



Application for Amendment No. 2 Type A Water Licence 2AM-MRY1325

Phase 2 Proposal

Nunavut Water Board Technical Meeting Iqaluit November 12-13, 2019



Introduction

Overview of Presentation

- Phase 2 Proposal Review Process
- Baffinland's Currently Approved Project
- Phase 2 Proposal Overview
- Scope of Requested Amendment
- Technical Comments Received
- Remaining Issues
- Management Plan Update



An aerial photograph of a large, deep blue reservoir. A light brown dirt road runs along the left side of the water. The surrounding landscape is hilly and covered in patches of snow and dry vegetation. In the distance, more hills and a cloudy sky are visible.

Phase 2 Proposal Review Process

Phase 2 Proposal Review Process

- **Reconsideration of Project Certificate No. 005 by the Nunavut Impact Review Board**
 - Final Hearing report by December 24
 - Minister's Decision up to 90 days following
- **Amendment of Type A Water Licence under review by the Nunavut Water Board**
 - Sept 2018 – Phase 2 Amendment submitted
 - May 2019 – Updated Application submitted
 - Aug 2019 – Responses to Technical Comments submitted
 - **Nov 2019 – Technical Meeting**
 - Dec 2019 – Confirm commitments from technical meeting
 - Jan 2019 – Pre-Hearing Conference & Decision Report
 - Jan 2019 – 60-day Notice of Public Hearing
 - Mar 2019 – Public Hearing in Pond Inlet



Baffinland's Amendment Application

- Application
 - Initial Application – September 2018
 - Updated Application – May 2019
- Four Parts
 - Part 1 – Main Report
 - Part 2 – Application and Proponent Info
 - Part 3 – Technical Information
 - Part 4 – Management Plans

Baffinland Iron Mines Corporation Mary River Project - Phase 2 Proposal

Updated Application for Amendment No. 2 of Type A Water Licence 2AM-MRY1325

Part 1 Main Report

Updated Application for
Amendment No. 2 of Type A Water
Licence 2AM-MRY1325

Part 2 Application and Proponent Information

Attachments:

- | | |
|---|-------------------------------------|
| 1 | Executive Summary |
| 2 | Water Licence Amendment Application |
| 3 | Application Concordance |
| 4 | Regulatory Correspondence |
| 5 | Compliance Report |
| 6 | Proponent Information |

Part 3 Technical Information

Attachments:

- | | |
|----|---|
| 7 | Design Criteria |
| 8 | Geotechnical Studies |
| 9 | Geochemical Evaluations |
| 10 | North Railway Detailed Figures |
| 11 | North Railway Design |
| 12 | Road Modifications |
| 13 | Watercourse Crossings |
| 14 | Mine Site Materials and Water Management |
| 15 | Milne Port Material Handling and Water Management |
| 16 | Temporary Ore Staging Area |
| 17 | Mine Site Fuel Tank Farm |
| 18 | Water Supply and Sewage |
| 19 | Milne Port Landfarm Manual |

Part 4 Management Plans

Attachments:

- | | |
|----|--|
| 20 | Emergency Response Plan |
| 21 | Spill Contingency Plan |
| 22 | Surface Water, Aquatic Ecosystem Management Plan |
| 23 | Fresh Water Supply, Sewage, and Wastewater Management Plan |
| 24 | Waste Management Plan |
| 25 | Hazardous Materials and Hazardous Waste Management Plan |
| 26 | Borrow Pits and Quarry Management Plan |
| 27 | Aquatic Effects Monitoring Plan |
| 28 | Environmental Protection Plan |



Approved Project

Mary River Project Overview

- Project Certificate 005, Amendment 2
- Type 'A' Water Licence 2AM-MRY 1325, Amendment 1



1. ካልካላ ስፔላይት ላይ ልጋጋጅ ማድረግ

1. Ore is blasted at the open pit mine



2. ማሳጠጥ ማድረግ ለማሳጠጥ ካልካላ ስፔላይት ላይ

2. Trucks haul the blasted ore to the crusher



3. ስፔላይት ካልካላ ስፔላይት ላይ ማሳጠጥ ማድረግ

3. Blasted ore is crushed into lump and fines



4. ማሳጠጥ ማድረግ ለማሳጠጥ ማድረግ

4. Trucked to the Port site and stored



5. ማሳጠጥ ማድረግ ለማሳጠጥ ካልካላ ስፔላይት ላይ

5. A ship loader is used to load iron ore on ships



6. ማሳጠጥ ማድረግ ለማሳጠጥ ማድረግ

6. Ore is shipped to our customers worldwide



Approved Water Licence

- Type 'A' Water Licence 2AM-MRY 1325, Amendment 1
 - Water Use
 - Construction Phase – 689,000 m³ per year
 - Operations Phase – 353,000 m³ per year
 - Waste Incineration, landfarm and landfill
 - Discharge of treated effluent
 - Sewage
 - Waste Rock facility
 - Run of Mine Stockpile
 - Crushing facility
 - Ore Stockpiles
 - Fuel Containment



