



Mary River Project

Final Hearing Nunavut Impact Review Board 90-minute Summary Presentation



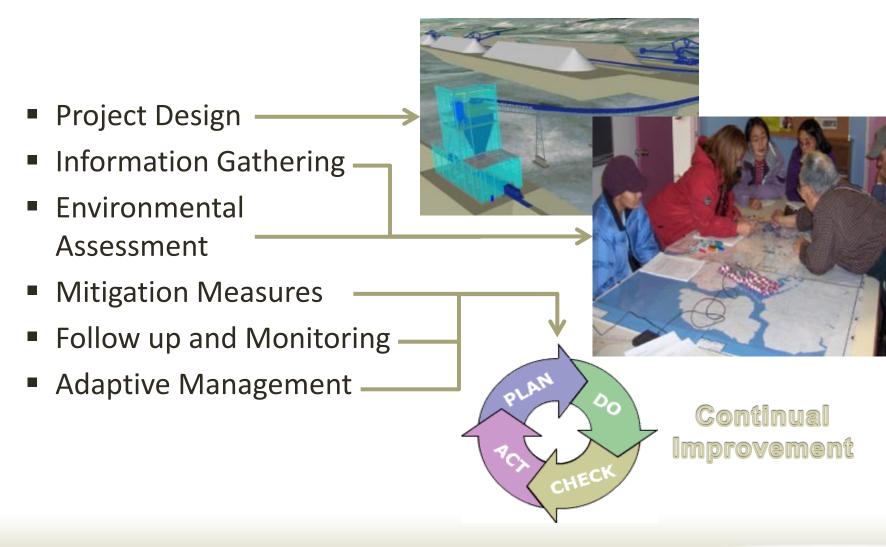
Mary River Project

- Four year construction Project
- An open pit mine with mine life of 21 years
- Operations consist of mining, ore crushing and screening, rail transport, port operations and marine shipping
- No secondary processing; no tailings produced
- A 150 km railway from mine to Steensby port
- The port will accommodate vessels capable of year-round shipping





Approach to Sustainable Development



Relationship Building and Collaboration Throughout



Moving to implementation,

regulatory compliance and adaptive management

Process Overview Water License; **Permits**

Project Certificate with Conditions

Final Hearings July 2012

Review and Final Submissions

Final Environmental Impact Statement February 2012

Review and issue resolution

Draft Environmental Impact Statement – January 2011

Draft Guidelines; Final Guidelines - January 2010

Scoping Issues - 2009

Development Proposal submitted by Baffinland March 2008

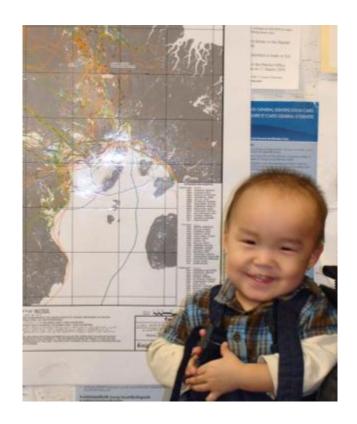
Baseline Data Collection 2005 until Present (7 years so far)

Increasing Knowledge and understanding

What the Project Means.....

For Nunavut, the timely development of the Mary River Project will generate :

- Significant training, employment, and business opportunities for Inuit
- A comprehensive IIBA to secure benefits for Inuit
- Large scale regional economic development helping to promote social, political and economic growth for Nunavut
- Royalty and tax revenues
- The benefits of meeting the objectives outlined in the Nunavut Land Claims Agreement





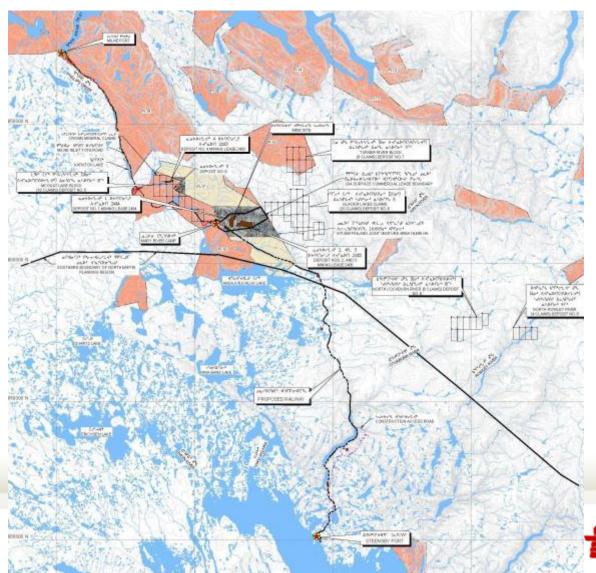


The Panel will address:

- FEIS Volumes 3, 5, 6 and 7
- Project summary and operations:
 - Mine Site
 - Railway
 - Tote Road to Milne Inlet
 - Steensby land facilities
- Project schedule
- Environmental aspects
- Mitigation measures



Overview of Mine Site, Tote Road and Railway to Steensby





Project Schedule

- Construction schedule estimated 4 years
- Operation schedule estimated 21 years
- Closure schedule 3 years followed by post-closure monitoring until objectives are met



Environmental Aspects Addressed by the Panel

- Project components that potentially affect:
 - Land forms, soil and permafrost
 - Atmospheric Environment
 - Freshwater quantity and quality
 - Freshwater fish habitat
- Reclamation and closure addressed by project component (mine, rail and Steensby port, tote road and Milne port)

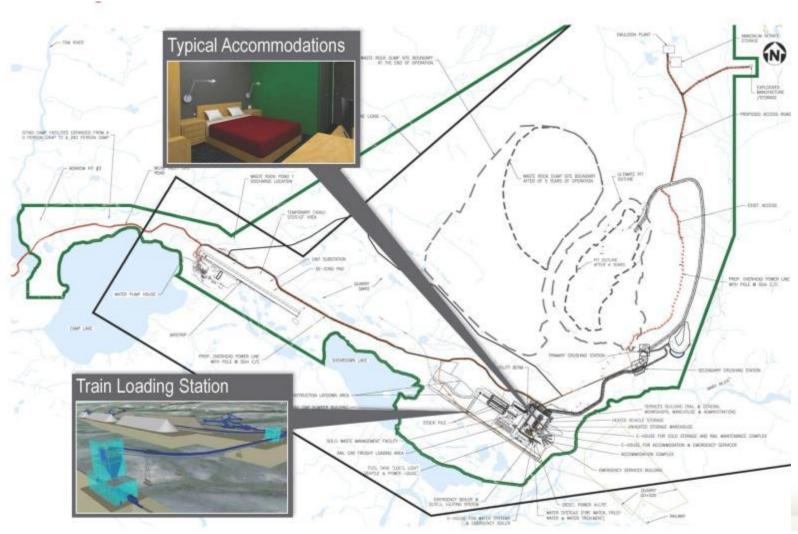


Environmental Design Guidelines

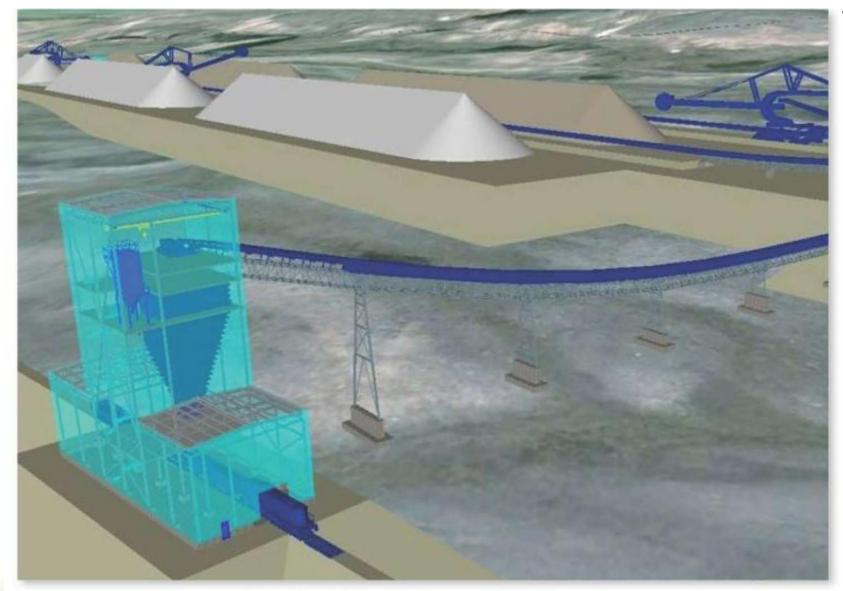
- The Project design:
 - minimizes the interactions of the Project with the natural environment
 - Includes measures to minimize potential effects (FEIS Volume 10, Section 3.0 – Environmental Design Guidelines)



Mine Site



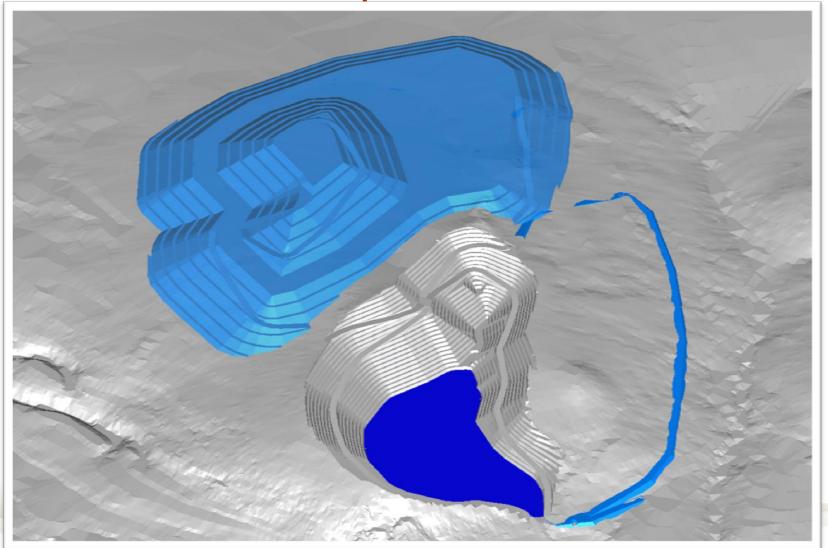




Train Loading Station



Waste Rock Dump and Pit at End of Life





Arcelor Mittal's Mont Wright Mine



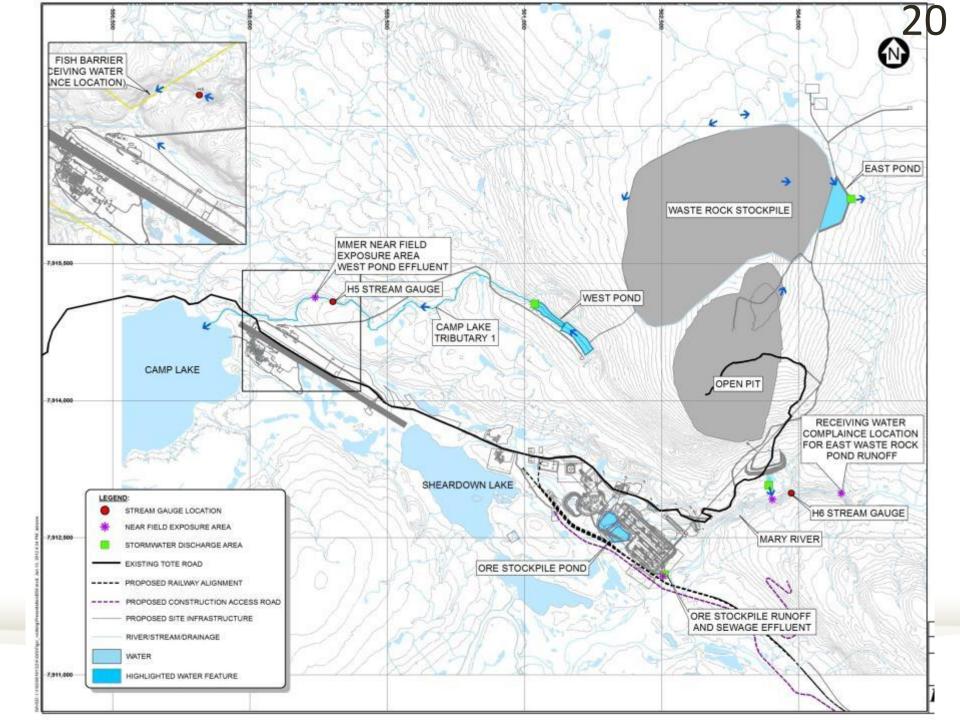
Arcelor Mittal's Mont Wright Mine



Arcelor Mittal's Mont Wright Mine







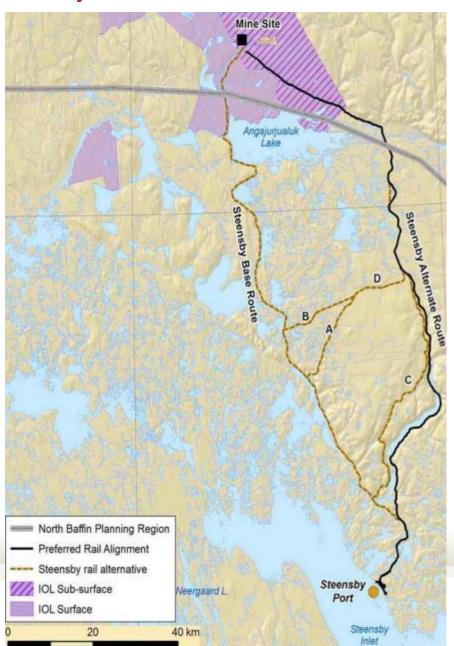


Railway



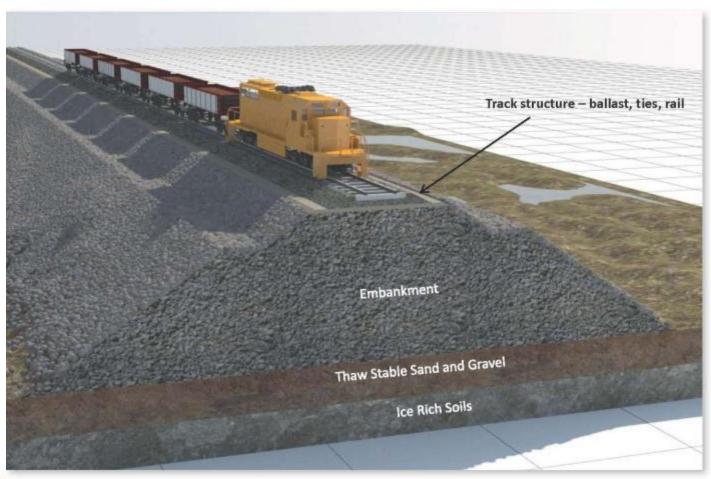


Railway – Alternative Routes



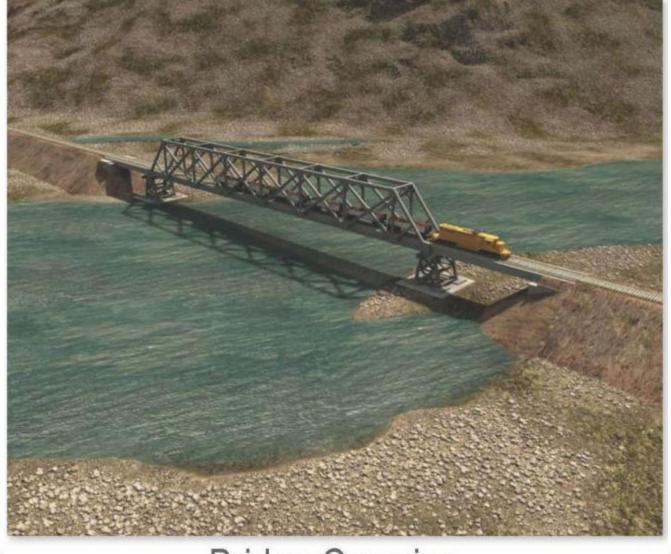


Railway-Design and Construction



Embankment Design





Bridge Crossing



Steensby Port



Dredging and drilling



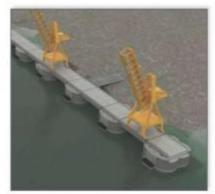
Placement of bedding material for caissons



Caissons filled with rock and concrete



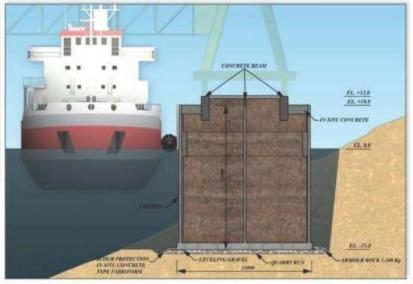
Deck structure between caissons added



Shiploaders added



Ship loading





Steensby Port





Milne Inlet Tote Road and Port





Closure and Reclamation – Post-closure

- Closure activities are expected to take 3 years
- Post closure monitoring will continue until closure objectives have been met
- The facilities remaining after closure will be the open pit, waste rock stockpile, and railway embankment
- No long-term active maintenance of any of the facilities is expected to be required



Going Forward

- Baffinland commitments
- Response to recommendations in Written Submissions.





Marine Shipping Regulations

Principle pieces of legislation protecting arctic waters:

- Arctic Waters Pollution Prevention Act
 - provides measures to prevent pollution from ships
- Canada Shipping Act makes the owners and/or operators of vessels responsible and liable for their vessels and the consequences of its operations





Marine Assessments

The Panel will address:

- Shipping Operations (FEIS Volume 3)
- Marine Environment (FEIS Volume 8):
 - Sea Ice
 - Water and Sediment Quality
 - Marine Habitat and Biota
 - Marine Mammals
- Monitoring Plans and Adaptive Management (FEIS Volume 10)

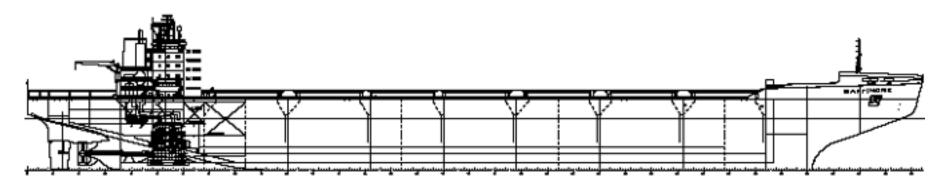


Shipping Operations

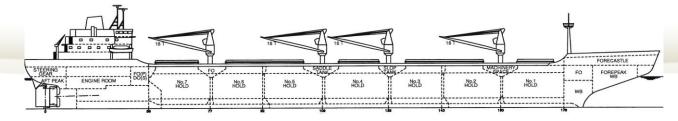
- 10 to 12 ore carriers completing 102 round trips every year
- Equates to a vessel passing in the shipping lane on average every 1.8 days
- Vessels will be approximately 330 meters long, 50 meters wide and 20 meters below water surface when loaded
- Vessels can travel at 14.5 knots and 7 knots in open water and ice cover respectively



Ship Design



	Current Design	MV Arctic
Capacity	185,000 DWT	28,400 DWT
Length Width Draft	330m 52m 20m	220m 23m 11.5m
Horsepower	90,000	14,500





Typical of Ship Design

- Fuel tanks positioned 2 meters from outside edge of ship – greater than regulatory standard
- Fuel tanks will be double lined
- Diesel engines superior efficiency
- Noise minimized to improve efficiency and reduce damage to propeller
- Ballast treatment will meet International and Canadian regulatory standards

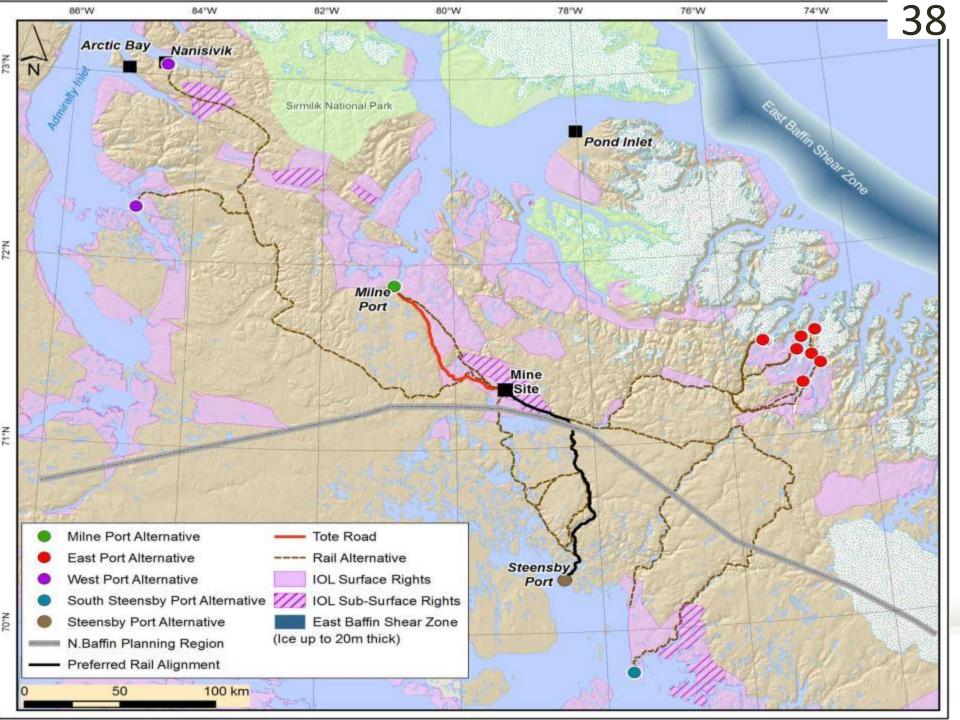




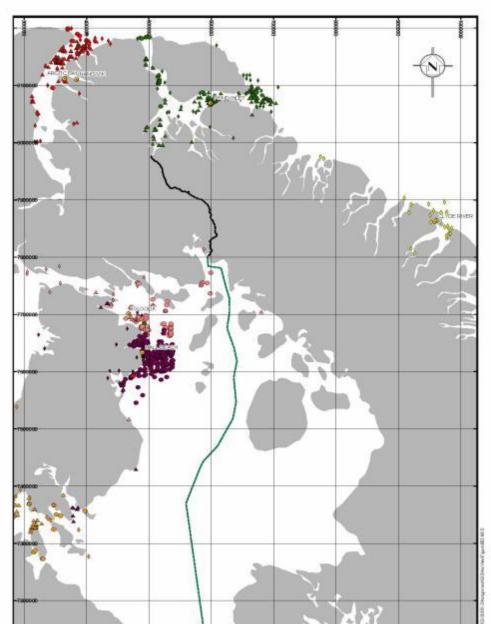
Route Selection

- Comprehensive Inuit knowledge studies influenced route selection
- Designed to avoid traditional resource use areas
- Designed taking bathymetry and ice conditions into account
- Fednav engaged to develop shipping options, decades of experience in operating ice-breaking bulk carriers in Arctic
- Bathymetry program ensures adequate depth for safety





Shipping and Inuit Marine Harvesting



Reported Harvest Locations

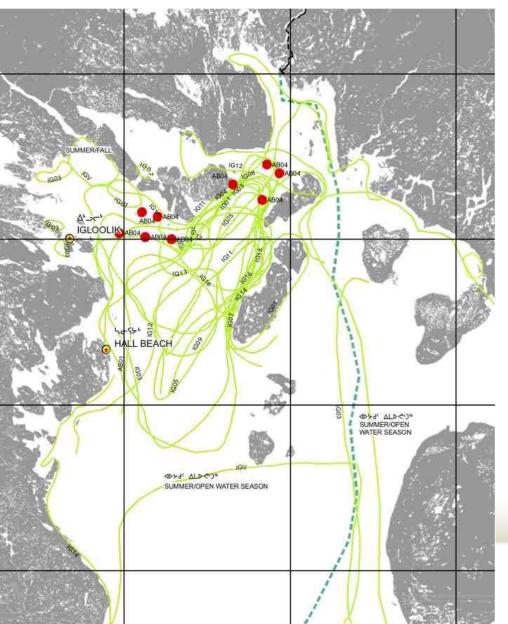
From:

Nunavut Wildlife Harvest Study (1996-2001)





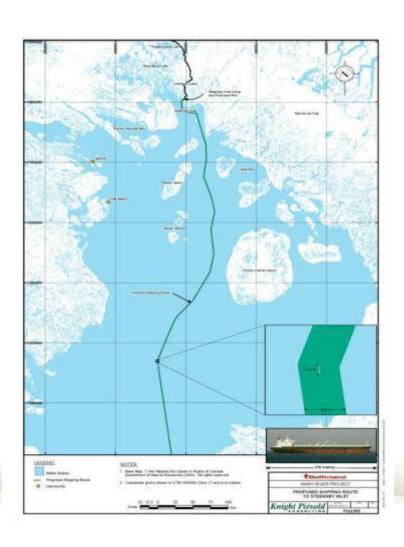
Inuit Knowledge - Walrus

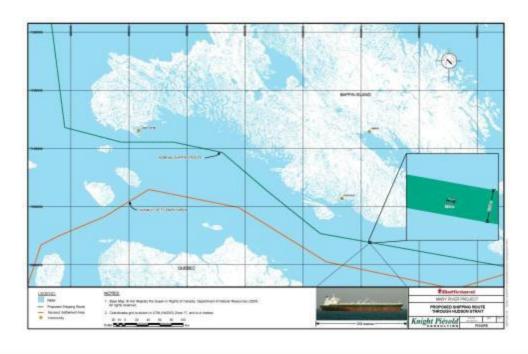


Based on the IQ study, the eastern route avoids a number of important walrus calving areas, and other areas where walrus were identified to be found and harvested.

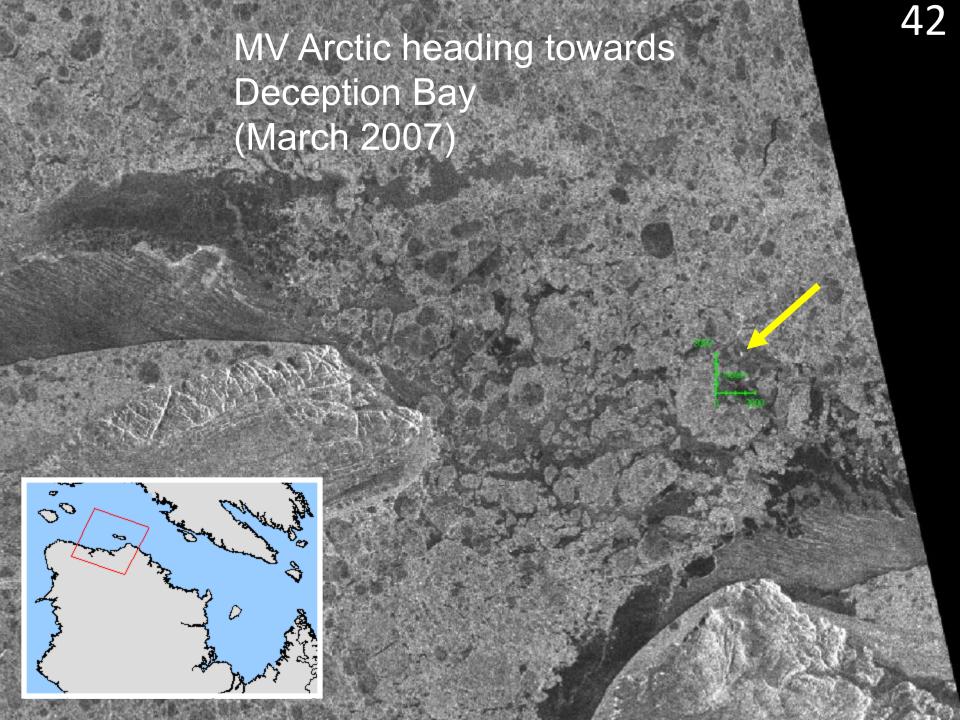


Scale of Ship and it's Proposed Route









Existing Marine Transportation Routes

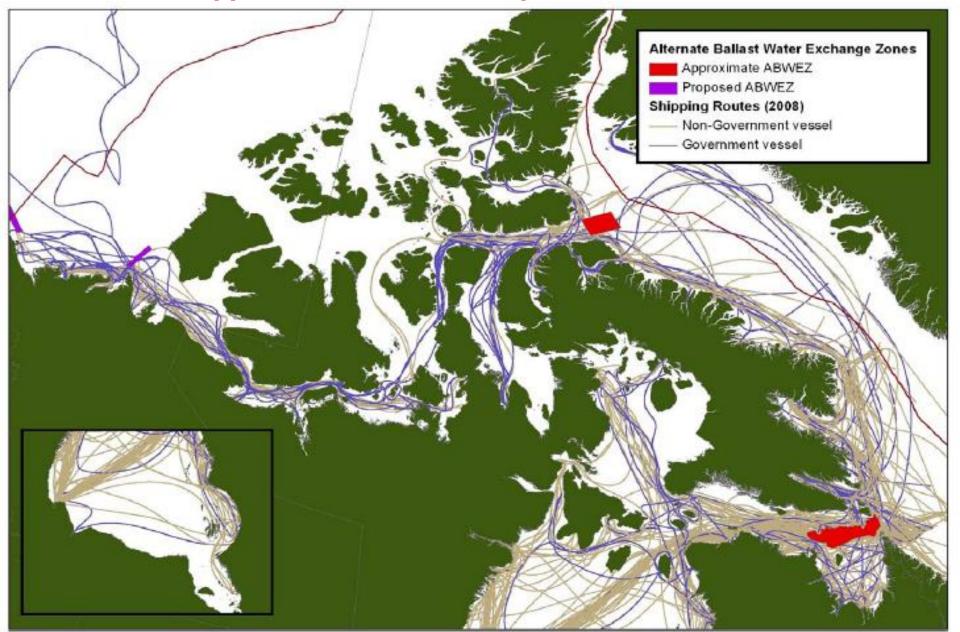


Figure 20: Marine transportation routes, major port locations and ballast water exchange zones in the Canadian Arctic.

Shipping Schedule

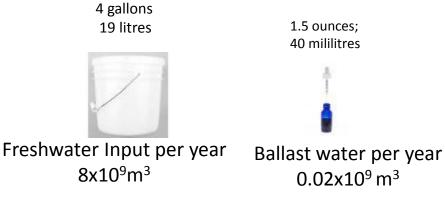
- The viability of the Project depends on the constant supply of iron ore to overseas markets requiring shipping on a 12 month/ per year basis
- FEIS concludes year round shipping will not have significant effects (see below)
- Tiered approach to adaptive management
- Potential for route alteration, vessel speed, periodic shipping suspensions



Ballast Water in Steensby



Steensby Inlet 141x10⁹ m³





Marine Environment Effects Assessment

Sea Ice (2.0)

- Landfast ice in Steensby Inlet
- Pack ice

Water & Sediment Quality (3.0)

- Suspended Solids
- Nutrients
- Metals
- Salinity
- Hydrocarbons

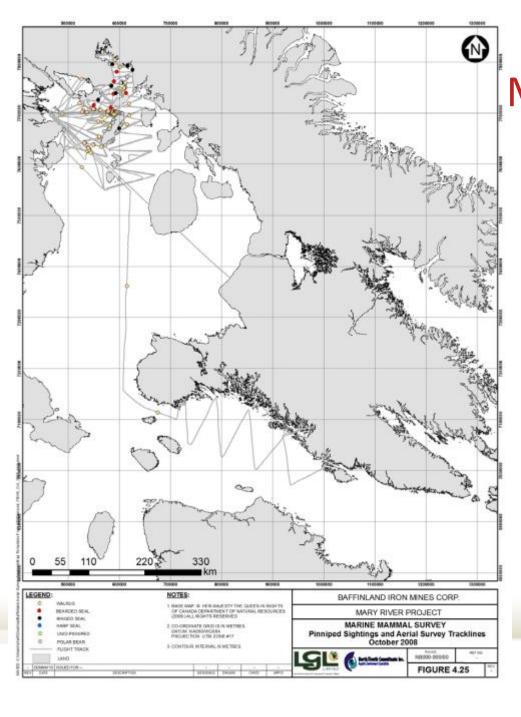
Habitat &Biota (4.0)

- Habitat
- Arctic char

Marine Mammals (5.0)

- Ringed Seal
- Walrus
- Beluga
- Narwhal
- Bowhead
- Polar Bear
- Bearded Seal



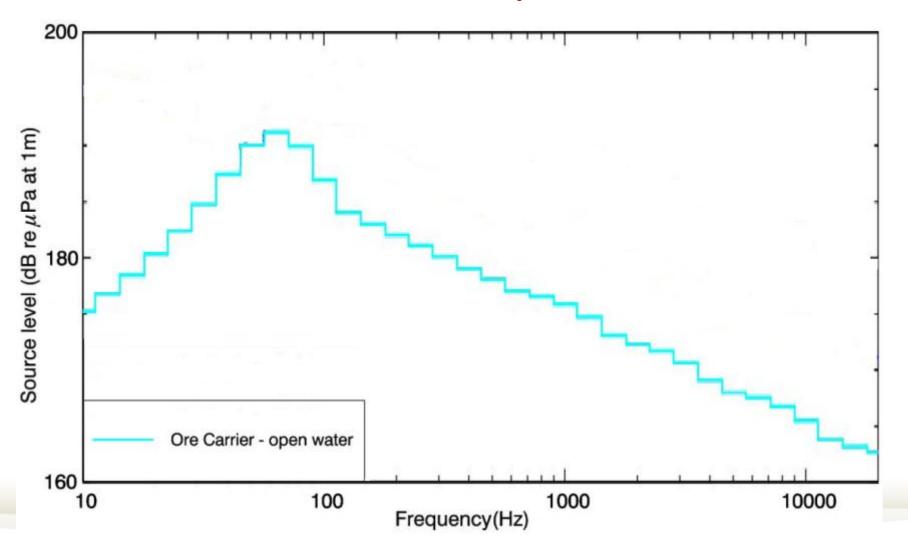


Marine Baseline Studies Marine Mammal Key Indicators

- Ringed Seal
- Walrus
- Beluga Whale
- Narwhal
- Bowhead Whale
- Polar Bear
- Bearded Seal

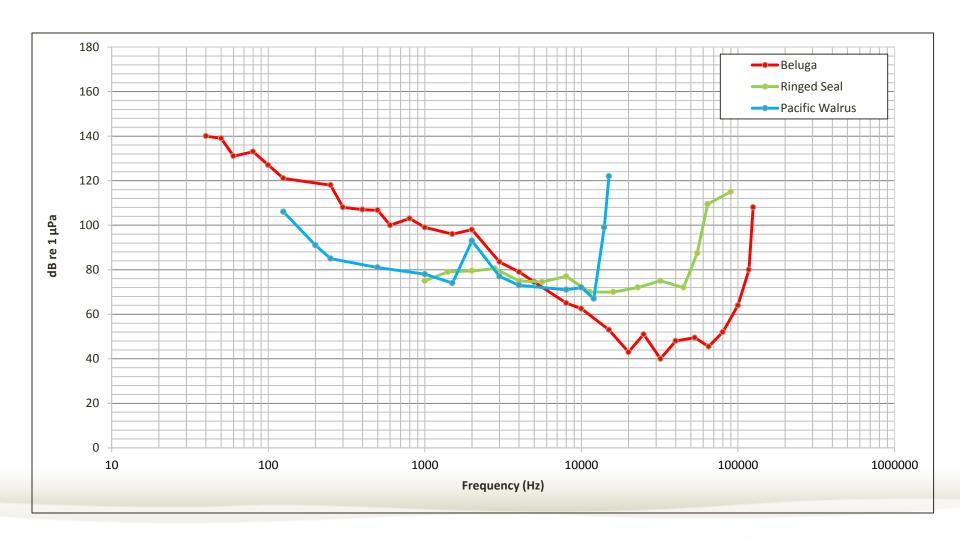


Predicted Ship Noise





Marine Mammal Hearing





Summary of Predictions

- Routine shipping will not have significant negative effects on populations of marine mammals.
- The project will not have significant transboundary effects in Nunavik or in Davis Strait (FEIS Volume 9, Section 4.0).
- The project will not have significant cumulative effects (FEIS Volume 9, Section 1.4.4) .
- Predictions to be verified by monitoring research (discussed later).



What does Experience Tell Us?

This is not a novel situation. Marine mammals are exposed to shipping all over the world. Some examples

- Bowheads and belugas in the Beaufort Sea
- Gray whales along W Coast of North America
- Humpback whales off Australia



Beaufort Sea





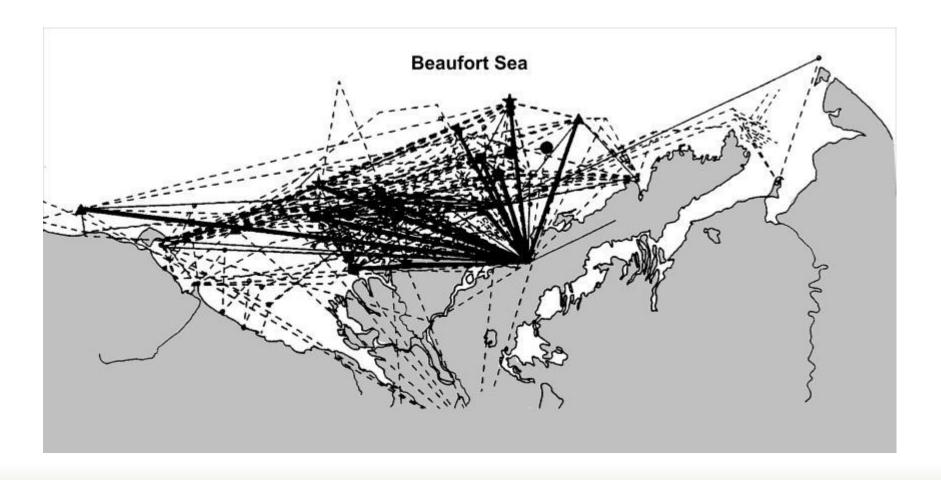
Industrial Activity 1980-1986 in Canadian Beaufort Sea

- As many as 5 drilling vessels per year
- Up to 71 vessels (including icebreakers)
- Up to 8 dredges (noisiest vessels)
- As many as 5 seismic vessels
- As many as 11 offshore helicopters
- 200-275 vessel passages per week
- 300 helicopter flights per week

(Source: Brouwer et al. 1988)



Industry Activity -1 Aug-10 Sep - 1985





Beaufort Sea Whale Populations – 1980-1986

- Bowhead population increased at the rate of 3.4% per year from 1978 to 2001. (Zeh and Punt 2005)
- Beluga population stable or probably increasing. (Hill and DeMaster 1998)



Risk of Ship Strikes (1)

- The FEIS predicts that there is a very low risk of the ships striking marine mammals
- The low risk of a ship strike is because the species of marine mammals in the arctic are known to avoid moving vessels
- Beaufort Sea experience



Risk of Ship Strikes (2)

- DFO conducted an analysis of the numbers of whales that could be struck if they took no evasive action when a ship approached
- However, all evidence indicates that marine mammals move out of the way of approaching vessels
- There is only one situation where there may be a risk of a ship strike
- Socializing bowhead whales

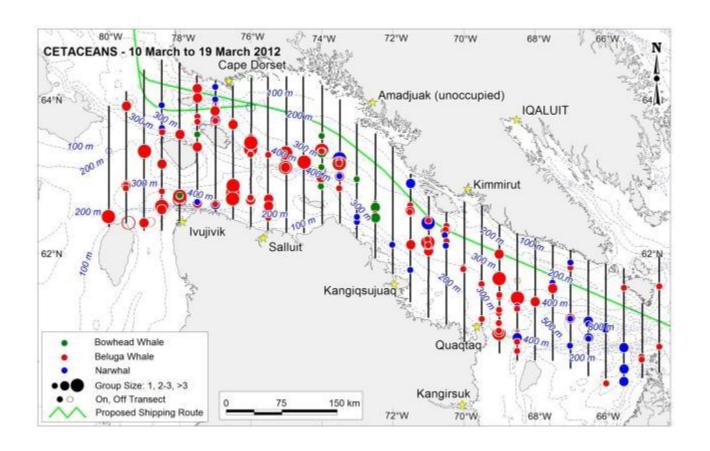


Bowhead Whale Study





Winter Surveys of Hudson Strait

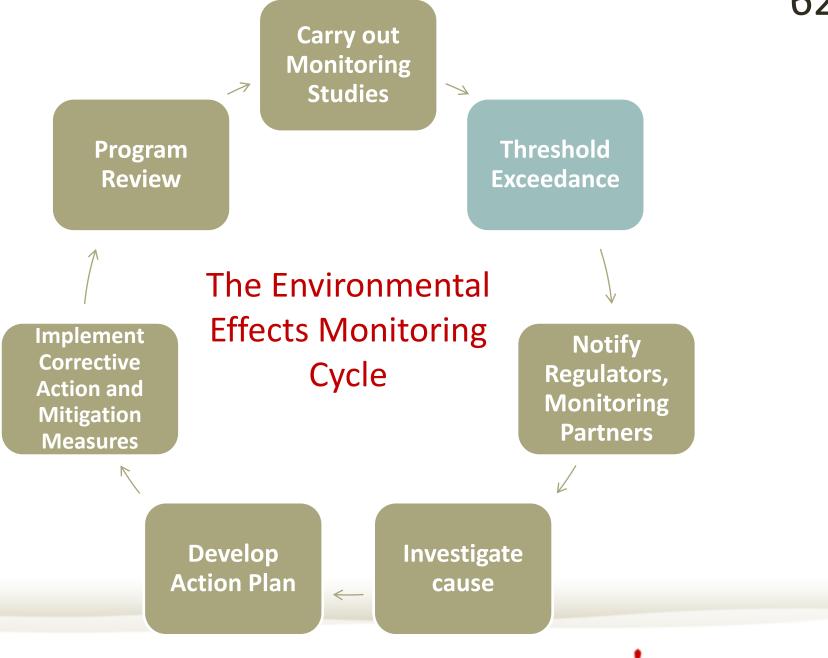




Environmental Management

The Cycle

- Project Design
- Mitigation
- Monitoring
- Adaptive Management





Marine Environment Working Group



- Purpose
- Terms of Reference

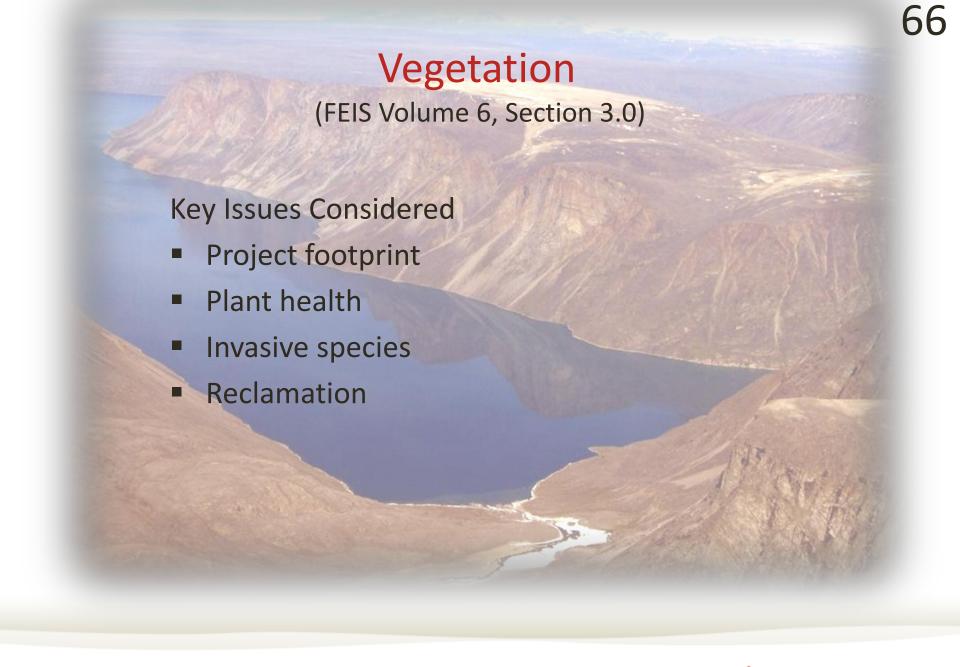


Going Forward

- Baffinland commitments
- Response to recommendations in Written Submissions









Mitigation — Vegetation

Terrestrial Environment Management and Mitigation Plan (TEMMP) Section 3.1.1:

- Minimize footprint (0.36% of the RSA)
- Invasive species best management practices
- Re-vegetation research plots to determine best reclamation approaches for north Baffin Island





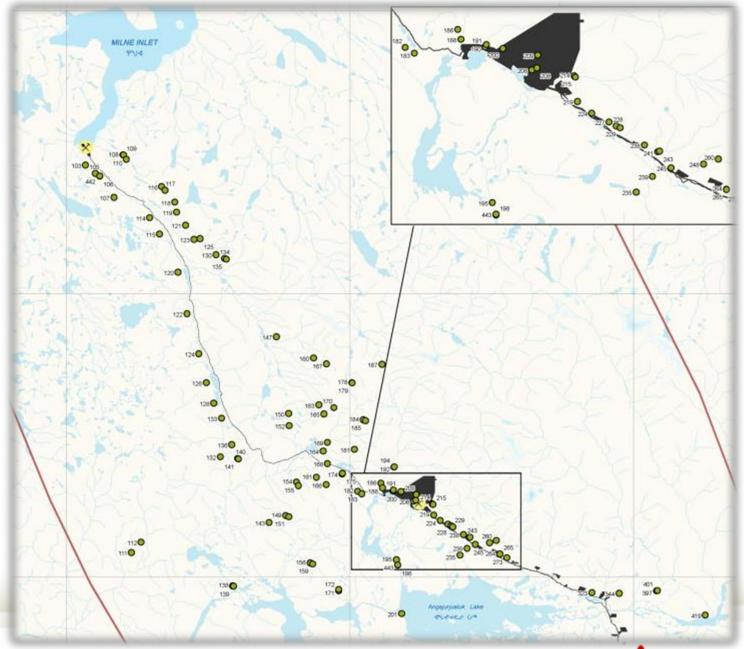
(FEIS Volume 6, Section 4.0)

- Key indicators:
- Peregrine Falcon
- Snow Goose
- Common and King Eider
- Red-throated Loon
- Thick-billed Murre
- Lapland Longspur
- Species at Risk











FEIS Conclusion

- Minor changes in distribution may occur as birds move to less disturbed habitat nearby, the overall effect on these birds is expected to be minimal.
- Considering design and mitigation measures that minimize impacts on migratory birds, the assessment concludes that the Project will have a not significant effect on bird population dynamics and habitat (FEIS Volume 6, Section 4.13)
- Assessment recommended follow up discussed at the end of this presentation

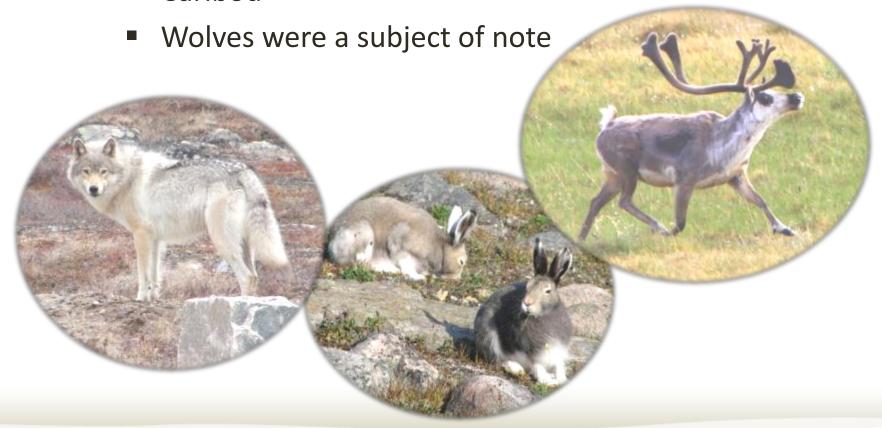


Terrestrial Wildlife and Habitat

(FEIS Volume 6, Section 5.0)

Key Indicator

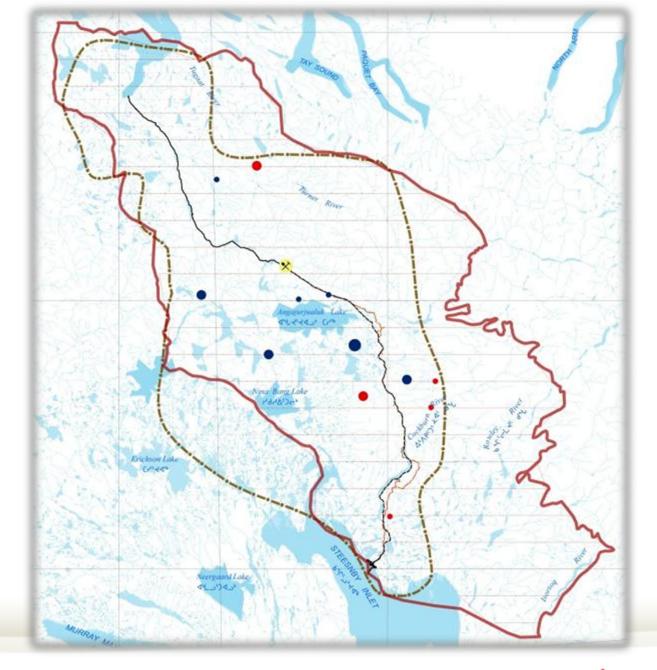
Caribou



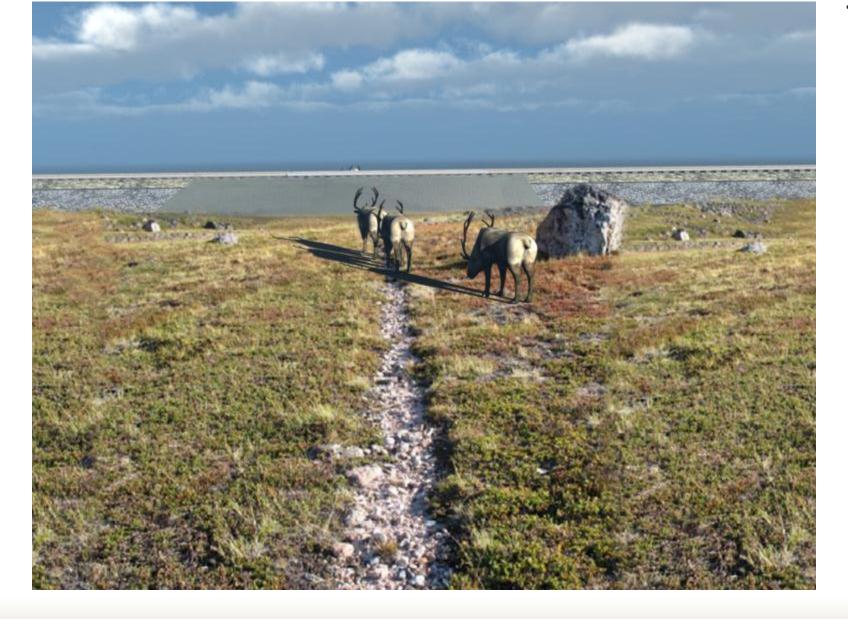














FEIS Conclusion

After design and mitigation, the Project is expected to cause no significant effects on caribou habitat, movement, mortality and health





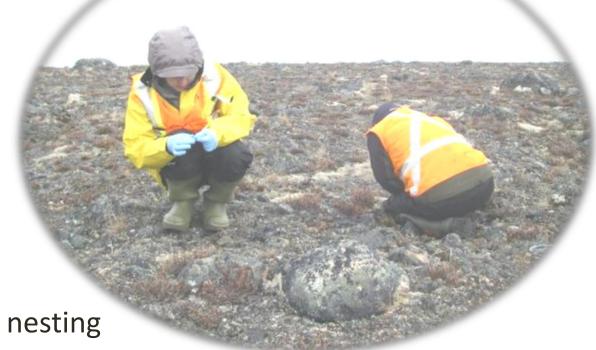
Monitoring Plans

Vegetation

- Invasive species
- Vegetation health

Birds

- Falcon nesting
- Eider and Red Knot nesting
- Seabird migration and overwintering
- Songbirds and shorebirds





Monitoring Plans

Caribou

- General distribution
- Calving habitat use
- Movement in the zone of influence
- Mortality risk
- Health
- Productivity





Adaptive Strategies (TEMMP Sec. 6.0)

- Implemented when unexpected impacts are observed or if impacts are larger than predicted and exceed the predefined thresholds.
- If impacts to vegetation, birds, or terrestrial wildlife exceed identified thresholds, then local HTOs, regulators, Baffinland's specialists, Baffinland's EHS Superintendent and other stakeholders will meet to discuss mitigation options that will remove or reduce the impact in question.



Terrestrial Wildlife Working Group

- Provide direction on key monitoring indicators, methods, schedule, reporting, and adaptive management approaches
- QIA, GN, EC, other stakeholders.
- Review progress regularly
- Develop monitoring details as project proceeds
- Advise and oversee adaptive management of unexpected impacts



Accidents & Malfunctions Preparedness & Emergency Response



Safety Across All Operations

- All locations mine site, port, rail
- Consideration of risks from accidents and malfunctions addressed in Final Environmental Impact Statement (FEIS)
- Significant emphasis on shipping related accidents particularly related to the potential for oil spills
- Additional analysis related to overwintering fuel
- Railway operation emergencies



Shipping – Regulatory Framework

The regulatory framework to ensure marine safety and to protect the marine environment for shipping in Canada includes:

- Canada Shipping Act (2001)
- Arctic Waters Pollution Prevention Act (AWPPA, 2001)
- Marine Liability Act

Transport Canada is the lead federal agency responsible for the National Marine Oil Spill Preparedness and Response Regime.



Ship-to-Shore Transfer of Fuel Preparedness and Emergency Response

- Addressed in FEIS Volume 9, Section 3.5
 - Fuel spill modelling presented in Appendix 9A and 9B
- During construction ship-to-shore fuel transfer by floating hose method (method used for all Arctic communities)
 - Fuel tankers have a Ship Onboard pollution Emergency Plan
 - Effective spill prevention measures have been identified and will be implemented for ship-to-shore transfers
 - Oil Pollution Emergency Plan for Oil Handling Facilities is reviewed and approved by Transport Canada on an annual basis
 - Fuel transfer only when weather conditions permit
- Once freight dock is constructed fuel unloaded at dock

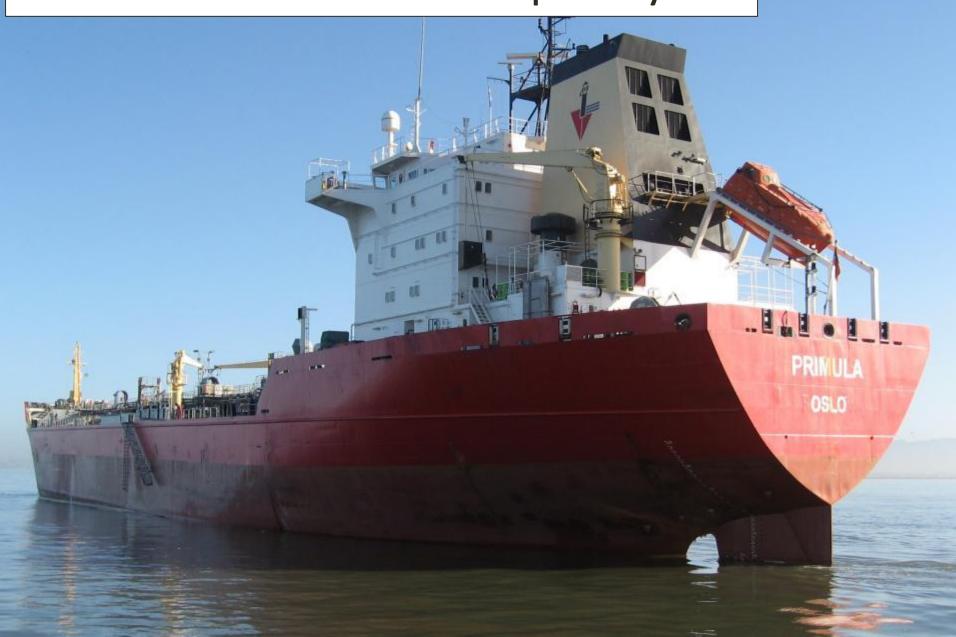


Steensby Port Area Overwintering of fuel vessel

- Rationale to support early construction activities
- Strategy to support early construction activities
 - It will require up to two years to construct the onshore fuel storage required by the project
- Risk assessment has identified risks and mitigations measures to ensure safe operation
 - Submitted for review on May 15th 2012
- The vessel will comply with all regulatory requirements
 - Double hulled, Polar class 1a vessel
- Operational plans for this practice have been submitted for review



Primula – Used at Hope Bay



Risk Assessment of Fuel Spill along Shipping Route

Final Environmental Impact Statement concludes that risk of a spill event is low.

Risk assessment work shop held on June 18th, 2012

- Attended by representatives of shipping companies, Transport Canada, Coast Guards, DFO and Environment Canada
- Concluded that risk of a spill along shipping route is unlikely with prevention measures in place and strict adherence the "rules of the road" for shipping



Prevention Measures

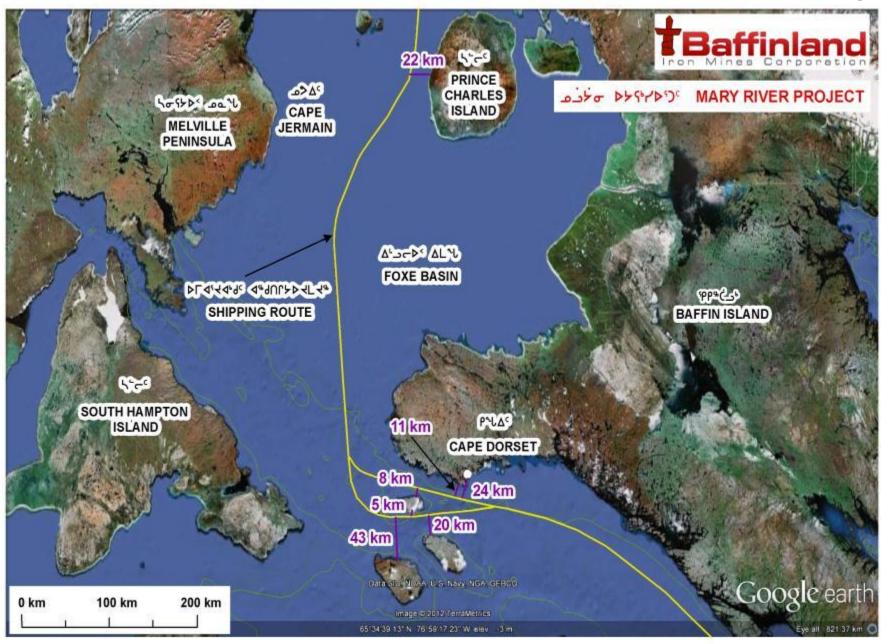
- Vessels are equipped with several dual/redundant back up systems
 - Engines,
 - Radar
 - Navigational & Communications systems
- Shipping lane bathymetry is known
 - Bathymetric surveys done for a 6 nautical mile width along shipping corridor
- Hazards and environmentally sensitive areas along shipping route have been identified
- Shipment of bulk fuel during the open water season
 - Suppliers with Arctic experienced and expertise with Arctic navigation



"Rules of the Road" for Shipping

- Shipping operators must abide by the established regulatory framework
- Ships must sail within the established shipping corridor (1.5 km within the 6 nauticle mile width where bathymetry is known)
- Ships must have a Ship Oil Emergency Response Plan (SOPEP)





Risk of Transboundary Effects

- The southern shipping route enters eastern Hudson Strait, passes the community of Cape Dorset and turns northward in Foxe Basin:
 - The preferred route is north of Mills Island closest distance to Cape Dorset is 24 km. All fuel shipped during open water season will use this route.
 - The alternative route passes south of Mills Island distance of 20 km from the Nunavik Settlement boundary and the islands of Nothingham and Salisbury
- Risk of transboundary effects is low



Summary – Shipping Preparedness and Emergency Response

- Risk of a spill is low
 - Bulk fuel tankers are double hulled
 - Ore carriers are Polar class 4 vessels with internal double skin fuel storage tanks
 - Ship owner/operator have Arctic experience and expertise
 - State of the art navigational systems on ships
 - Well defined shipping lane and known bathymetry
- Preparedness and Emergency response
 - Ships will have Transport Canada approved SOPEP
 - Baffinland will have Emergency Response Team and response equipment on shore at Steensby and Milne
 - Two ice management vessels equipped with emergency response equipment
 - Contract with certified Response Organization (R.O.) for response and clean up for spills
- Transboundary effects of spill Very low risk



Railway – Regulatory Framework

- Federally regulated railway
- Requirement for:
 - Certificate of Fitness
 - Authorization to construct and operate a railway under article 98 of the Canadian Transportation Act
- The regulatory framework for railway safety encompasses the legislation, regulations, rules, and, engineering standards that provide the structure in which railway companies can operate safely.
- Relevant rail safety legislation, regulations, rules, engineering standards, policies and guidelines presented in Transport Canada's submission – Appendix B



Prevention Measures

- Dangerous goods transported
 - Bulk arctic diesel and jet fuel in tanker cars
 - All other dangerous goods in appropriate packaging within sea container
- Operating practices
 - Fuel tanker cars add two to four tanker cars to the return train to
 Mine site
 - Railway speed limited to 30 to 40 km/hr
- Railway tanker car design
 - Regulations and Canadian Standard



Railway Accidents & Malfunctions

- Risk of a spill is low
 - Prevention measures, mitigations and management plans in place to minimize risks
- Railway Emergency Response Plan
 - Emergency Response Team (ERT) and emergency response equipment located at Mine Site and at Steensby
 - External expertise to assist in training of ERT
 - ERT is trained and knowledgeable
- First response
 - Safety of personnel
 - Secure site / containment
 - Respond as weather conditions safely allow





Contributions To Nunavut's Objectives

- Development of Resources Provides Taxes and Royalties
- Employment and Training Opportunities
- Contract and Business Opportunities

"Unlocking Potential"

- Training partnerships and employee support
- Local business development
- Inuit Impact and Benefits Agreement



Valued Components of the Human Environment

- Human Environment VSECs (FEIS Volume 4, Section 1)
 - Population Demographics
 - Education and Training
 - Livelihood and Employment
 - Economic Development and Self-Reliance
 - Human Health and Well-being
 - Community Infrastructure and Public Service
 - Contracting and business opportunities
 - Protection of Archaeological Resources and Other Heritage Sites
 - Resources and Land Use
 - Cultural Well-Being
 - Benefits, Royalty and Taxation
 - Government and Leadership



Tax and Royalty Payments

- Taxes will be paid to Government of Nunavut:
 - Corporate income tax
 - Employee payroll tax
 - Fuel tax
 - Property tax
- The Nunavut Mining Royalty will accrue to NTI





Job Creation

- Between 800 and 2700 jobs during the construction phase.
- Roughly 950 jobs during operations, mostly based at Mary River mine and Steensby port.
- Additional indirect jobs are expected to be created due to economic growth generated by the Project.



Challenges To Realising The Opportunities

- Challenges that are part of the industrial style of work:
 - Fly-in/fly-out rotations
 - 12 hour shifts / 7 days per week
 - Demanding "production" workplace
- Challenges from the labour force:
 - Small population
 - Skills gap



Enhancing Inuit Employment

- Baffinland is committed to hiring Inuit at all levels of employment, from entry level position to senior management.
 - Multiple points-of-hire will provide access to these jobs.
 - Accessible rotation (2 in 2 out during operations)
 - Employee recruitment and selection program
 - Adaptive Human Resources Management Plan to build a foundation for long-term labour force development
- We recognise it will take time to build capacity. The longterm nature of this Project makes this possible.



Education and Training

- BIMC is committed to providing training that is linked to specific jobs. We will do this in partnership with other agencies.
- Human Resource Management Plan (HRMP)
 - Work Ready and Job-Specific Technical Training
 - Use of Inuktitut and Inuit instructors
 - Employment and Training Coordinator
 - Training facilities and dormitories on site

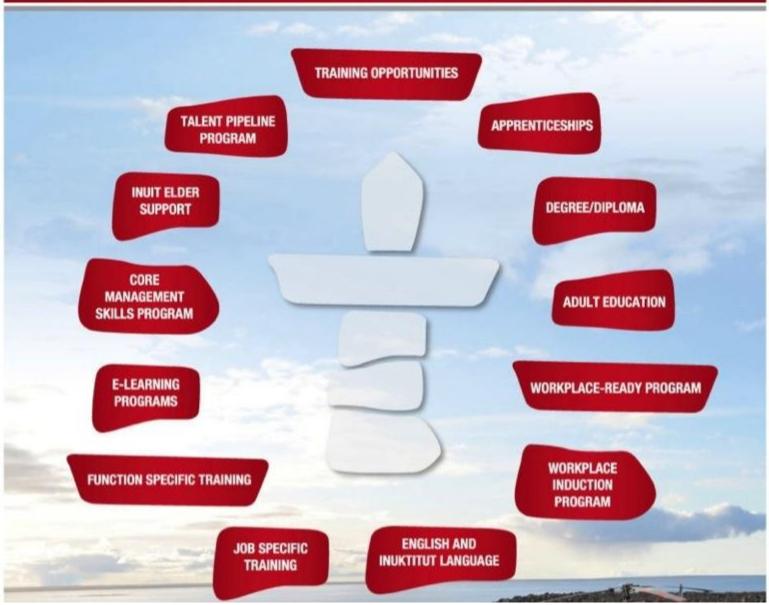


Education and Training

- Human Resource Strategy
 - Inuit Human Resources Strategy
 - Women's access to employment
 - Student summer employment
 - Apprentice program
- Commitments apply to the Company, its Contractors, and all Subcontractors.
- Creation of new career paths, supported by on-going training programs is assessed to have a beneficial effect on job promotion and career advancement.



OPPORTUNITIES FOR A LIFETIME





Contracting and Business Opportunities

- Baffinland is committed to use best efforts to maximize contracting and subcontracting opportunities for qualified Inuit firms during all phases of the Project.
 - Inuit preference;
 - Report on performance.
- Expanded markets through growth in demand for consumer goods and services.



Examples of Potential Contract Opportunities and Associated Jobs

Contract Opportunity Area	Typical Job / Labour Requirements
Security Services	Security guard
Camp/catering operations	Food preparation, some cooking Kitchen assistant Cleaner, housekeeper General labour
Temporary construction / rough carpentry structures	General labour Truck driver of light vehicles i.e. pick-up trucks
Site services	General labour Light maintenance
Environmental	Obtaining samples-liquid, solids Monitoring activities Wildlife management
Logistics/warehousing	Offloading trucks Tool crib assistant General labour in warehouse



Community Demographics

- We considered how the Project is likely to affect migration in and out of North Baffin communities.
- The Project is designed to avoid the need for people to move in order to work at Mary River:
 - Fly-in/fly-out;
 - Multiple points of hire.
- Migration that may occur as a consequence of individual preference is assessed as "not significant" for North Baffin communities.



Assessment of Effects on Harvesting

- Detailed review of how the Project may affect Inuit harvest activities .
- We identified potential Project interactions and how these might combine to affect Inuit harvesting livelihoods:
 - Interactions with wildlife
 - Socio-economic interactions



Direct Effects on Access

- Rail crossings:
 BIMC is committed to designing the railway to include snow machine crossings on identified travel routes.
- Ship track:
 BIMC has committed to work with QIA and communities to implement best measures to ensure safe travel in the vicinity of the ship track.



Indirect Effects On Traditional Land Use and Food Security

- Indirect effects on harvesting (Volume 4, Section 4.3)
 - Employment and income
 - Time to harvest is available with fly-in/fly-out work
 - Expected to be generally positive
- Effects on food security (Volume 4, Section 6.6.2)
 - Affordability of food
 - Effects on harvesting (discussed above)





Archaeological Resources & Heritage Sites

- Adequacy of proposed mitigation measures to protect archaeological resources and other heritage sites
- Baffinland is committed to adhering to the regulated processes for protection, care and preservation of sites that are administered by the Department of Culture and Heritage and the Inuit Heritage Trust
- A detailed mitigation schedule person days of archaeologist time on a site by site basis, has been provided to CLEY
- Heritage Resources Protection Plan is presented in Volume 10, Appendix 10F-2.



Socio-Economic Monitoring

- Baffinland is committed to monitoring and reporting on how we are doing on the objectives we have committed to in the Human Resources Management Plan. Examples include:
 - Training and education
 - Inuit employment and career advancement
 - