunity to improve Baffinland's monitoring, management and future assessment of potential contributions of the Mary River Project to cumulative effects experienced in the Qikiqtani region and Nunavut. Lessons learned through the development of a CEAF for the Mary River Project may also lead to improvements for the conduct of monitoring programs across Nunavut, including for the interpretation and communication of monitoring results, coordination across projects and the understanding and mitigation of potential adverse cumulative effects across Nunavut.

The NIRB is leading the CEAF development through engagement with a CEAF Steering Committee and informed by a transparent process for public engagement with communities and the general public. The CEAF development process will run independently from the monitoring program under the Mary River Project Certificate and any ongoing assessments, while taking the same into account to the extent practicable when scheduling associated public engagement opportunities.

The development of a CEAF is **not** a reconsideration of the terms and conditions of Project Certificate No. 005 for the Mary River Project pursuant to s. 112 of the *Nunavut Planning and Project Assessment Act* (NuPPAA); should that be identified as necessary that would be a separate public process that would be addressed by NIRB and the Minister in due course.

This discussion paper sets out foundational knowledge to generate feedback and help advance the development of a CEAF. The intent is to facilitate common understanding and engagement with communities, interested parties and the public to:

1) Build awareness on how the potential for cumulative effects associated with the Mary River Project is considered within Nunavut's unique legislative framework for resource development, project assessment and project monitoring;
2) Consider Baffinland's current approach to the consideration of potential cumulative effects and the future assessment of potential contributions of the Mary River project to cumulative effects experienced in the Qikiqtani region and Nunavut; and,
3) Identify potential improvements to the management of cumulative effects for the Mary River Project, with consideration for lessons learned that could have relevance for the conduct of monitoring programs across Nunavut, including for the interpretation and communication of monitoring results, coordination across projects and the understanding and mitigation of potential adverse cumulative effects across Nunavut.

# 2 What are Cumulative Effects?

## 2.1 Identifying Key Terms

The impact assessment process administered by the NIRB, like other jurisdictions in Canada, uses specific technical concepts and terminology; some terminology and definitions are further tailored to the unique operating environment and context within Nunavut. The NIRB's Technical Guide Series: Terminology and Definitions Guide (December 2018) provides a useful reference for specific terms and has served as the starting point for identifying and developing appropriate definitions to support this initiative.

To understand how a development and its associated activities interact with the environment, we identify the potential or observed effects as either 'direct effects' or 'indirect effects' and determine their significance:

**Direct Effects** - refer to changes in the environmental components that result from direct cause-effect consequences of interactions between the project activities and the environment. For example the construction of a quarry site may see direct loss of local vegetation and disturbance to soils and aquatic environments.[i]

**Indirect Effects** – result from cause-effect consequences of interactions between the environment and indirect impacts. For example, the effect of pollution may not only be seen directly in the loss of local vegetation, but indirectly as a degradation of the health, culture and social structure of the local people.[ii]

**Effects vs. Impacts** – while often used somewhat interchangeably, the term "effect" is used to refer to the immediate result or outcome of an action, event, etc. while the term "impact" should be used to describe the consequences of the action, event, etc. Construction of a quarry site causes a direct effect of loss of vegetation and a direct impact on local vegetation health and abundance.

**Significance** - in impact assessment generally refers to a determination of how important or acceptable a project's potential environmental, social, or economic impacts are predicted to be and whether mitigation or other actions are therefore required. As set out under the *Nunavut Planning and Project Assessment Act* (NuPPAA), when determining the significance of impacts the NIRB must take the following factors into account:

a) the size of the geographic area, including the size of wildlife habitats, likely to be affected by the impacts;
b) the ecosystemic sensitivity of that area;
c) the historical, cultural and archaeological significance of that area;
d) the size of the human and the animal populations likely to be affected by the impacts;
e) the nature, magnitude and complexity of the impacts;
f) the probability of the impacts occurring;
g) the frequency and duration of the impacts;
h) the reversibility or irreversibility of the impacts;

i) the cumulative impacts that could result from the impacts of the project combined with those of any other project that has been carried out, is being carried out or is likely to be carried out; and
j) any other factor that the Board considers relevant to the assessment of the significance of impacts.[iii]

In administering an impact assessment for a proposed development project, the NIRB leads the proponent and participants through a structured evaluation of the potential ecosystemic and socio-economic impacts that could occur from the project components and activities, and their associated significance. The NIRB's impact assessments must fully consider all potential direct effects, indirect effects and cumulative effects and the proponent's plans to prevent, mitigate and manage project effects to determine whether projects should be allowed to proceed and under what terms and conditions.

**Mitigation** - Measures designed to control, reduce or eliminate potentially adverse impacts of a project or activity. For example, the placement of fences or rocks along a steep slope to slow down water flow. This is typically done to reduce and/or eliminate erosion which can have an impact on slope steepness and the freshwater environment.[iv]

**Adaptive Management** - a systematic and ongoing process of decision-making in the face of uncertainty, whereby initial decisions are based on existing data, with subsequent decisions following from the monitoring for potential effects, assessment of the effectiveness of the initial decisions (including assessing the effectiveness of mitigation measures) and then adjusting actions to reflect the monitoring data and the effectiveness of measures taken to minimize adverse effects. Adaptive management is a tool that provides the basis for sound environmental decision-making even in the face of uncertainty surrounding the nature and extent of effects that is often inherent at the environmental assessment stage, with the goal of reducing uncertainty over time.

It should be acknowledged that it is not possible to construct and operate a major development project that has no negative impacts; instead, the goal of ongoing adaptive management is to ensure the observed impacts of the project are within the predicted impacts and acceptable level of significance. Adaptive management may be used during monitoring or observing projects once they have obtained a project certificate. Proponents create monitoring plans and actions based on available data and information, once they begin implementing the plan and collecting additional experience or data, proponents compare this to what they initially predicted. If the data shows that what was predicted was not accurate, then the plan and associated actions would be updated to effectively address what was being observed. The Mary River Project has an Adaptive Management Plan in place which systematically guides this process using objectives, indicators, thresholds and responses based on Inuit Qaujimajatuqangit and best available western science.[v]

## 2.2 Defining Cumulative Effects

During the Cumulative Effects Assessment Framework workshop for the Mary River Project held by the NIRB in February 2024, parties shared concerns about how to define cumulative impacts; it is

recognized that to appropriately consider and manage potential cumulative effects we require a shared understanding of what that term includes and what differentiates cumulative effects from other project-related effects.

There are varying definitions of cumulative effects in use across Canadian jurisdictions and internationally. The International Association for Impact Assessment notes "a common definition in use within impact assessment since the 1980s is: Cumulative effects are changes to the environment that are caused by an action in combination with other past, present, and future human actions".[vi] The Government of Canada further explains that "some definitions consider only cumulative environmental effects, while others also include cumulative socio-economic and health effects. Some definitions include only human activities, while other also include natural processes. Some focus on adverse effects, while others consider both positive and adverse effects."[vii]

The *Nunavut Agreement* and the *Nunavut Planning and Project Assessment Act* (NuPPAA) which establish the NIRB's mandate and processes do not provide an explicit definition for cumulative effects, with NuPPAA directing the NIRB to consider the following as a factor when determining the significance of impacts: "the cumulative impacts that could result from the impacts of the project combined with those of any other project that has been carried out, is being carried out or is likely to be carried out".[viii] Both the *Nunavut Agreement* and NuPPAA provide the NIRB with the discretion to consider all matters considered relevant to fulfillment of its mandate however, and within its Terminology and Definitions Guide the NIRB has further articulated its own working definition for cumulative effects:

**Cumulative Effects** - referring to the accumulation of changes to the environment caused by human activities (e.g., past, existing and proposed activities, including activities associated with the project under assessment). These changes occur over space and time and can be brought about by environmental effects that are additive or interactive. For example, hunting, oil spills, and loss of habitat, commercial fishing pressure on prey species, can affect marine mammals in the Arctic.[ix]

The Impact Assessment Agency of Canada (IAAC) differentiates cumulative effects as including:

a) **Synergistic Cumulative Effects** - A synergistic cumulative effect occurs as a result of the interaction between two or more effects, when the resultant combination is greater or different than the simple addition of the effects. E.g. constructing roads through woodland may cause habitat fragmentation for caribou and increase predation (using roads to hunt), combining to create a lower caribou carrying capacity.
b) **Compensatory Cumulative Effects** - Compensatory cumulative effects are effects from two or more physical activities that "offset" each other. E.g. a metal mine project might cause a decrease in a specific fish population due to effluent discharges, while a cogeneration plant might enable an increase in this same population through its warm water discharges. These effects may offset each other and, accordingly, the cumulative effects on this fish population may not be measurable.[x]
c) **Masking Cumulative Effects** - Effects of one may make another undetectable. E.g. Warm water plume associated with a project may be masked by a greater plume of another project.[xi]

The definition of cumulative effects used in one of the most recent Environmental Impact Statement (EIS) guidelines issues by the NIRB in 2026 for the Grays Bay Road and Port project expands slightly on the NIRB's standard definition above to include, similar to definitions used by the Canadian Council of Ministers of the Environment and Environment and Climate Change Canada, a consideration for the interaction with natural processes: "A cumulative effect (or impact) refers to the accumulation of changes caused by human activities (e.g., past, existing and proposed activities, including activities associated with the project under assessment) and natural processes (such as climate change). These changes occur over space and time and can be brought about by the combination of various effects that are additive or interactive. The combination and interaction between these types of effects can increase or decrease the impact of a single effect."[xii]

Definitions of cumulative effects inevitably reference future development or activities, further narrowing to "proposed" or "likely" or "reasonably foreseeable". The NIRB's definitions above each includes a reference to "proposed" activities, which its Terminology and Definitions Guide addresses as "reasonably foreseeable future development":

**Reasonably Foreseeable Future Development**: Those future projects or activities which are currently under regulatory review or will be submitted for regulatory review in the near future, as determined by the existence of a proposed project description, letter of intent, or any regulatory application filed with an Authorizing Agency, including the Nunavut Planning Commission.[xiii] This means that every impact statement must take into account all projects that the proponent is aware have been submitted for approval or are likely to be submitted in the near future.

**Induced effects** are indirect effects that are not specifically the result of project activities, works or undertakings but that may be more likely to occur if project activities, works or undertakings occur. For example, a new hotel in a community becomes feasible only after a nearby mine opens and creates new and prolonged demand for such temporary accommodations. If an induced development is certain or reasonably foreseeable, it is typically necessary to have it also considered in the cumulative effects assessment.

For the purposes of developing the CEAF, the following definition for cumulative effects is proposed:

**Cumulative Effects** - changes to the ecosystemic and socio-economic environment caused by the combined direct and indirect effects of past, present and reasonably foreseeable future development, other human activities and natural processes (such as climate change). These changes may be brought about by the combination of various effects that are additive or interactive, which can change the overall impact of a single effect. Cumulative ecosystemic and socio-economic effects can also result from individually minor, but collectively significant, actions taking place over time.

**Is the proposed definition of cumulative effects sufficiently clear?**

## 2.3 How are Potential Cumulative Effects Identified?

Through the NIRB's review an impact statement for a major development project, the Proponent identifies potential direct and indirect project effects on Valued Components (VCs), assesses their significance and proposes mitigation measures to prevent or reduce impacts to acceptable levels. The remaining effects after proposed mitigation is applied are referred to as "**residual effects**". For the VCs with predicted residual effects from the project, spatial and temporal boundaries are determined that allow consideration of effects from interactions with other past, present and reasonably foreseeable projects and activities in a defined geographic scope. A cumulative effects assessment (CEA) is then undertaken by the Proponent to understand how effects from its proposed project might combine with effects from other projects and activities for each of the VCs and additional mitigation and monitoring is designed to address.

While this sequential approach to considering cumulative effects after identifying residual effects from project interaction is standard practice, it has been criticized for potentially narrowing the scope for the cumulative effects assessment.[xiv] More concurrent or integrated approaches in which cumulative effects are assessed alongside project-specific effects, instead of afterwards, are also possible.

For the assessments of the Mary River Project and subsequent amendment applications, Baffinland identified the residual effects of the Project, and the potential to interact with the residual effects of other projects or activities that could result in a greater effect to a VC of the ecosystemic or socio-economic environments.

**The CEA for the Mary River Project consisted of 3 main steps:**

1. Determine whether the Project will have a residual effect on identified valued components;
2. If a residual effect is likely, assess the potential for the Project's residual effect to interact with residual effects resulting from other projects or activities (past, current, or future); and
3. Determine if the interaction of the residual Project effect, in combination with other project effects, is likely to meaningfully influence a VC.

*Figure 1: How cumulative effects were assessed for the Mary River Project*

During the 2024 CEAF Workshop Baffinland acknowledged the concerns expressed by parties regarding the methodology it employed for the cumulative effects assessments within its previous impact assessments for the Project and associated amendments (an overview of cumulative effects concerns raised in previous NIRB assessments for the Mary River Project and associated amendments has been included as Appendix 6.2 for ease of reference). Clarification was provided regarding the methodology used to screen VCs into the CEA: where project-related interactions with valued components were found to not be significant once proposed mitigation was applied and no residual impacts were resulting, that specific VC was not brought forward for further consideration within the subsequent cumulative effects assessment. For the Sustaining Operations Proposal 2 (SOP2) amendment application Baffinland committed to carrying forward all VCs into the subsequent cumulative effects assessment independent of their conclusions about the potential for negative residual effects.

To support development of the CEAF, Baffinland has prepared a backgrounder document titled "Materials to Support Cumulative Effects EA Guidelines Update for the Mary River Project". This document provides an overview of the assessment of the contribution of the Mary River Project to cumulative effects in Nunavut, to support evaluation of whether updates to the impact statement guidelines for the Mary River Project are needed to ensure future cumulative effects assessments reflect current best practice. A summary of the approach followed by NIRB to date regarding cumulative effects, a summary of previous assessments for the Mary River Project, and the updated approach for cumulative effects assessment provided in the SOP2 application are also presented.

The Baffinland backgrounder can be reviewed alongside this discussion paper from the NIRB's website: https://www.nirb.ca/content/cumulative-effects-assessment-framework#

**Is further guidance needed to help differentiate between project-specific effects and cumulative effects?**

**What updates to guidance should be adopted to improve the assessment of cumulative effects in future amendment applications?**

# 3 How are Cumulative Effects Managed in Nunavut?

## 3.1 Overview of Legislative Framework in Nunavut

The *Nunavut Agreement* establishes the framework for assessing, monitoring and addressing the potential impacts of project development through the integrated regulatory management system overseen by the five Institutions of Public Government: the Nunavut Wildlife Management Board (NWMB); the Nunavut Planning Commission (NPC); the Nunavut Impact Review Board (NIRB); the Nunavut Water Board (NWB); and the Nunavut Surface Rights Tribunal (NSRT).

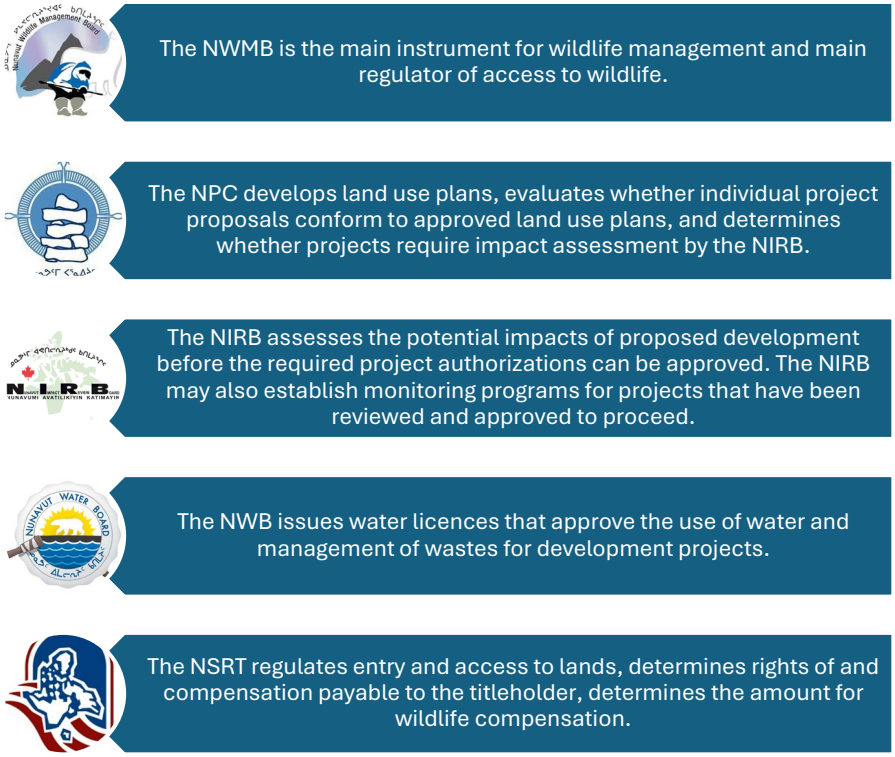


*Figure 2: Mandates of Nunavut Institutions of Public Government*

Together the NPC, NIRB, and NWB administer a co-ordinated process for the consideration and approval of development projects in the Nunavut Settlement Area. Proponents wishing to obtain the necessary licences, permits, or project approvals are required to satisfy the applicable land-use planning, impact assessment, and water licensing provisions of the Nunavut Agreement and enabling legislation (including the *Nunavut Planning and Project Assessment Act* and the *Nunavut Waters and Nunavut Surface Rights Tribunal Act*) before the government authorizing agencies can issue their respective authorizations or approvals. The Nunavut Agreement requires an integrated approach to development impact assessment that gives similar weighting to ecosystemic and socio-economic components, including Inuit harvesting and traditional land use.

Nunavut's institutions of public government, federal and territorial governments and project proponents have each been fulfilling their respective and collective obligations for cumulative impact assessment and management since the coming into force of the *Nunavut Agreement* in 1996. The core legislative framework specific to cumulative effects assessment and management in Nunavut is established through Articles 11 and 12 of the *Nunavut Agreement* and their enabling legislation, the *Nunavut Planning and Project Assessment Act* (NuPPAA). Taken together they:

a. establish the mandates of the NPC and the NIRB and their respective processes for land use planning and considering the impacts of development projects.

b. empower the NPC to refer project proposals to the NIRB that would normally be exempt from impact assessment where there are concerns for potential cumulative impacts in relation to other projects and activities in a region.[xv]

c. require the NIRB to consider the cumulative impacts associated with a development proposal during its screenings and review assessments.[xvi]

d. establish responsibilities for the federal and territorial governments to develop the Nunavut General Monitoring Plan (NGMP) in cooperation with the NPC and directing and coordinating general monitoring and data collection. Nunavut Tunngavik Inc. is also a key member of the NGMP Steering Committee.

e. allow for the terms and conditions contained in a[n] NIRB project certificate, screening decision report, or NWB licence to require the establishment of a project-specific monitoring program with specific responsibilities for the proponent, the NIRB, or other government agencies.[xvii]

f. provide certainty regarding the requirement for federal and territorial ministers and departments or agencies to fulfil any other responsibilities respecting monitoring of projects and data collection imposed on them by or under any other Act of Parliament or territorial law.[xviii] For example, the *Fisheries Act* includes requirements for Fisheries and Oceans Canada to consider the cumulative effects of a proposed project, in combination with past or ongoing projects, prior to making a decision under the fish and fish habitat protection provisions of the Act.

The monitoring of projects in Nunavut is designed to verify the accuracy of impact assessment predictions and determine the effectiveness of measures taken to manage effects and mitigate any potential adverse impacts to an acceptable level. There are several general types of monitoring associated with the assessment and management of cumulative effects in Nunavut:

1. **Baseline Monitoring**: Monitoring to determine the state of the environment at a particular point in time before any of the project components are built or operating. This monitoring is used to establish background or "baseline" levels of select parameters (ecosystemic and/or socioeconomic in nature) against which environmental changes can be measured over time or natural variations can be determined. Baseline monitoring is focused on evaluating the state of the environment before the project is developed.

2. **Project-Specific Effects Monitoring**: Monitoring carried out by proponents to determine changes to the status and trend of specific ecosystemic and/or socio-economic attributes or indicators. Effects monitoring is project-based and focuses on changes to the environment resulting from human activities associated with developing the project. Effects monitoring is informed by traditional knowledge holders and best available western science. Through effects monitoring, the accuracy of impact predictions is constantly evaluated and a means to adaptively manage project activities based on monitoring results is established.
3. **Regional Effects Monitoring:** Monitoring carried out by government to evaluate ecosystemic and/or socio-economic trends which are beyond the capacity, responsibility and/or ability for proponents to monitor (e.g. caribou collaring programs). The outcomes of these programs, where shared with proponents, provide another means to evaluate potential contributions of the project to regional trends which are affected by a number of influences (e.g. climate change, community construction programs and shipping, traditional activities, commercial hunting and fishing).
4. **Compliance Monitoring**: Monitoring led by Authorizing Agencies to determine whether a project is in compliance with its licensing and permitting conditions, including the terms and conditions of the NIRB Project Certificate. Compliance monitoring is used to detect and correct violations and provide evidence to support enforcement actions. Regulations and conditions are informed by what is known about the environment from long-term and effects monitoring. This monitoring is generally prescribed by regulators and delivered by proponents. Compliance is confirmed through inspection by the appropriate enforcement authority, through continual review of results submitted by proponents using approved testing methodology and, where necessary, independent testing carried out by government authorities. An example is monthly testing of effluents deposited to approved discharge points submitted to the NWB, required under the Licence, and placed on the public registry.

Each of the major mining development projects currently operating in Nunavut has undergone an extensive public review administered by the NIRB with impact predictions supported by extensive baseline monitoring conducted over multiple years for various valued components identified in consultation with proponents, Inuit organizations, government reviewers, and communities and individual Nunavut residents. Each of these projects is governed by a **Project Certificate** issued by the NIRB which includes the requirement for establishment and operation of a project-specific monitoring program designed in part to manage and monitor potential ecosystemic and socio-economic cumulative impacts and support government-led monitoring at the regional level. Monitoring undertaken by project proponents seeks to determine project-related impacts and their potential contribution to broader regional cumulative impacts (effects monitoring), while also demonstrating compliance with the NIRB Project Certificate and various project authorizations (compliance monitoring).

*Table 1: Project-Specific Monitoring vs. Regional Effects Monitoring*

| Feature | Project-Specific Monitoring | Regional Effects Monitoring |
|---|---|---|
| **Primary Objective:** | Demonstrate management of project impacts & regulatory compliance | Understand long-term trends & manage cumulative effects |
| **Responsible For:** | The Proponent | Territorial & Federal Governments |
| **Example of a Key Question:** | Is this mine disturbing calving caribou in the local area? | Is development in this region impacting caribou calving success? |
| **Data Use:** | Adaptive management of the project | Informing regional policy decisions & future assessments |

The NIRB's project-specific monitoring programs provide the NIRB with feedback throughout the life of the project to ensure that the predictions made in the impact statement related to cumulative and residual effects were correct and that the proposed mitigation and monitoring strategy are adequate. Evidence that an approved project is operating within or near the original impact predictions and in compliance with its approvals can be a strong indicator that project effects are likely not exceeding the expected contribution to cumulative effects. When cumulative effects are being perceived or are suspected for a Valued Component, project-specific monitoring programs can be valuable sources of monitoring information while regional effects monitoring led by governments can help identify other activities that may contribute to cumulative effects and require adjustment.

Regional monitoring programs overseen by federal and territorial government departments or agencies may be focused on a specific Valued Component (e.g. Polar Bear) or a geographic area (e.g. Baffin Bay or various components of either the ecosystemic or socio-economic environments. The Government of Nunavut has established **Regional Socio-Economic Monitoring Committees** which collect and analyze data from the socio-economic programs required under NIRB Project Certificates. There are committees for each of Nunavut's three regions: the Qikiqtani, Kivalliq and Kitikmeot. Including representation from the Government of Nunavut, Government of Canada, Designated Inuit Organizations and each Hamlet in a region, the SEMCs review relevant monitoring data, project management plans and reports, and the general socio-economic trends and indicators within their respective regions potential project impacts to better understand the socio-economic impacts of major resource developments. Reports are prepared annually as outcomes of the regional SEMC meetings, with reports for the 2025 meetings soon to be disseminated publicly.

In addition to project-specific monitoring, the Nunavut Agreement requires the establishment of a general monitoring program that is not specific to any one development project to collect and analyse information on the long-term state and health of the ecosystemic and socio-economic environment in the Nunavut Settlement Area. The **Nunavut General Monitoring Plan (NGMP)** provides for the collection and analysis of information on the long-term conditions of Nunavut's environment, people, communities and economy. The NGMP is administered by a steering committee consisting of representatives from the NPC, Nunavut Tunngavik Inc., the Government of Nunavut, and Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) on behalf of the Government of Canada, with the NGMP Secretariat housed within CIRNAC. The NGMP gathers existing ecosystemic and socio-economic monitoring data and identifies gaps where more monitoring needs to take place, while also supporting the development of monitoring information where gaps exist.

The NGMP collects and analyzes information on the long-term conditions of Nunavut's environment, people, communities, and economy. This may be qualitative or quantitative and include both traditional and scientific data. The areas of focus are guided by consultations with the NGMP's stakeholders, including Nunavummiut, industry, researchers and scientists. The information collected under the NGMP is also intended to further support fulfillment of land use planning responsibilities under Article 11 of the *Nunavut Agreement*.

The NGMP has developed blueprints which provide current information on individual Valued Components (VC) and identify Nunavut general monitoring objectives, needs and requirements for each VC. The NGMP asserts that addressing these identified knowledge gaps would “enhance our understanding of the changes being observed to Nunavut’s ecosystemic and socio-economic environments. Understanding these changes, in turn, will support enhanced management and decision-making processes in Nunavut”. Ultimately, the NGMP is intended to provide public monitoring reports and make meaningful Nunavut ecosystemic and socio-economic information accessible to the public, with effective long-term monitoring contributing to the sustainable development of Nunavut's land, resources and social economy.

Further details on the NGMP can be found on the NGMP website: https://www.ngmp.ca.

**Community-based monitoring programs** may also inform monitoring for cumulative effects at a regional scale. For example, the Community-based Monitoring Network developed by the NWMB is intended to help compile information that is needed to address concerns affecting wildlife management, conservation, and Inuit harvesting rights and to obtain Inuit Qaujimajatuqangit information in a format that can communicate with scientific modelling. This network relies upon harvesters to record wildlife observations and harvests using specially designed hand-held computers while on the land. Its objective is to improve the information available for use by the NWMB and its co-management partners for wildlife management decisions, including setting wildlife research and management priorities and directing further research efforts.

Additionally, there are many research and monitoring initiatives and programs administered by the territorial and federal governments which are specific to various Valued Components and can inform

both project-specific monitoring programs and regional monitoring for cumulative effects; these initiatives are spoken to in the next section.

In conclusion, the legislative framework for cumulative effects assessment and management in Nunavut has created a comprehensive system of assessment and monitoring with responsibilities for project proponents, governments, designated Inuit organizations and the Institutions of Public Government created under the Nunavut Agreement. Individual project proponents must undertake a thorough impact assessment of their proposed projects, with predictions for any potential contributions to regional cumulative effects supported by baseline monitoring and outputs from regional monitoring and the NGMP. The NPC is required to consider whether project proposals that would otherwise be exempt from screening should be referred to NIRB for assessment, based on identified concerns for potential cumulative impacts. The NIRB is required to ensure cumulative impacts are considered in determining whether projects can be approved to proceed and under what terms and conditions, with the NIRB further designing Project Certificates for major developments which support management of project contributions to regional cumulative effects, compliance monitoring and regional monitoring by governments and others. Finally, the NGMP is in place to act as a further feedback mechanism, collecting and analysing monitoring data and information to enable Governments and the NPC to develop and implement effective land use planning for Nunavut.

## 3.2 Research and Monitoring to Support Management of Cumulative Effects

To understand a Project's potential for contributing to cumulative effects on key Valued Components, it's necessary to identify what other sources of research and monitoring information are available for consideration. All research in Nunavut must be licenced, with the Government of Nunavut (GN), the Government of Canada (GOC), and the Nunavut Research Institute (NRI) each licensing research on specific valued components within their respective legislative mandates. The NRI administers Nunavut's *Scientists Act* which applies only to social, health, land or physical/natural research. The NRI produces annual compendiums of all the research licenced under the *Scientists Act*: https://www.nri.nu.ca/research-compendiums

The GN and the GOC each play a central role in coordinating research and monitoring across the Qikiqtani region and Nunavut, with additional research and monitoring initiatives undertaken by designated Inuit organizations, community-level groups, academia, not-for-profits and others. The GN and GOC have independently prepared summaries of government-led or funded monitoring and/or research to support the Cumulative Effects Assessment Framework (CEAF) initiative for the Mary River Project, as requested by the NIRB. These programs occur primarily in the Qikiqtani region, with a focus on valued components that may be affected by the Mary River Project.

The government summaries can be reviewed alongside this discussion paper from the NIRB's website: https://www.nirb.ca/content/cumulative-effects-assessment-framework#

The GN sets its own monitoring and research priorities, with resources directed accordingly. As such, long-term GN-led or funded research is not designed as a stand-alone project but is part of a larger body of work to support responsible decision-making for government. GN monitoring is not intended to assess project-specific impacts or be a substitute for proponent-led monitoring. The information produced by the GN is primarily related to Baffin Island caribou and polar bear (e.g., Davis Strait, Baffin Bay, Foxe Basin, Lancaster Sound), as well as selected human health research with a focused overview of the regional Socio-Economic Monitoring Committees that support the GN's socio-economic monitoring related to resource development.

The GOC is responsible for administering the Nunavut General Monitoring Program and supports research and monitoring efforts across many departments and areas of focus, including but not limited to: ice-breaking, underwater noise, coastal erosion, ice, marine mammals, fish and whales, shorebirds, invasive species, water quality, human health, and dust. Similarly to the GN, the GOC sets its monitoring and research priorities to support responsible decision-making for government, including for issues identified through the approval processes for project impact assessments and other regulatory decision-making.

There is much to be gained from supporting coordination where possible across these different monitoring programs, particularly where the same Valued Components or indicators are being monitored, to provide a basis for understanding regional cumulative effects. Both the GN and GOC participate in the Marine Environment and the Terrestrial Environment Working Groups established under the Mary River Project Certificate, which may provide opportunity for supporting such coordination.

**What other sources of research and monitoring information are available to support project-specific cumulative effects assessment and management?**

**How can we improve coordination across governments, proponents, academia and other stakeholders for research and monitoring to inform regional cumulative effects management?**

## 3.3 Monitoring for Project Contributions to Regional Cumulative Effects

Following the conclusion of an impact assessment by the NIRB for a major development project and approval by the responsible government ministers that it may proceed, a Project Certificate will be issued by the NIRB and will address any requirements for a project-specific monitoring program to be established. The purpose of a NIRB monitoring program is to:

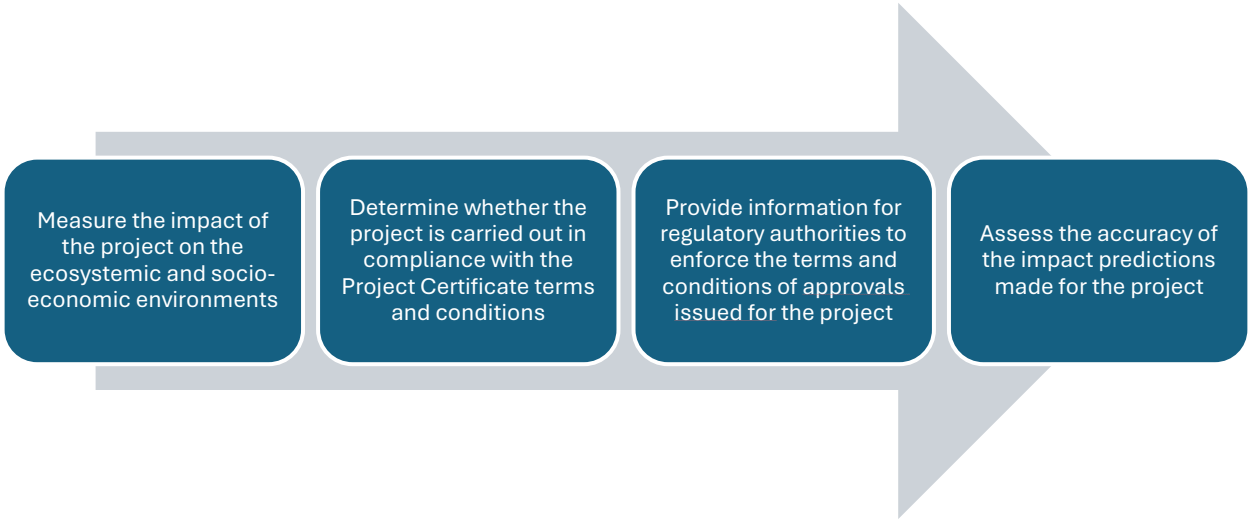


*Figure 3: NIRB Monitoring Program Objectives (paraphrasing NuPPAA s.153(3))*

NIRB monitoring programs must specify what's to be monitored and may require that:

a) regulatory authorities and the proponent provide the NIRB with information on project activities, impacts and the implementation of mitigation measures;
b) the NIRB carry out periodic evaluations of the program; and
c) the NIRB produce a report of the adequacy of the program, based on its evaluations and the impacts of the project.

Many different government departments and agencies act as regulatory authorities for major developments in Nunavut based on their respective legislation and associated licences, permits and approvals. Approvals may be for individual project components (e.g. building a dock or water use) or for the full scope of proposed activities (e.g. construction and operation of a mine and all its supporting components). When establishing a monitoring program, the NIRB is prohibited from duplicating monitoring and data collection responsibilities already assigned to government agencies and departments;[xix] for this reason, the NIRB designs project-specific monitoring programs in coordination with other project approvals to limit duplication while ensuring all project interactions and effects are monitored and reported on holistically (looking at the whole of the project and its interconnected components, rather than focusing on a single component) and made available to the public.

The responsibilities of the project proponent related to administration of the project-specific monitoring program are detailed in the NIRB's Proponent's Guide (2020) and include:

1. **Program Development:** the proponent must create and maintain a Post-Environmental Assessment Monitoring Program (PEAMP).
    - Consistency: it must align with all commitments made within the impact statement and assessment process.
    - Compliance: it may include the development of specific management plans required by the Project Certificate.
2. **Annual Reporting:** Once pre-construction begins, the proponent must submit an annual report to the NIRB by a set deadline every year. This continues through construction and operation until the project is fully closed. The annual report must include:
    - Terms & Conditions: a table showing exactly how the proponent is meeting every requirement in the Project Certificate.
    - Monitoring Results: data from the PEAMP, including comparisons of actual impacts vs. predicted impacts and any adaptive management undertaken.
    - Compliance & Permits: status updates on all project authorizations, including any new permits, renewals, or amendments.
    - Activity Logs: a summary of work completed (with photos), progressive reclamation efforts, and a plan for the upcoming year.
    - Community Engagement: documentation of consultations and engagement with local communities and evidence of how feedback influenced monitoring programs.

Most major development projects are designed to be operated over extended periods of time and the monitoring programs required by the NIRB reflect this, incorporating a continuous feedback system to enable adaptive management and fulfill the various monitoring and reporting requirements over the life of the development. Public engagement and feedback is an important aspect of each project-specific monitoring program overseen by the NIRB. Community members in the local or regional study area for a major development project will often have valuable knowledge and experience to share with project proponents and regulators, which complements the project-specific monitoring programs operated by proponents and the regional monitoring programs and initiatives overseen by governments and other parties.

Monitoring for potential project contributions to regional cumulative effects is generally integrated within the various project-specific monitoring plans and programs and may also be aligned with regional monitoring programs or initiatives. Monitoring activities undertaken by the proponent are focused on observing project interactions and effects to confirm the accuracy of impact predictions and the effectiveness of management actions across the Project in meeting those predictions. Where concerns regarding the potential for cumulative effects have been identified during the impact assessment for a project, the Project Certificate terms and conditions may include specific requirements to address these concerns. The information and data collected by the proponent and governments for each Valued Component to track project interactions and effects may also be

chosen to align with regional monitoring programs and initiatives designed to manage cumulative effects by using comparable collection methods, indicators, etc.

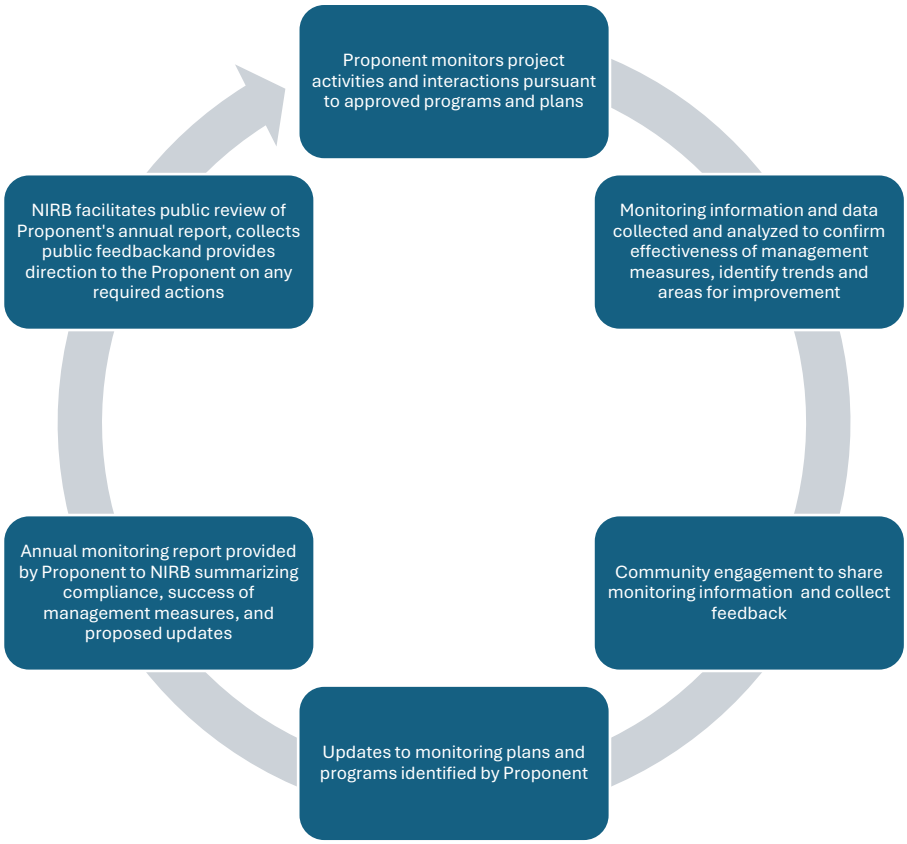


*Figure 4: Project-Specific Monitoring Program annual cycle (modified from NIRB Proponent's Guide, Figure 17)*

The NIRB has a well-established ongoing monitoring program for Project Certificate No. 005 for the Mary River project which regularly evaluates the effectiveness of each term and condition for existing project components through its annual reporting process; the CEAF initiative will not duplicate that process but will consider whether modifications to the annual reporting format may be helpful to more clearly present where monitoring results are compared to impact predictions and, where necessary, outline where cumulative effects may be occurring and develop recommendations for the Mary River Project during the annual NIRB monitoring process. A summary of the requirements of Project Certificate No. 005 terms and conditions which explicitly reference cumulative effects has been included as Appendix 6.1 as a point of reference.

To support development of the CEAF, Baffinland has prepared a backgrounder document on the annual monitoring report templates used for the Mary River Project: “Materials to Support the Understanding of Baffinland Annual Monitoring Report Templates”.

The Baffinland backgrounder can be reviewed alongside this discussion paper from the NIRB’s website: https://www.nirb.ca/content/cumulative-effects-assessment-framework#

**How could the monitoring report templates for the Mary River Project be improved to address potential project contributions to regional cumulative effects and enhance readability?**

# 4 CEAF Development Process

## 4.1 Identified Goals and Priorities

Consistent with the Project Charter for this initiative, the following goals have been identified for the development of a CEAF for the Mary River Project:

a) Development of updated CEA guidelines to be followed for future amendment applications for the Mary River Project (e.g. adding Deposit 2 and 3 to the current Approved Project) with consideration for the extensive monitoring experience for the Mary River Project and commitments made by the Proponent to update the approach to cumulative effects assessment in the SOP2 amendment application.

b) Identification of potential improvements for the monitoring, mitigation and management of cumulative effects through a review of existing cumulative effects assessment conclusions from previous impact assessments for the approved Mary River Project and an evaluation of the existing monitoring program for the Mary River Project. This may include modifications to annual reporting format to more clearly present where monitoring results are compared to impact predictions and, where necessary, outline where cumulative effects may be occurring and develop recommendations for the Mary River Project during the annual NIRB monitoring process.

c) A description of how improved understanding of the contribution of the Mary River Project to overall cumulative effects and environmental trends in the Qikiqtani region will be used going forward. This could include but is not limited to:
    i. identification of knowledge gaps to help guide future research (by Government, proponents, industry, academia, Inuit organizations, communities, etc.) and identification of monitoring priorities focusing on the detection of/ understanding of cumulative effects in the Qikiqtani Region
    ii. Information to support Government decision making on future Mary River Project Certificate amendment applications
    iii. Information to support decision making on projects other than the Mary River Project with the potential to contribute to cumulative effects

d) Developing a shared understanding of what is meant by the term “cumulative effects” and other associated impact assessment terminology will be critical to realizing the goals outlined above. Additional priorities for the development of the CEAF include:
    i. Providing opportunities for community knowledge and Inuit Qaujimajatuqangit to inform and guide an updated CEA for the Mary River Project, including by using appropriate feedback mechanisms, such as through community consultations, periodic check-ins/verification of results, thematic technical meetings, and interim reporting;
    ii. Improving public awareness and confidence in the monitoring outcomes and oversight for the approved Mary River project; and,

iii. Enhancing the awareness of how cumulative effects are considered within the unique legislative framework of Nunavut for resource development, project assessment and project monitoring.

## 4.2 Guiding Principles

Inuit Qaujimaningit, public engagement, the precautionary principle, and sustainable development are principles, or values, that guide the NIRB's processes. The development of a CEAF for the Mary River Project will be grounded in these same foundational principles.

The NIRB is committed to the application of **Inuit Qaujimaningit** throughout its processes and expects that Inuit Qaujimaningit extensively and respectfully informs project development as well as the associated impact statements that are the focus of the NIRB's Review process. The NIRB also considers knowledge provided by various Knowledge Holders and Indigenous Groups asserting rights under Section 35 of the *Constitution Act, 1982* (s. 35 rights). The NIRB's impact statement guidelines require proponents to incorporate Inuit Qaujimaningit, Inuit Qaujimajatuqangit, Traditional and Community Knowledge into their respective impact statements. The NIRB understands that the availability of such information may be limited by obligations of confidentiality and other ethical obligations, but expects proponents and other participants to take reasonable measures to access this type of information for incorporation into their submissions to the NIRB.

The NIRB's processes are designed to create opportunities for meaningful **public engagement** and the consideration of Inuit Qaujimaningit, Indigenous Knowledge, and Community Knowledge throughout all stages. Public engagement is an integral component of the NIRB's processes and differs from documenting Inuit Qaujimaningit, Indigenous Knowledge, and Community Knowledge. Public engagement should be open, honest, and transparent. The NIRB uses the term 'public engagement' as an encompassing term that describes varying levels of information exchange and involvement between parties. The focus of public engagement is to create opportunities to exchange and clarify information, gather input, and promote collaboration and understanding amongst the public to inform project design, as well as the NIRB's processes, proceedings, and decision-making.

The NIRB expects proponents to incorporate the **precautionary principle** throughout their impact statements, including for project design, assessment of project alternatives and identifying preferred means of carrying out the project, and impact/effect prediction and significance determination, as well as identification of mitigation measures and monitoring methods. The NIRB's processes are designed to assess proposed projects and monitor approved projects in a careful and precautionary manner and to ensure that where there is a potential for harm to the environment, actions will be taken to prevent or reduce the negative impacts/effects, even if there is a lack of information and certainty about the cause and extent of the impact/effect.

**Sustainable development** is defined as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs".[xx] It is about balancing economic, ecosystemic, social, cultural, and health needs and well-being, while allowing for the protection of the environment and availability of benefits for present and future generations. This

means that the impacts of decisions made today on future generations must be considered. As required by the *Nunavut Agreement* and the NuPPAA, the NIRB must consider whether, and to what extent, proposed projects would protect and enhance the existing and future well-being of the residents and communities of Nunavut, considering the interests of other Canadians. The Board must further consider whether proposed projects reflect the priorities and values of the residents of the designated area. The NIRB's recognition of the principle of sustainable development is woven into its consideration of both proposed projects under assessment and monitoring of approved projects.

## 4.3 Scope of Initiative

Development of the CEAF will include a review of previous CEA methodology and conclusions from impact statements for the Mary River Project with recognition for the additive nature of the project development that has occurred to date. This is anticipated to help focus consideration on the project interactions with key VCs and enable an updated and comprehensive understanding of the potential effects of the approved components not yet constructed (the railway, Steensby Inlet port, shipping through Foxe Basin/Hudson Strait) and potential future phases of the Mary River Project including mining additional deposits or as-yet unidentified expansions to the approved project.

The **geographic scale** of a cumulative effects assessment should reflect the potential impacts/effects on selected VCs in combination with other identified activities (past, existing, and reasonably foreseeable future development) and natural processes (e.g., climate change). Boundaries selected may differ for each VC included and should not be constrained by jurisdictional boundaries.

The geographic boundaries selected by Baffinland for the cumulative effects assessment for the original Mary River Project was the Nunavut Settlement Area, with provisions to include shipping through Hudson Strait associated with the Raglan Mine. Study areas were selected as determined to be appropriate to the evaluation of each VC.

Through the 2024 CEAF Workshop parties requested that an updated CEAF for the Project include "an expanded temporal scope commencing with a time prior to project development to a future point where project impacts are no longer measurable or can no longer be felt" and "an expanded geographic scope for some VCs which considers the full range of impacted communities inclusive of their travel routes, the range of mobile aquatic and terrestrial wildlife, and watersheds where project effects may be expected".

A submission from the Qikiqtani Inuit Association (QIA) to the NIRB following the 2024 CEAF Workshop further recommended the geographic scope of the CEA should include:

> "…the entire range of stocks of mobile wildlife species like terrestrial and marine wildlife, and fish, that are known to frequent the potential Mary River Project affected area. The geographic scope should not be limited by current project regional study areas; understanding stressors on these stocks of wildlife throughout their life cycles is critical to understanding their vulnerability to project effects and other cumulative effect causing agents. Such focus on the

life cycle health of VCs is a VC-centred CEA approach, which avoids underestimation of total effects on VCs that can be encountered in a Mary River Project-centred CEA.

As a starting point for consideration, the geographic scale for CEA in future applications could include the entire Mary River Project regional study area, the migratory range of marine and terrestrial wildlife, and Tallurutiup Imanga, and the southern communities that may be affected by the Southern Transportation Route and Southern Shipping Corridor. Affected communities include but may not be limited to: Mittimatalik (Pond Inlet), Ikpiarjuk (Arctic Bay), Kangitugaapik (Clyde River), Sanirajak, Igloolik, Kimmirut and Kinngait. The geographic scale will also account for the values that underpin the protection of Tallurutiup Imanga and how these values may influence the interpretation of impacts."[xxi]

The **temporal scope** of the cumulative effects assessment should consider other identified activities (past, existing, and reasonably foreseeable future development) and is expected to include analysis of how the cumulative effects from the entire project could persist and interact with other impacts after the project's closure and until the impacts caused by the Mary River Project are no longer measurable. The consideration of VCs is expected to utilize appropriate pre-project baseline conditions to understand and integrate changes to the environment and Inuit society and culture that occurred before the initiation of the Mary River Project and should consider potential impacts of climate change using multiple future climate change scenarios.

The temporal boundaries selected by Baffinland for the cumulative effects assessment for the original Mary River Project was 1970 to 2045, a time period of 75 years, based on the approximate date of introduction of industrial development in the area and the life of the current Project.

The submission from the Qikiqtani Inuit Association (QIA) to the NIRB following the 2024 CEAF Workshop further recommended the temporal scope of the CEA should include consideration for how the cumulative impacts of the Mary River Project will continue to be felt, and interact with other impacts, even after the closure and decommissioning. The QIA recommended that the end point in time for the CEA should be the point at which impacts caused by the project are likely no longer measurable. QIA also clarified its expectation that the consideration of VCs will adopt appropriate pre-Project baseline condition sets, to allow changes to the environment and Inuit society and culture that occurred prior to the Mary River Project's initiation to be properly understood and integrated.

**What geographic scale and temporal boundaries are appropriate for the development of the CEAF?**

## 4.4 Identification of Projects, Activities and Processes to be Considered

An important component of a cumulative effects assessment is identifying the past, present and reasonably foreseeable developments, activities and processes with effects that could interact with the potential effects of the project under assessment. From the final environmental impact

statement for the original Mary River Project, Baffinland included the following projects or activities in its assessment of cumulative effects:[xxii]

- Baffinland's previous exploration and bulk sampling programs;
- Baffinland's proposed monitoring programs concurrent with the Project;
- Past, current and future mineral exploration in the region, by Baffinland and others;
- Operating mines (Meadowbank mine in the Kivalliq Region and Raglan Mine in Nunavik) and reasonably foreseeable mines (Roche Bay Iron Ore Project);
- Decommissioned mines (former Nanisivik and Polaris mines);
- Induced development of other Mary River iron ore deposits;
- Marine transport/shipping;
- Nanisivik Naval Facility;
- Air transport;
- Military exercises;
- Traditional and recreational hunting, fishing and foraging;
- Communities;
- Tourism and commercial recreation activities;
- Baffinland's potential Separation Lake hydroelectric project; and
- Climate change

The impact statement addendum prepared by Baffinland to support its Phase 2 proposal also considered the following additional items for inclusion in its cumulative effects assessment:[xxiii]

- Grays Bay Road and Port Project
- Hope Bay Project (Doris North Gold Mine and the Phase 2 Hope Bay Belt Project)
- Back River Project
- Meliadine Project
- Military radar stations
- Tullurutiup Imagna/Lancaster Sound NMCA
- Simirlik National Park
- Regional monitoring programs

While the items in the above list were considered, not all were subsequently brought forward for inclusion in Baffinland's cumulative effects assessment, with the reasoning for excluding specific items provided for the information of reviewers.

Within its cumulative effects assessment for the original Mary River Project, Baffinland concluded that the greatest potential for cumulative effects on terrestrial and socio-economic VCs was the potential for induced development of additional ore bodies at Mary River. Under this scenario, Baffinland assumed that development of additional deposits would practically involve an approximate doubling of production output over the temporal scale of the assessment, through the development of one or two additional deposits. A similar approach was taken within the impact statement prepared in support of the Phase 2 Proposal; in addition to the reasonably foreseeable

activities included in the cumulative effects assessment, Baffinland considered alternative development scenarios associated with its development of the Mary River Project.

To support the development of the CEAF and address the potential for induced effects associated with the Project, it may be appropriate to consider several development scenarios for the Project: a first development scenario with the Existing Project as currently constructed and operated by Baffinland; a second development scenario with the full scope of the Approved Project, assessed previously by Baffinland; and, a third development scenario with future development of other identified deposits, specifically Deposits 2 and 3.

**What projects, activities and processes should be considered for development of the CEAF?**

**How should induced development/future phases for the Mary River Project be considered?**

## 4.5 Selection of Valued Components (VCs)

Each VC identified for the various project-specific assessments undertaken for the Mary River Project should be considered for the development of the CEAF, with a rationale provided for the VCs ultimately selected for inclusion. Considerations for selecting VCs may include:

- Community values, objectives, and desired outcomes, including future use of an area;
- Predicted residual impacts/effects;
- VCs with associated significance determinations and those that could potentially be most impacted by the proposed project in combination with other human activities and/or natural processes;
- Priority issues related to the proposed project as identified by parties, especially potentially affected communities;
- VCs sensitive to the development context of the project;
- VCs with known existing impacts/effects;
- VCs representative of key and or important ecosystemic function;
- Critical importance of an area where pressures in other areas have increased reliance on this area for traditional use; and
- Importance of the particular area to Inuit cultural practices.

In the Final Environmental Impact Statement provided for the original Mary River Project, the VCs selected for the ecosystemic environment (VECs) included both the natural environment and the wildlife that depends on the health of that environment, grouped into thematic areas related to key components of the environment. Significant indicator species were identified and provided a focus for the assessments:

- **Atmospheric Environment** – Climate change; Air quality; Noise and vibration.
- **Land Environment** – Landforms, soil and permafrost; Vegetation; Terrestrial wildlife and habitat; Birds.
- **Freshwater Environment** – Surface water and sediment quality; Water quantity; Freshwater fish, fish habitats and other aquatic organisms.
- **Marine Environment** – Sea ice; Marine water and sediment quality; Marine habitat and biota; Marine mammals.

The VCs selected by Baffinland for the socio-economic environment (VSECs) were related to the well-being of the people, their communities and the overall social and economic health of the area:

- **People:** Population demographics; Education and training; Human health and well-being.
- **Community:** Community infrastructure and public service; Cultural Resources; Resources and land use; Governance and leadership: Livelihood and employment; Cultural well-being.
- **Economy:** Economic development and self-reliance; Contracting and business opportunities; Benefits, taxes and royalties.

Following the 2024 CEAF Workshop, in a submission to the NIRB the QIA recommended that the following VCs be the focus for development of the CEAF:[xxiv]

- Narwhal;
- Caribou;
- Ringed seal;
- Walrus;
- Anadromous char;
- Inuit culture, resources and land use;
- Snow and vegetation quality;
- Water and sediment quality;
- Sea ice;
- Public transportation;
- Others terrestrial wildlife; and
- Ground/ permafrost stability.

The experience gained by Baffinland and parties to date through the assessment, operation and monitoring of the Project and its amendments provides valuable insights and creates a unique opportunity for evaluation. For each of the identified VCs, consideration may be given to the effectiveness of indicators (how to measure changes to VCs), thresholds of change (the points at which VCs are impacted), and management responses (what responses to impacts need to be contemplated as thresholds are reached) selected by Baffinland, and their alignment with other monitoring initiatives in the region, as applicable.

**What Valued Components (VCs) should be the focus for development of the CEAF?**

## 4.6 Community Knowledge and Inuit Qaujimajatuqangit

The identified priorities for the development of the CEAF include providing opportunities for community knowledge and Inuit Qaujimajatuqangit to inform and guide an updated cumulative effects assessment for the Mary River Project, including by using appropriate feedback mechanisms, such as through community consultations, periodic check-ins/verification of results, thematic technical meetings, and interim reporting. The CEAF development process will be informed by an open process for public engagement with communities, guided by the CEAF Steering Committee.

The NIRB expects that Inuit Qaujimajatuqangit and Inuit Qaujimaningit will play a central role in developing the CEAF; it is anticipated that the CEAF Steering Committee will work with NIRB to establish an approach to consideration and integration of Inuit Qaujimajatuqangit and Inuit Qaujimaningit into the CEA framework that is endorsed by the impacted Inuit parties and reflective of Inuit perspectives.

Inuit and residents from all impacted communities are invited to become directly involved in all phases of the CEAF development; the NIRB will be scheduling information sessions in as many impacted communities as possible to encourage public participation. The NIRB will make efforts to demonstrate how knowledge and feedback shared is reflected in the CEAF as it is developed. This includes study design, data collection, analysis, effects characterization and significance determination, mitigation and monitoring development, and reporting.

A summary of the anticipated process steps and timeline for the CEAF is provided on the following page:

| | |
|---|---|
| February 19-20, 2024: | •NIRB hosts CEAF Workshop in Iqaluit |
| April 8, 2024: | •NIRB issues CEAF Workshop Report and Recommendations |
| March 5, 2025: | •NIRB receives Ministers' response on CEAF Workshop Report |
| June 26 & October 8, 2025: | •NIRB issues public update on CEAF process and next steps |
| October 2025 - January, 2026: | •Steering Committee formed to guide CEAF development process |
| January 16, 2026: | •NIRB issues public updates on CEAF Process and next steps |
| February 2026: | •NIRB website updated to include CEAF registry |
| April 30, 2026: | •NIRB issues CEAF Discussion Paper for public review and feedback |
| May 9-15, 2026: | •NIRB hosts community information sessions for CEAF development |
| June 1, 2026: | •Written comments received on Discussion Paper |
| June 9-10, 2026: | •NIRB hosts CEAF Workshop in Iqaluit |
| July, 2026: | •NIRB issues Summary Report from Info Sessions and CEAF Workshop |
| September, 2026: | •NIRB issues Interim Report on CEAF and preliminary findings |
| October, 2026: | •Comments received on Interim Report on CEAF |
| October/November, 2026: | •NIRB hosts CEAF Workshop in Iqaluit |
| November, 2026: | •Final Written Submissions received |
| February/March, 2027: | •NIRB issues Final Report on CEAF |

*Figure 5: Anticipated Process Steps and Timeline for Development of a CEAF for the Mary River Project*

# 5 CEAF Information Requirements

The following areas of information are anticipated inputs that will help inform the development of a CEAF for the Mary River Project:

1. **Summary of key areas of concern for cumulative effects to be addressed:** recognition of concerns regarding cumulative effects raised through previous assessments, annual monitoring, and community engagement associated with the Mary River Project. Ensuring key areas of concern are identified, understood and addressed through this initiative.
2. **Identification of key Valued Components:** focusing on the Valued Components that correspond to the key areas of concern for potential cumulative effects.
3. **Defined geographic and temporal scope:** select boundaries which reflect the potential effects on selected Valued Components in combination with other identified activities (past, existing, and reasonably foreseeable future development) and natural processes (e.g., climate change).
4. **Identification of developments, activities and processes to be considered for cumulative effects assessments:** including all relevant projects, activities and processes with the potential for interactions with effects from the Mary River Project and identified Valued Components across the defined geographic and temporal scope.
5. **Identification of relevant research and monitoring programs:** programs and initiatives with outcomes relevant to selected Valued Components and the identified scope for the initiative can inform the understanding of regional cumulative effects.
6. **Overview of the previous cumulative effects assessments from prior applications for the Mary River project:** consideration for how previous assessments were designed and conclusions drawn against the identified concerns to inform identification of opportunities for improvement for future applications.
7. **Overview of the annual reporting structure for the Mary River project:** provide reviewers with improved understanding of where and how information of interest is included in annual reporting to better evaluate the potential contributions of the project to regional cumulative effects.

At the request of the CEAF Steering Committee, Baffinland has prepared backgrounder documents to provide an overview of: (1) the assessment of the contribution of the Mary River Project to cumulative effects in Nunavut, to support evaluation of whether updates to the standard guidelines for the Mary River Project are needed to ensure future cumulative effects assessments are carried out in a way that reflects current best practice; and (2) the current Mary River Project NIRB Annual Reporting contents as well as identification of areas where further collaboration and information sharing with other parties is required to improve the integration and understanding of cumulative effects in the region.

Also at the request of the CEAF Steering Committee, the Government of Nunavut and the Government of Canada have independently prepared summaries of government-led or funded

monitoring and/or research to support the Cumulative Effects Assessment Framework (CEAF) initiative for the Mary River Project, as requested by the NIRB. These programs occur primarily in the Qikiqtani region, with a focus on valued components that may be affected by the Mary River Project.

The Baffinland backgrounder documents and government summaries of research and monitoring can be reviewed alongside this discussion paper from the NIRB's website: https://www.nirb.ca/content/cumulative-effects-assessment-framework#

# 6 Appendices

## 6.1 Overview of the Mary River Project

*The following excerpt is reproduced from the NIRB's "Cumulative Effects Assessment Framework Workshop Report in relation to Baffinland Iron Mines Corporation's Mary River Project (NIRB File No. 08MN053), April 2024".*

As currently approved, the Mary River Project involves exploration, construction, operation, closure, and reclamation of an open pit iron ore mine at Deposit No. 1 and associated transportation and shipping of the ore via Steensby Inlet (the "southern route", approved in 2012) and Milne Inlet (the "northern route", approved in 2014 and subsequently modified in 2018, 2020, 2022 and 2023). The infrastructure associated with transportation and shipping via the southern route is not yet constructed, but when operational, Baffinland is authorized to ship up to 18 million tonnes of ore per year (Mtpa) via the southern route. Transportation and shipping of ore via the northern route to markets in Europe started in 2015. Until December 31, 2024, Baffinland is authorized to transport and ship via the northern route up to 6 Mtpa (and in 2023, the Board authorized shipping up to a further .9 Mtpa of ore from the previous year if it is "stranded" at Milne Port). There are three (3) main project locations – the Mine site, Milne Port located north of the Mine site, and Steensby Port located south of the Mine site. Milne Port is connected to the Mine site by the Tote Road, approximately 100 kilometers (km) in length. The Project as originally proposed was to include the construction of a railway approximately 150 km in length to connect the Mine Site to Steensby Port; as noted above, the infrastructure to transport and ship ore along the southern route is yet to be constructed.

The Project, as currently operated, involves the extraction and crushing of ore at the Mine Site and transportation by truck along the Tote Road before being shipped from Milne Port between July15 and October 31 of each year using contracted vessels. The approved Project also includes additional facilities at Milne Port, including the construction of a fixed ore dock, ore stockpile and reclaim area, ship loading facilities and an accommodations camp.

### 6.1.1 Procedural History

*The following excerpt is reproduced from the NIRB's "Cumulative Effects Assessment Framework Workshop Report in relation to Baffinland Iron Mines Corporation's Mary River Project (NIRB File No. 08MN053), April 2024".*

**The Original Mary River Project (2012)**

The Mary River Project (the Project) as originally approved in 2012 consisted of mining iron ore from the reserve at Deposit No. 1 at a nominal production rate of 18 million tons per year (Mtpa). The Project included the extended exploration, construction, operation, closure, and reclamation of an open-pit mine and associated infrastructure for extraction, transportation and shipment of iron ore. As set out in Figure 1 below, the Project had three (3) main project locations – the Mine Site, the Port at Milne Inlet north of the mine site (Milne Port), and a Port at Steensby Inlet south of the mine site

(Steensby Port). Milne Port was proposed to be connected to the Mine Site by the existing Tote Road (as improved for the Project), approximately 100 kilometers (km) in length. Steensby Port was proposed to be connected to the Mine Site by a 150 km Railway (South Railway), and the iron ore was planned to be shipped year-round on purpose-built ore carriers out of Steensby Port (the Southern Shipping Route). During the construction period, supplies and equipment required for construction at the Mine Site and the northern portion of the proposed South Railway would be received through Milne Port. While construction equipment and supplies for Steensby Port and the southern portion of the South Railway would be received at Steensby Port. It was expected that Steensby Port facilities and the South Railway would take up to four (4) years to construct.

The Board concluded its assessment of the original Mary River Project in September 2012 and recommended that the Project be allowed to proceed subject to over 180 terms and conditions.[xxv] The original Mary River Project was approved by the Minister and Project Certificate No. 005 governing the Project was issued on December 28, 2012. To-date, significant elements of the original Mary River Project have not been constructed, although this infrastructure remains authorized under Project Certificate No. 005, including: the port at Steensby Inlet, the South Railway from the mine site to Steensby Inlet, and the fleet of purpose-built ice-breaking ore carriers.

For further information on the original Mary River Project, please refer to the Project Dashboard on the NIRB's Public Registry at www.nirb.ca/project/123910.

**The Early Revenue Phase Proposal (Amendment No.1)**

In January 2013, Baffinland applied for an amendment to the original Mary River Project, seeking to modify the project by using the previously approved mining infrastructure to mine and transport 3.5 Mtpa of ore (up to 4.2 Mtpa if Operational Flexibility is required) along the Tote Road north to Milne Port (Figure 2) for shipment during the open water season only. The purpose of this proposal was to use the Northern transportation and shipping corridor to generate sufficient revenue to fund the construction of the southern railway, Steensby Port, and the purpose-built ore carriers, allowing the original Project to be realized at a later date. Consequently, the Early Revenue Phase Proposal (ERP) changed the shipping route from Foxe Basin in the South to Eclipse Sound in the North of Baffin Island. Following the NIRB's assessment of the ERP Proposal, the amendment was approved to proceed, and the Mary River Project Certificate No. 005 was subsequently amended and re-issued on May 28, 2014.

For further information on the Early Revenue Phase Proposal, please refer to the Project Dashboard on the NIRB's Public Registry at www.nirb.ca/project/124700.

**The Production Increase Proposal (Amendment No. 2)**

In April 2018, Baffinland submitted the "Production Increase, Fuel Storage and Milne Port Accommodations Modification Proposal" (Production Increase Proposal) to the NIRB. This proposed an increase in the volume of ore that would be trucked from the Mine Site north to Milne Port via the Tote Road from 4.2 Mtpa to 6 Mtpa. The scope of the Production Increase Proposal also included the

addition of a 15 million-liter (ML) diesel fuel tank within the existing Fuel Storage Facility at Milne Port and installation of a new 380-person accommodation at Milne Port.

On August 31, 2018, the NIRB issued its Reconsideration Report and Recommendations to the then Minister of Intergovernmental, Northern Affairs and Internal Trade (as the Minister was referenced at that time; the Minister is now referenced as the Minister of Northern Affairs) recommending that only the camp upgrades and fuel storage expansion aspects of the Production Increase Proposal be allowed to proceed. The Board recommended that due to the potential for the trucking and shipping aspects of the Production Increase Proposal to result in adverse ecosystemic effects beyond what was previously considered by the NIRB during the Board's Review of the original Mary River Project (2012) and the subsequent Early Revenue Phase Proposal (2014), the increased transportation and shipping of ore not be allowed to proceed. On September 30, 2018, the Minister accepted the Board's positive recommendations; however, the Minister varied the Board's recommendation that the increased trucking and shipping not be allowed to proceed and authorized the increased transportation and shipping of up to 6 Mtpa through Milne Inlet until the end of 2019. Subsequently, the amended Project Certificate No 005 was issued on October 30, 2018.

For further information on the Production Increase Proposal, please refer to the Project Dashboard on the NIRB's Public Registry at www.nirb.ca/project/124702.

**The Extension Request to the Production Increase Proposal (Amendment No. 3)**

On December 6, 2019, Baffinland submitted the "Extension Request to the Production Increase Proposal" (the Extension Request) to request the Board to further modify Conditions 179(a) and 179(b) of the Mary River Project Certificate[xxvi] to extend the 6 Mtpa trucking and shipping limit until the Board had completed its assessment of Baffinland's additional proposed changes to the approved Project under the "Phase 2 Development Proposal". Baffinland indicated that the Extension Request was necessary because the next steps (Public Hearings) associated with the Board's assessment of the Phase 2 Development Proposal were not completed in November 2019 and the Board was considering the suspension of the assessment and the completion of additional process steps before reconvening the Public Hearing. On March 4, 2020, after the NIRB's assessment of the potential ecosystemic and socio-economic effects of the Extension Request, the Board provided their recommendation to the Responsible Ministers recommending the approval of Baffinland's Extension Request Proposal, which authorized the extension of the 6 Mtpa transportation and shipping limit via the northern route until the Board's assessment of the Phase 2 Development Proposal was completed or December 31, 2021.

On May 19, 2020, then Minister of Northern Affairs wrote to the Board on behalf of the Responsible Ministers to accept the Board's recommendation regarding Term and Conditions 179 (a) and (b) of the Extension Request. The Minister also varied Term and Conditions 179 (c) and 183 in Project Certificate No. 005, Amendment No. 3 (issued on June 18, 2020), to ensure those conditions were meeting their original intent.

For further information on the Extension Request to the Production Increase Proposal, please refer to the Project Dashboard on the NIRB's Public Registry at www.nirb.ca/project/124703.

**The Production Increase Proposal Renewal (Amendment No. 4)**

While waiting for the Ministers Decision on the Phase 2 Development Proposal, in an effort to maintain production levels and reduce the risk of adverse socio-economic impacts from employee lay-offs, Baffinland submitted an application on June 13, 2022, requesting the Board to further modify Conditions 179(a) and 179(b) of the Mary River Project Certificate[xxvii] as part of their "Production Increase Proposal Renewal" (PIP Renewal). Specifically, Baffinland requested that that Board considered the continued trucking and shipping of up to 6 Mtpa of iron ore from the Mine Site to Milne Port using the existing northern route until December 31, 2022.

On September 22, 2022 after the NIRB's impact assessment of the potential ecosystemic and socio-economic effects of the PIP Renewal, the Board provided their recommendation to the Responsible Ministers recommending approval of Baffinland's PIP Renewal. On October 4, 2022, the Minister of Northern Affairs wrote to the Board on behalf of the Responsible Ministers to accept the Board's recommendation regarding Term and Conditions 179 (a) and (b) of the PIP Renewal along with the addition of five (5) new Terms and Conditions and the modification of two (2) others to enshrine Baffinland's commitments made during the Board's assessment of the PIP Renewal as enforceable Terms and Conditions (Appendix B of Project Certificate No. 005, Amendment No. 004). On November 3, 2022, the Board issued Project Certificate No. 005, Amendment No. 4 including the modifications to Terms and Conditions 49, 77, 179 (s) and (b), 183 and the additional new Terms and Conditions 185-189.

For further information on the PIP Renewal Proposal, please refer to the Project Dashboard on the NIRB's Public Registry at www.nirb.ca/project/124710.

**The Sustaining Operations Proposal (Amendment No. 5)**

On March 16, 2023, Baffinland submitted the Sustaining Operations Proposal to the Board requesting to modify Terms and Conditions 179 (a) and (b) to allow Baffinland to extend trucking and shipping up to 6.0 Mtpa using the northern transportation route. Baffinland further requested Operational Flexibility allowing them to ship up to an additional 0.9 Mtpa of stranded ore that remained on the stockpile at Milne Port owing to adverse weather and other shipping conditions in previous years. The Board conducted the assessment of the Sustaining Operations Proposal as a reconsideration with a technical review in writing followed by an in-person Community Roundtable in Iqaluit and Pond Inlet. Following the receipt of oral and written comments, the Board provided its Reconsideration Report and Recommendations to the Responsible Ministers on September 13, 2023 indicating that the Sustaining Operations Proposal should be approved to proceed until December 31, 2024 and recommending that terms and conditions 28, 35, 76, 82, 83 (a), 85, 99, 101, 150 and 179 (a) and (b) of Project Certificate No. 005 be amended to limit the potential for adverse effects from the proposed activities. The Responsible Ministers accepted the Board's recommendation on October 17, 2023. After the completion of a Project Certificate Workshop on November 3, 2023, the Board issued Project Certificate No. 005, Amendment No. 005 on November 17, 2023.

For further information on the Sustaining Operations Proposal, please refer to the Project Dashboard on the NIRB's Public Registry at www.nirb.ca/project/125767.

**The Phase 2 Development Proposal**

On May 13, 2022, the Board issued their Reconsideration Report and Recommendations to the Minister of Northern Affairs. The Board concluded that the Phase 2 Development Proposal has the potential to result in significant adverse ecosystemic effects on marine mammals, fish, caribou and other terrestrial wildlife along with vegetation and freshwater ecosystems which could lead to adverse socio-economic effects on Inuit. The Board further expressed that the proposal poses the potential for transboundary effects on marine mammals, fish, and the marine environment generally. As a result of these findings, the Board remained concerned that these adverse effects would not be able to be mitigated through adaptive management and monitoring programs and consequently recommended that the Proposal should not be allowed to proceed as this time. On November 16, 2022, the Responsible Minister provided Correspondence to the Board providing its decision and acceptance of the Board's Recommendation that the Phase 2 Development Proposal should not be allowed to proceed to the permitting stage.

For further information on the original Mary River Project, please refer to the Project Dashboard on the NIRB's Public Registry at www.nirb.ca/project/124701.

### 6.1.2 Project Components Built to Date

While the scope of the previously approved project is stated to encompass the entire mine life, due several factors addressed in each amendment to date, Baffinland has constructed only part of the transportation infrastructure proposed. The components of the Mary River Project constructed include:

- The Mine Site:
    - Accommodations Facilities;
    - Maintenance Shops
    - Deposit No. 1 Working Face;
    - Wate Rock Storage Area;
    - Fuel Tank Farms;
    - Outdoor Crusher Facility;
    - Landfill and Landfarm;
    - Airport and Runway;
    - Various Laydown facilities;
    - Road Networks;
- The Tote Road from the Mine Site to Milne Port;
    - Bridges and Culverts for Water Crossings;
- Milne Port:
    - Accommodations Facilities;
    - Maintenance Shops;
    - Various Road Networks;
    - Landfarm;
    - Various Laydown Facilities;

- Road Networks;
- Ore Stockpile and Conveyor system; and
- Ship Loader and Ore Dock.

### 6.1.3 Requirements of Project Certificate No.005 Terms and Conditions

There are 6 project-specific terms and conditions in NIRB Project Certificate No. 005 for the Mary River Project (November 17, 2023; Doc ID 347553) that explicitly reference cumulative effects: Terms and Conditions 50, 56, 58, 111, 112 and 169. Collectively these specific terms and conditions require:

- Terrestrial environment monitoring plans must contain clear thresholds to allow for the identification of long-term trends and cumulative effects where project interactions are identified (it is acknowledged by NIRB that coordination and cooperation among governments, QIA and communities is required to achieve this goal).
- A strategy for the recovery of terrestrial wildlife habitat in the Project area in a progressive manner consistent with the Nunavut Wildlife Act. Where project effects exceed predictions, adaptive management may require additional mitigation responses to limit the project contributions to regionally measured cumulative effects to caribou survival, breeding propensity, and population dynamics (all of which could be influenced by regional factors other than the Project, e.g. climate change and hunting).
- A demonstration and description of how project monitoring results, including the railway, road traffic, air traffic and dustfall could contribute to regional cumulative effects.
- A monitoring protocol which includes acoustical monitoring to continue evaluation of the potential short term and long term effects, and contribution of the project to regional cumulative effects of vessel noise on marine mammals and marine mammal populations. (i.e. recognizing that Baffinland ships are not the only ships operating in the region or contributor to cumulative effects impacting marine mammals).
- Development of clear thresholds for determining if negative impacts as a result of vessel noise are occurring, with identifications of zones where cumulative noise could be mitigated due to biophysical features (e.g., water depth, distance from migration routes, distance from overwintering areas etc.); and vessel transit planning, for all seasons, to determine the degree to which cumulative sound impacts can be mitigated through the seasonal use of different zones.
- A monitoring protocol that includes acoustical monitoring that provides an evaluation of the negative effects (short and long term cumulative) of vessel noise on marine mammals and development of related mitigation.

## 6.2 Cumulative Effects Concerns Raised to NIRB for the Mary River Project

The following excerpts have been compiled to provide a summary overview of cumulative effects concerns raised by parties during previous NIRB assessments for the Mary River Project and associated amendments; it is not intended to be exhaustive and is provided for ease of reference only.

**The Original Mary River Project (2012):**

*The following excerpt is reproduced from: NIRB File No. 00MN053, Final Hearing Report for the Mary River Project, Baffinland Iron Mines Corporation, September 14, 2012 (Doc ID No. 286425).*

As outlined in the specific discussion of Valued Components throughout this report, although cumulative effects were identified as a possibility for several Valued Ecosystem Components, particularly caribou and marine mammals, the Proponent concluded that no significant cumulative effects are anticipated to result from the Project. With respect to those effects associated with the Proponent's development of additional Deposits No. 2 - 9 and the Separation Lake hydroelectric project, the Proponent correctly identified that these additional projects and activities would be required to undergo additional assessment of the potential effects of these projects and activities in conjunction with effects of the Mary River Project prior to proceeding.

- In their written submissions and over the course of the Final Hearing, the Board heard from Elders, parties and Intervenors that cumulative effects had not been fully accounted for in the FEIS: The Government of Nunavut (GN) and several community representatives indicated that the cumulative effects of in-migration and out-migration may have been underestimated.
- The Qikiqtani Inuit Association (QIA) stated that the Proponent has not adequately assessed how the impacts of Project activities may interact over time and space to have cumulative effects.
- Fisheries and Oceans Canada (DFO)[xxviii] and Environment Canada (EC)[xxix] expressed the view that the cumulative effects of ballast water releases over time had not been fully considered.

Representatives from Makivik Corporation in Nunavik also indicated that the Project's potential for cumulative effects should also consider the other existing and planned developments in the area, including those activities taking place in Nunavik.

> *There are many things going on. The fact that we're working closely together with them -- we have two mining sites in Nunavik. One is called Raglan Mine, and it's in operation, and we share property share, and they've numerous exploration activities going on. They are right before us.*[xxx]

At the Final Hearing, community members also indicated that the unprecedented shipping associated with the Project should also be viewed in the context of receding ice making the Northwest Passage more likely to be used for international transit:

*I had asked the government, when this -- the international shipping is becoming more prevalent, especially through the northwest passage. I -- I -- I wish it, as -- like this, that it would be used more and more, as more ships come in to the north. I don't want to -- I don't want it to be only used for northerners. I want to -- it to be used as a -- as a passage and gateway*[xxxi].

**The Early Revenue Phase Proposal (2014):**

*The following excerpt is reproduced from: NIRB File No. 00MN053, Public Hearing Report for the Mary River Project: Early Revenue Phase Proposal, Baffinland Iron Mines Corporation, March 17, 2014 (Doc ID No. 319779).*

Other than expanding the temporal boundaries of the assessment, only two activities introduced with the Early Revenue Phase Proposal were identified by the Proponent as having the potential to result in a change to the cumulative effects from the Approved Project:

- The transportation of ore by trucks from the Mine Site to Milne Port, and
- The shipment of 3.5 Mt/a of ore via Milne Inlet-Eclipse Sound shipping route.

Specifically, the Proponent reviewed whether the transportation of ore by trucks via the Tote Road would result in increased cumulative effects on air quality and on terrestrial wildlife including caribou, and concluded that no significant cumulative effects would result from this activity. With respect to the shipment of ore via Milne Port, the Proponent also reviewed the potential for cumulative effects on water and sediment quality, marine fish and habitat, as well as marine mammals. The Proponent's assessment of these potential effects concluded that although there could be effects at the Port site, these effects would be localized (essentially only near the ore loading dock) and that the activities associated with the Early Revenue Phase Proposal would not result in cumulative effects.

In addition to concerns with the temporal scope of the Early Revenue Phase Proposal and the potential for this scope to create cumulative effects when added to the Approved Project, the Pond Inlet Mary River Project Committee expressed concerns regarding the Proponent's conclusions that there would be no cumulative effects in the following areas:

*As long as reclamation plans and security deposits are in place, cumulative effects on caribou movement and mortality are not expected. We disagree. Maybe for now, but maybe once the caribou come back to the area it might be a different story. It is concluded that there will be no cumulative effects associated with the increased shipping activities along the Milne Inlet/Eclipse Sound shipping route. We disagree. There may be effects after the third year of operation. I don't know.*

*Effects on marine water and sediment quality will be limited to small areas near the ore loading dock and are predicted not to be significant. We disagree, but we will soon find out if that's true if the project goes ahead. Effects on marine habitat will be limited to a small footprint of ore and are predicted not to be significant. We disagree, but we will soon find out if that's true if the project goes ahead. Key indicator species from open-water shipping*

*activities are not predicted to be significant. We disagree, but we will soon find out if the project goes ahead.*[xxxii]

**The Phase 2 Development Proposal (2022):**

*The following excerpt is reproduced from: NIRB File No. 00MN053, Reconsideration Report and Recommendations for the Baffinland's Phase 2 Development Proposal, Baffinland Iron Mines Corporation Project Certificate No. 005, May 13, 2022 (Doc ID No. 339558).*

The Board acknowledges that throughout the assessment of the Phase 2 Development Proposal, several Intervenors identified concerns regarding the adequacy of the cumulative effects assessment performed by the Proponent. Parties particularly highlighted deficiencies with respect to the analysis of cumulative effects on caribou and in the marine environment. Multiple parties, including the QIA, the Hamlet of Clyde River, the MHTO, and the GN questioned whether Baffinland had conducted a sufficient analysis regarding the potential disruption of caribou migration when both the North Railway and South Railway have been constructed and in operation, as this infrastructure would completely bisect/cut across Baffin Island.

Further concerns were raised by the MHTO and community members regarding the long-term effects on caribou from the noise and vibration associated with the railway. Baffinland concluded that there would be minimal effects; however, the MHTO and community members did not agree with this statement. Baffinland committed to updating their Terrestrial Environment Mitigation and Monitoring Plan to reflect research performed by Baffinland to estimate zones of influence and disturbance, with updated estimates of cumulative habitat losses for caribou to be provided to the Board at least every five (5) years. However, as noted in Section 3 and the Board's discussions in Section 5, Intervenors have expressed concerns regarding the effectiveness of existing monitoring programs. Further, as outlined in Section 5.1.1.7 in the Board's discussion of Adaptive Management, several Intervenors have expressed dissatisfaction with the functioning of existing Working Groups and the ability of these Groups to produce important components of the adaptive management system for the Project such as thresholds, indicators, and mitigation measures. The Board shares the concerns about whether the existing Working Groups or the structures proposed under the ICA would be able to fulfil their critical roles in relation to the monitoring and adaptive management of potential cumulative effects when gaps and uncertainty remain in the prediction of cumulative effects on caribou.

Baffinland has stated that its current cumulative effects assessment measures caribou response to rail, road, mining, helicopter overflights, and communities. The Board notes that Baffinland performed this analysis by grouping general sensory disturbances rather than performing a separate analysis for each. Baffinland noted that caribou are identified in the ICA as a priority for monitoring and study requirements.

With respect to the potential for cumulative effects on marine mammals, DFO, QIA, and other parties stated they believed the study areas for the effects on marine mammals should be larger due to the migratory nature of animals such as narwhal. These parties indicated that the smaller area selected by Baffinland would not be sufficient to capture the project effects due to increased shipping and

reiterated their previously stated concerns with respect to the effectiveness of current project monitoring and the dysfunction of the relevant Working Groups. A community member also stated that local knowledge indicates the whale population consists of a single stock that migrates around the entire North Baffin region.

> ...we know for a fact as Inuit, Pond Inlet and Clyde River and to Arctic Bay, we have one stock. It's the same group of beluga that migrate through these communities to Kuganajuk [phonetic] and right over to Kugaaruk. They migrate through our communities all the way over to Kugaaruk, the same stock, and on their way back, the same stock goes through Pond Inlet.[xxxiii]

Noting concern about the potential for cumulative and transboundary effects on marine wildlife, the QIA further requested that Baffinland identify and implement mitigation and adaptive management measures to avoid impacts on marine mammals outside of the Regional Study Area. The QIA and Oceans North expressed dissatisfaction with Baffinland's cumulative effects assessment, with QIA identifying a lack of data regarding climate change and its potential cumulative effects on the Phase 2 Development Proposal. Oceans North stated that Baffinland's cumulative effects assessment should predict all possible impacts and determine how to monitor all impacts with multiple indicators.

> So even though it is difficult to estimate impacts from the past, present, and future projects, it is still necessary, and we are required to try. The cumulative effects assessment should predict if there will be possible overall impacts and should determine how to monitor for these impacts using multiple indicators. However, if a prediction about what cumulative effects will happen is not made, we cannot monitor for it. And as of yet, Baffinland has made no clear proposal for cumulative effects monitoring. A couple of days ago, Baffinland stated that they don't know exactly what is causing the changes to animal populations and that their Phase 2 monitoring programs will separate out the cause of those impacts. However, the problems being seen now in this current phase are showing us that the current monitoring programs are not able to separate project impacts from other issues.[xxxiv]

The Board notes that while a cumulative effects assessment must be comprehensive, the Board does not require every possible impact to be identified. However, the Board notes that effective prediction of cumulative effects requires an understanding of the effects of existing projects. This understanding requires monitoring data that, combined with local observations and knowledge, provides a reasonable basis for making decisions about predicted effects and can be relied on to establish agreed-upon triggers and thresholds to identify if effects exceed predicted levels. However, as observed several times throughout this assessment and as indicated above, parties do not agree on what existing monitoring data and Inuit knowledge and experience is telling us about the effects of the existing Mary River Project. There is also disagreement about the method of collection and the role and responsibilities for evaluating and responding to monitoring data, and in relation to how to incorporate and apply Inuit knowledge and experience. Without agreement on the existing information and impacts, the validity of predictions of cumulative effects remain uncertain and cannot be relied upon.

The Board, therefore, is not confident that the predictions provided by Baffinland are sufficient to reliably assess the cumulative effects of the Phase 2 Development Proposal in combination with the approved Mary River Project.

**Cumulative Effects Assessment Framework Workshop (2024)**

*The following excerpt is reproduced from: Nunavut Impact Review Board, Cumulative Effects Assessment Framework Workshop Report in relation Baffinland Iron Mines Corporation's Mary River Project, NIRB File No. 00MN053, April 8, 2024 (Doc ID No. 349249).*

The Workshop further clarified the concerns of parties regarding previous approaches taken by the Proponent to the assessment of cumulative effects for the original project proposal and its various project amendment applications, with requests for consideration of the following within an updated CEA Framework for the Project:

- An expansion of Valued Components (VCs) included within the CEA based on Inuit knowledge and advice, up to date research, and monitoring of actual vs. predicted effects;
- An expanded temporal scope commencing with a time prior to project development to a future point where project impacts are no longer measurable or can no longer be felt;
- An expanded geographic scope for some VCs which considers the full range of impacted communities inclusive of their travel routes, the range of mobile aquatic and terrestrial wildlife, and watersheds where project effects may be expected;
- Expanding and clarifying the scope of other contributions to cumulative effects that should be considered; for example not limiting the scope to only the effects of physical activities (which leads to inadequate consideration or exclusion of other ongoing and anticipated stresses such as climate change effects) and limiting the scope to only future activities triggering an approval process (which fails to capture consequential and induced developments and likely future scenarios in phased development that have not yet advanced to the proposal submission stage);
- Revisiting/updating of impact predictions associated with approved project components that are not yet constructed (e.g. railway) which may have become outdated;
- Reflecting the recent establishment of Tallurutiup Imanga National Marine Conservation Area and expectations around increasing pleasure craft/tourism; and,
- Ensuring the CEA Framework increases public confidence in the effective management of project-related effects.

## 6.3 References Cited

The following references are cited as endnotes throughout the main body of this document:


[i] Terminology and Definitions, NIRB Technical Guide Series, Nunavut Impact Review Board, 2018

[ii] Terminology and Definitions, NIRB Technical Guide Series, Nunavut Impact Review Board, 2018

[iii] Nunavut Planning and Project Assessment Act, S.C. 2013, c. 14, s. 90

[iv] Terminology and Definitions, NIRB Technical Guide Series, Nunavut Impact Review Board, 2018

[v] Adaptive Management Plan, Draft For Review Purposes, Baffinland Iron Mines Corporation, Apr. 15, 2024 (Doc. ID No. 349416)

[vi] International Association for Impact Assessment, accessed from https://iaia.org/cumulative-effects/cumulative-effects-assessment-and-management/

[vii] Government of Canada. Accessed from https://www.canada.ca/en/services/environment/cumulative-effect/about.html

[viii] Nunavut Planning and Project Assessment Act, S.C. 2013, c. 14, s. 90

[ix] Terminology and Definitions, NIRB Technical Guide Series, Nunavut Impact Review Board, 2018

[x] Government of Canada. Technical Guidance for Assessing Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012. Accessed from https://www.canada.ca/en/impact-assessment-agency/services/policy-guidance/assessing-cumulative-environmental-effects-ceaa2012.html

[xi] Cumulative Effects Assessment – IAAC's Guidance, Nova Scotia Offshore Wind Regional Assessment Committee, August 16, 2024. https://ceaa-acee.gc.ca/050/documents/p83514/158582E.pdf

[xii] Guidelines for the Preparation of an Impact Statement for West Kitikmeot Resources Corp.'s Grays Bay Road and Port Proposal (NIRB File No. 24XN038), Nunavut Impact Review Board, Jan. 30, 2026.

[xiii] Terminology and Definitions, NIRB Technical Guide Series, Nunavut Impact Review Board, 2018

[xiv] Joseph C. et al. Improving Cumulative Effects Assessment: Alternative Approaches Based Upon An Expert Survey and Literature Review. Impact Assessment and Project Appraisal, 2023, Vol. 41, No. 2, pp.162-174.

[xv] Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada, 25 May 1993, s.12.3.3

[xvi] Nunavut Planning and Project Assessment Act, S.C. 2013, c. 14, s. 90.i and s.103(1)f)

[xvii] Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada, 25 May 1993, s. 12.7.1

[xviii] Nunavut Planning and Project Assessment Act, S.C. 2013, c. 14, s.135(5)

[xix] Agreement Between the Inuit of the Nunavut Settlement Area and Her Majesty the Queen in Right of Canada, 25 May 1993, s. 12.7.4 and s.12.7.5; Nunavut Planning and Project Assessment Act, S.C. 2013, c. 14, s. 135(6)

[xx] United Nations, Report of the World Commission on Environment and Development, General Assembly Resolution 42/187, 11 December 1987.

[xxi] Qikiqtani Inuit Association letter to the NIRB dated March 22, 2024 regarding follow up to the CEAF Workshop (Doc ID No. 348767)
[xxii] Mary River Project Environmental Impact Statement, Volume 1 Main Document, 2011, p. 91
[xxiii] Mary River Project Phase 2 Proposal FEIS Addendum August 2018 Technical Supporting Document TSD27 Cumulative and Transboundary Effects Assessment, Table 1.1 pp. 7-11
[xxiv] Qikiqtani Inuit Association letter to the NIRB dated March 22, 2024 regarding follow up to the CEAF Workshop (Doc ID No. 348767)
[xxv] NIRB File No. 00MN053, Final Hearing Report for the Mary River Project, Baffinland Iron Mines Corporation, September 14, 2012 (Doc ID No. 286425).
[xxvi] Baffinland letter to the NIRB regarding their Extension Request to the Production Increase Proposal (Doc. ID No. 327657).
[xxvii] Baffinland letter to the NIRB regarding their Extension Request to the Production Increase Proposal (Doc. ID No. 327657).
[xxviii] D. Moggy, DFO, NIRB Final Hearing File No.: 08MN053 Transcript, July 18, 2012, p. 757, lines 1-10.
[xxix] S. Forbrich, EC, NIRB Final Hearing File No.: 08MN053 Transcript, July 18, 2012, pp. 725-726, line 26 and lines 1-10.
[xxx] A. Alaku, Makivik Corporation, NIRB Final Hearing File No.: 08MN053 Transcript, July 19, 2012, p. 913, lines 9-14.
[xxxi] A. Kublu, Pond Inlet, NIRB Final Hearing File No.: 08MN053 Transcript, July 27 (pm), 2012, p. 2517, lines 16-23.
[xxxii] C. Sangoya, Pond Inlet Mary River Project Committee, NIRB Public Hearing File No.: 08MN053 Transcript, January 30, 2014, p. 758-759, lines 3-27 and lines 1-2.
[xxxiii] C. Inuarak. Pond Inlet, NIRB Public Hearing File No.: 08MN053 Transcript, Vol 19, November 4, 2021 at pp. 3346-3347 lines 22-26 and lines 1-2.
[xxxiv] A. Joynt. Oceans North, NIRB Public Hearing File No.: 08MN053 Transcript, Vol 19, November 4, 2021 at pp. 3505-3506 lines 20-26 and 1-12.