Management Plans

Approved Management Plans

- Environmental Protection Plan
- Quarry and Borrow Source Management Plan (and source specific plans)
- Emergency Response Plan
- Spill Contingency Plan
- Surface Water and Aquatic Ecosystems Management Plan
- Fresh Water Supply, Sewage and Wastewater Management Plan
- Roads Management Plan
- Waste Management Plan
- Hazardous Materials and Hazardous Waste Management Plan
- Life-of-Mine Waste Rock Management Plan
- Phase 1 Waste Rock Management Plan



Project Monitoring

Established Monitoring Programs

- Aquatic Effects Monitoring Program
- Environmental Effects Monitoring Program
- Surveillance Network Program
- Lake Sedimentation
- Hydrology
- Fisheries Authorization monitoring
- Tote Road Monitoring Program
- Water crossing installation/modification guideline
- Bi-annual geotechnical inspections



An aerial photograph of a large, deep blue reservoir. A wide, light-brown dirt road or embankment runs along the left side of the water. The surrounding landscape is hilly and covered in patches of snow and brown vegetation. In the distance, more hills and a cloudy sky are visible.

Phase 2 Proposal Overview

Phase 2 Proposal Overview

Scope of the Phase 2 Proposal

- Higher maximum production rate at the Mine Site
- Construction and operation of the North Railway
- Construction and operation of a second ore dock at Milne Port
- Increased open water shipping from Milne Port

The current Licence already contains the mechanisms and provisions to regulate the Phase 2 Proposal, with only modest modifications to the Licence required



Scope of Phase 2 Proposal



Mine Site

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- Increased Mine Production
- New primary crushing facility including stormwater pond
- Relocation of secondary crushing to Milne Port

Surface Water Diversions
New Stormwater Pond



Rail/Road Corridor

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- Crossing Structures and Stream Modifications
- Increased water withdrawal for dust suppression
- Short-term increase in traffic followed by Long-term decrease in Traffic
- Ore Transfer Facility

Surface Water Diversions and Infill
New Stormwater Pond
Increase Water for Dust Suppression



Milne Port

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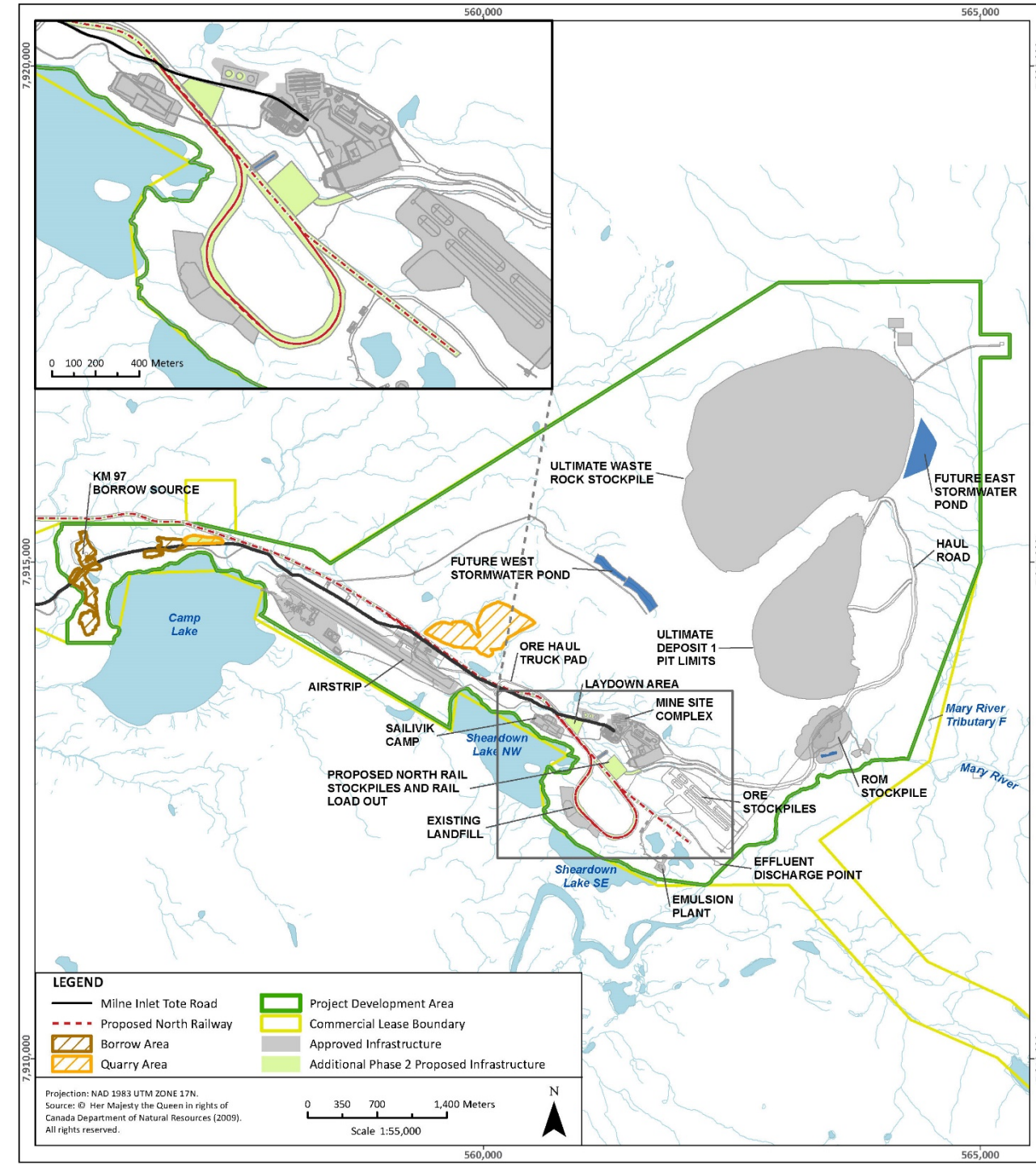
- Decrease in dust relative to Approved Project
- Minor increase in effluent
- Additional waste management
- Subject to *Metal and Diamond Mining Effluent Regulations*

Surface Water Diversions and Infill
New Stormwater Ponds
New Landfill Facility

Scope of Requested Amendment

Mine Site

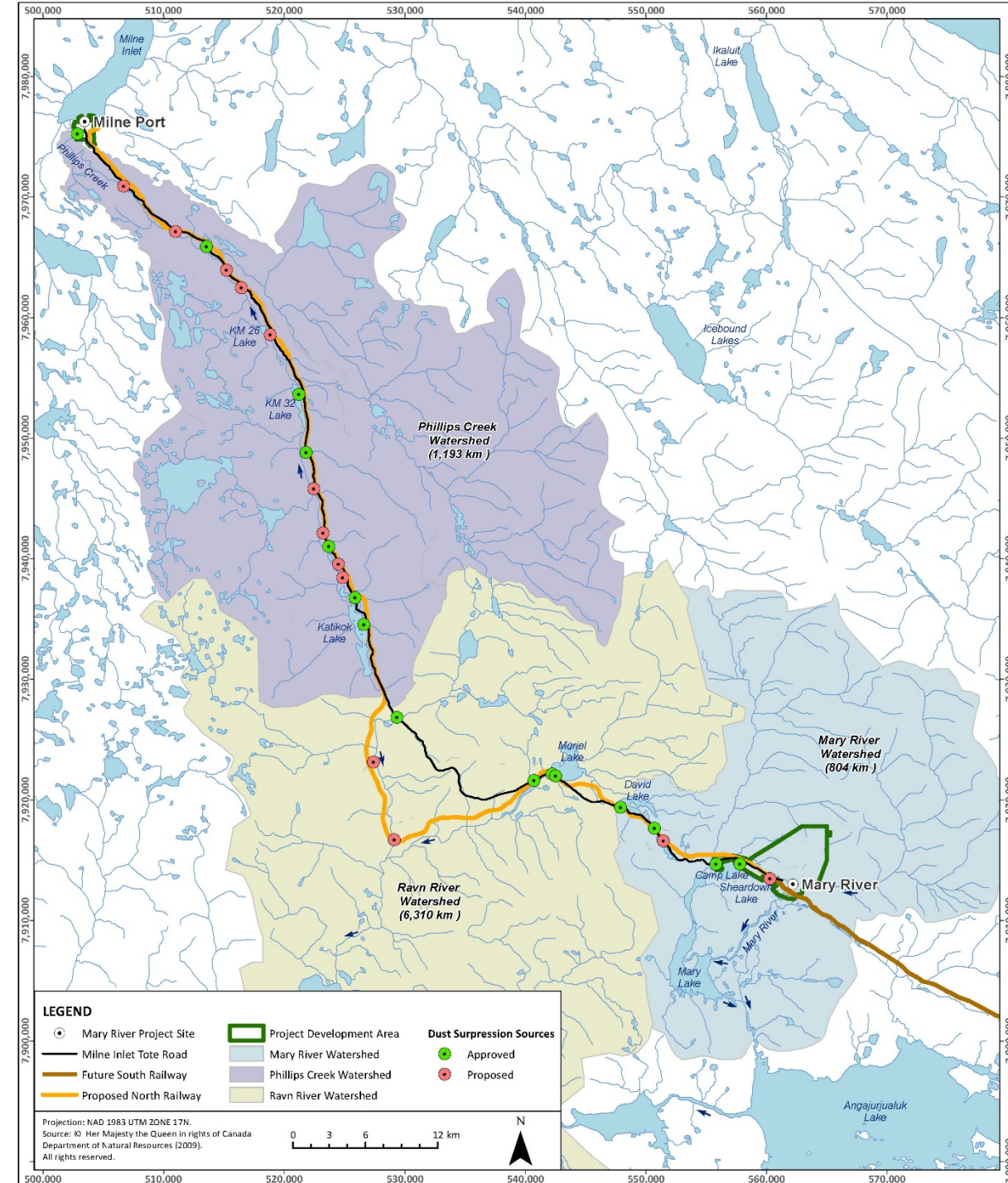
- Rail / Ore Handling
 - Rail loading facility
 - Primary Crushing with water management
- Water use
 - No additional water required
- Waste Management
 - Existing waste management facilities are adequate
 - Rotating Biological Contactor (RBC) Sewage Treatment Plant removed from licence
- Containment Areas
 - No additional fuel storage areas required
- Quarries and Laydown areas



Scope of Requested Amendment

Northern Transportation Corridor

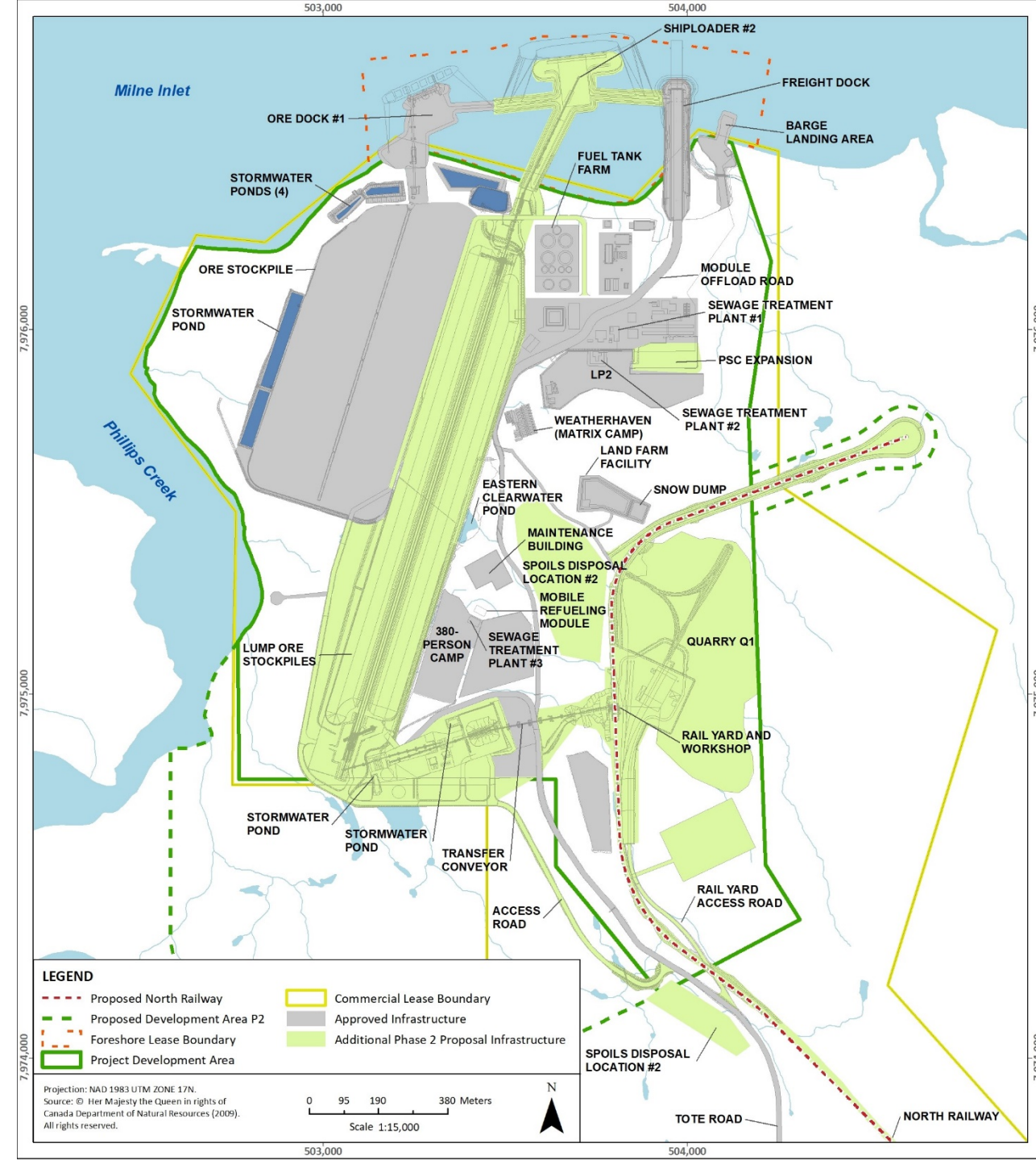
- North Railway and Tote Road
 - Culvert and bridge crossings, pond infills
 - Grade crossings (8)
 - Soil spoils disposal sites
- Temporary facilities
 - Explosives storage (4 new)
 - Construction camps with water/sewage storage tanks (2)
 - Temporary ore staging area at KM57 including water management
- Additional dust suppression
 - 13 new sources; increase to 2,600 m³/day
- Quarries and Laydown areas
 - 34 new quarries and 1 new borrow pit



Scope of Requested Amendment

Milne Port

- Rail
 - Ore unloading facilities
 - Rail maintenance shop
- Ore Handling
 - Indoor secondary crusher and screening
 - Expanded ore stockpiles with water management
 - Second ore dock and shiploader
- Water use
 - Port Site Camp expansion
 - No additional water required
- Waste Management
 - Rail shop oily water treatment
 - New landfill
- Containment Areas
 - No additional fuel storage required
 - Fuel bladder farm removed from licence



Closure and Reclamation

- Minor changes to Closure Objectives, Criteria or Measures
 - Add North Railway and Second Ore Dock (both infrastructure already considered)
- Overall reclamation strategy remains unchanged
 - Return project sites to viable, and where practicable, self-sustaining ecosystems compatible with a healthy environment and human activities
- Increase in reclamation securities associated with new infrastructure, expanded footprint



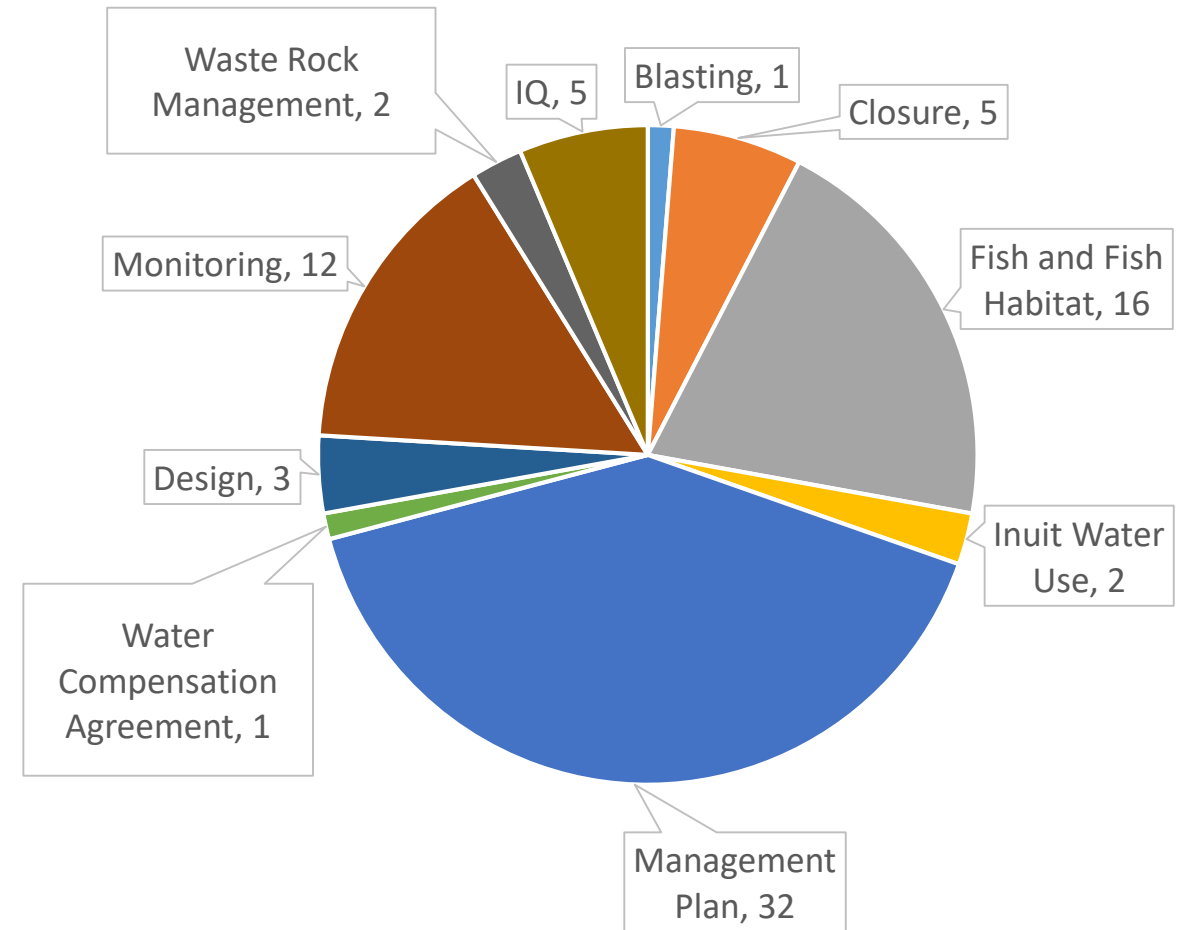


Technical Comments

Technical Comments Received

Comments received from:

- Qikiqtani Inuit Association
- Crown-Indigenous Relations and Northern Affairs Canada
- Environment and Climate Change Canada
- Fisheries and Oceans Canada



Qikiqtani Inuit Association

- 30 Technical Comments
 - Use of Inuit Qaujimanituqangit, Interim Closure and Reclamation Plan, Water Compensation Agreement, Monitoring Programs, Adaptive Management, Reporting Requirements, North Railway Monitoring
- Technical Comments Addressed in Full: 2
- Technical Comments Requiring Supplemental Information : 28
 - Northern Railway – Instrumentation Monitoring Program (QIA 31.1, 15, 21.1)
 - Updated Surface Water and Aquatic Ecosystem Management Plan (QIA 6.1, 8.1, 13.2, 16)

Crown-Indigenous Relations and Northern Affairs Canada

- 9 Technical Comments
 - Waste Rock Management, Pit Development, Interim Closure and Reclamation Plan, Management Plans, Stormwater Ponds, Dust, Annual Security Review Process
- Technical Comments Addressed in Full: 8
- Technical Comments Unresolved: 1
 - CIRNAC TR #6: Design Storm Criteria for Stormwater Ponds

Environment and Climate Change Canada

- 4 Technical Comments
 - Water Treatment, Construction Monitoring, Discharge Criteria, Application Appendices
- Technical Comments Addressed in Full: 2
- Technical Comments Requiring Supplemental Information: 2
 - Updated Fresh Water Supply, Sewage, and Wastewater Management Plan (ECCC 3.1, 3.3)

Fisheries and Oceans Canada

- 13 Technical Comments
 - Fish-bearing water crossings, hydrologic modelling, cumulative impacts of crossings, bridge design for fish passage, water withdrawals, blasting
- Technical Comments Addressed in Full: 10
- Technical Comments Requiring Supplemental Information: 3
 - Water Withdrawal Plan (DFO 3.3.1, 3.3.3, 3.3.4)



Remaining Issues

Remaining Issues

- Design storm criteria for stormwater ponds
- Details on proposed water withdrawal sites (to be addressed through submission of Water Withdrawal Plan)
- Details on railway monitoring (to be addressed through submission of Northern Railway – Instrumentation Monitoring Program)
- Inclusion of adaptive management in management plans
- Inclusion of Inuit perspectives and Inuit Qaujimanituqangit into management plans, research and monitoring initiatives, project planning

An aerial photograph of a large, deep blue reservoir. The shoreline is irregular, with a prominent road or path running along the left side. The land surrounding the reservoir is covered in a light layer of snow, revealing patches of brown earth and vegetation. In the background, more land and distant mountains are visible under a cloudy sky.

Update on Management Plans

Update on Management Plans

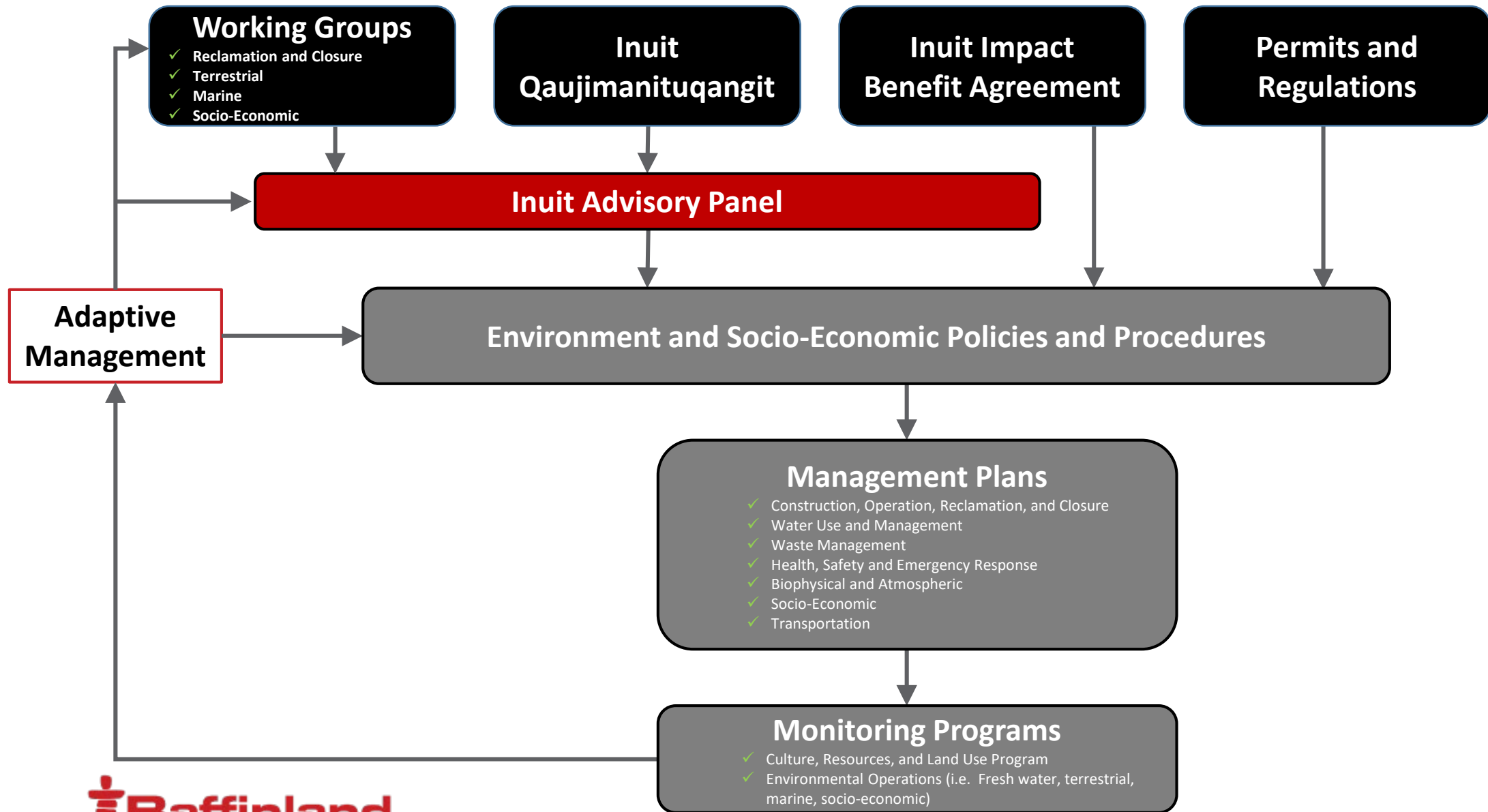
- Updated prior to this technical meeting:
 - Surface Water and Aquatic Ecosystem Management Plan
 - Roads Management Plan
 - Fresh Water Supply, Sewage and Wastewater Management Plan
- Northern Railway – Instrumentation Monitoring Program also provided for review
 - Report provides information on proposed geotechnical instrumentation and monitoring program to be implemented during construction of the North Railway



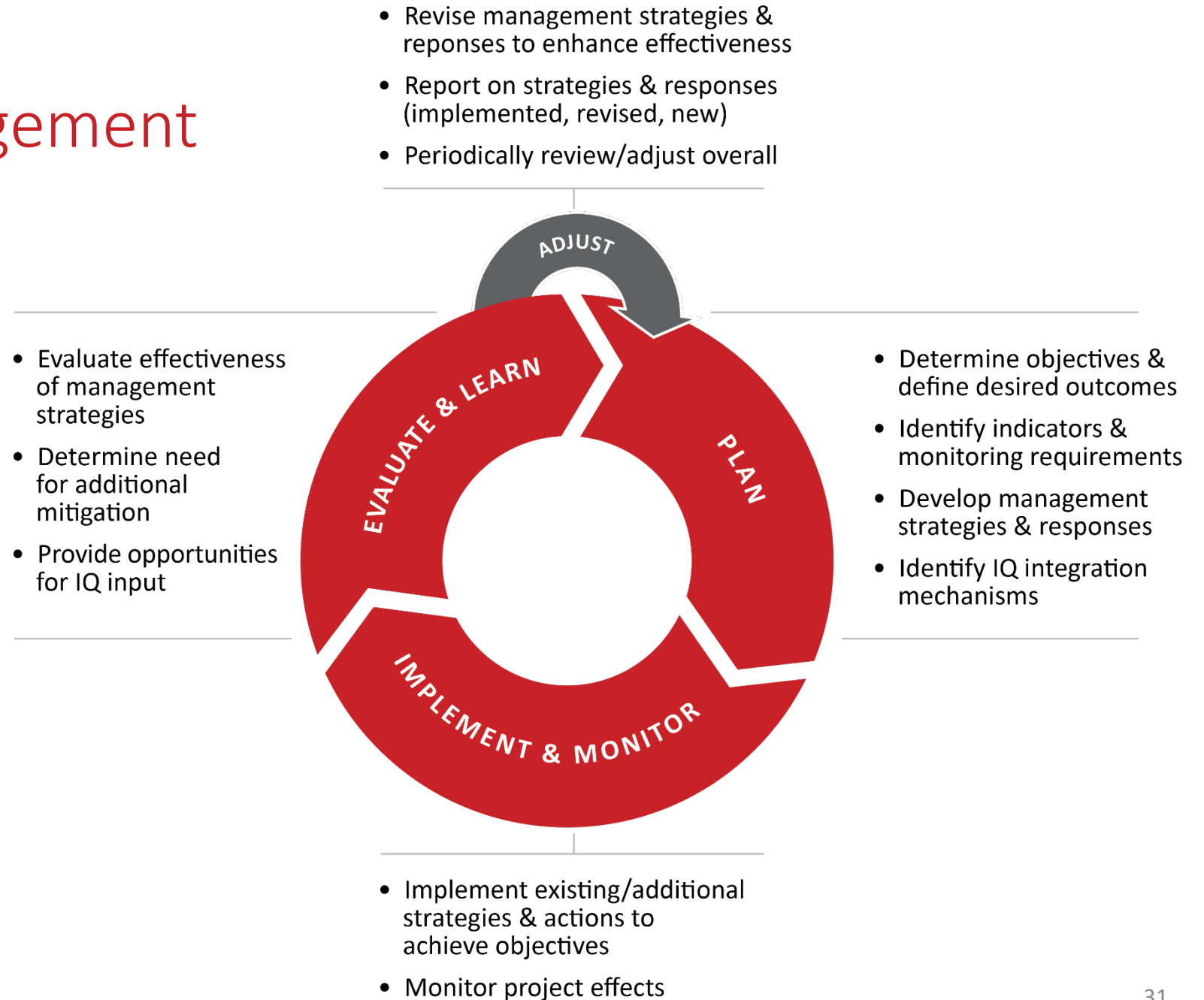
Update on Management Plans

- Future plan updates:
 - Hazardous Materials and Hazardous Waste Management Plan
 - Borrow Pit and Quarry Management Plan
 - Environmental Protection Plan
 - Waste Management Plan
 - Emergency Response Plan
 - Spill Contingency Plan
 - Phase 1 Waste Rock Management Plan
 - Life of Mine Waste Rock Management Plan
- Schedule of management plan submission dates to be provided following technical meeting
 - Blasting Management Plan
 - Aquatic Effects Monitoring Plan
 - Surface Water Sampling Program – Quality Assurance and Quality Control Plan
 - Interim Closure and Reclamation Plan
 - Snow Management Plan
 - Rail Operation and Maintenance Plan
 - Detailed Water Withdrawal Plan

Environmental Management System



Adaptive Management

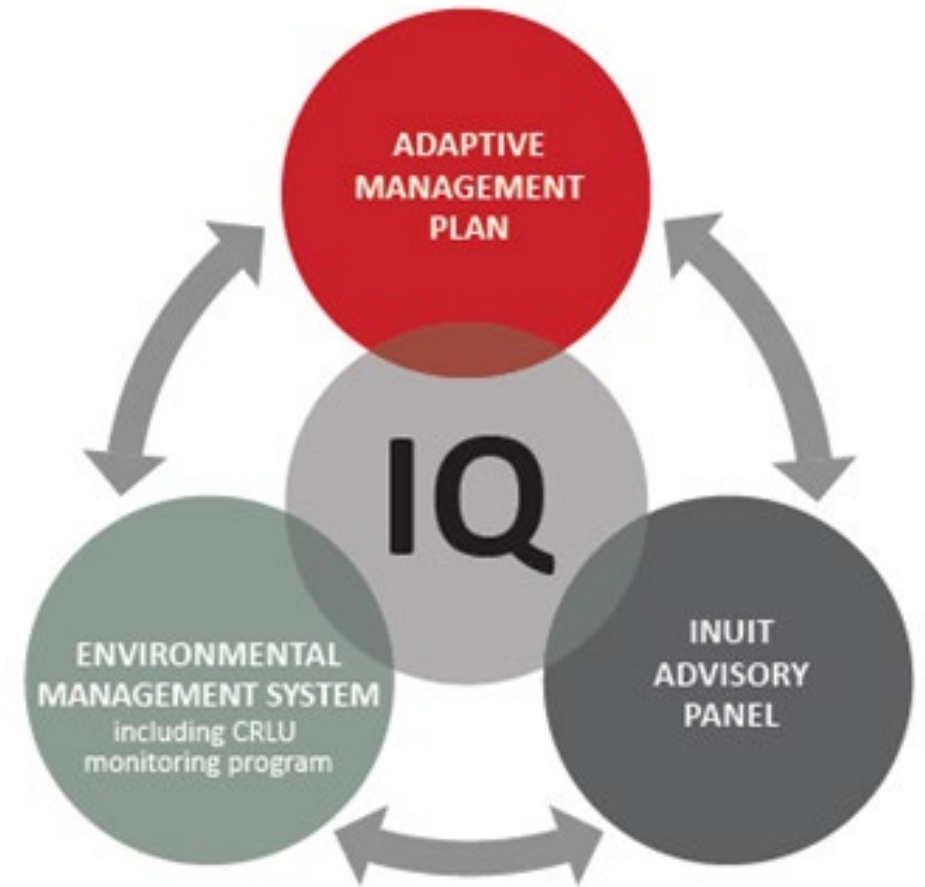


Adaptive Management Considerations

Adaptive Management Phases	Components	Proposed Adaptive Management Mechanisms
Plan	Objectives	Are objectives clear and key desired outcomes defined?
	Indicators	Are performance indicators adequately identified?
	Identification of Thresholds	Are thresholds for specific responses identified (e.g., early warning triggers, action levels, quantitative metrics or qualitative descriptions)?
	IQ Integration / Influence	Are mechanisms for IQ integration/influence identified?
Implement and Monitor	Management Strategies and Responses	Are management strategies and response options clearly identified?
	Monitoring	Does the monitoring program provide the information needed to determine the effectiveness of management strategies and responses?
Evaluate and Learn	Review Data and Feedback	Is the process for reviewing and evaluating management effectiveness (based on monitoring data and feedback) articulated?
	Additional Mitigation	Are mechanisms for determining the need for additional mitigation described?
	Input of IQ Holders	Are opportunities identified for IQ holders to review results and provide input into adaptive management responses / mitigations?
Adjust	Unanticipated Effects or Issues	Is it apparent how unanticipated effects or issues will be actioned and resolved?
	Reporting	Are reporting mechanisms for new / revised strategies and response actions established?
	Scheduled Updates	Is the frequency of scheduled updates to the management plan identified?

Influence of IQ

- Baffinland's Adaptive Management Plan, IAP and Environmental Management and Monitoring Systems are all influenced by IQ and provide feedback mechanisms for IQ to inform, change, and improve the Project
- *IQ governs Baffinland's Environmental Management and Monitoring System, Approach to Adaptive Management and Guides recommendations for Inuit vision of Project development through IAP*





Conclusion

Next Steps

- Continue to engage with QIA to resolve:
 - Outstanding technical comment concerns
 - Updates to the Interim Closure and Reclamation Plan and associated reclamation security
 - Amendment to the Water Compensation Agreement
- Issue all updated Management Plans relevant to Phase 2
- Issue the Updated Phase 1 Waste Rock Management Plan



Conclusion

- The current Licence already contains the mechanisms and provisions to regulate the Phase 2 Proposal, with only modest modifications to the Licence required
- Monitoring and mitigation sufficiently robust, will only improve with time through adaptive management and integration of Inuit Qaujimanituqangit
- Identified ARD/ML issues at the Waste Rock Facility addressed through current licence process. Phase 1 Waste Rock Management Plan update in December 2019
- Baffinland to continue to engage with QIA on Interim Closure and Reclamation Plan, reclamation securities, and Water Compensation Agreement



Questions?
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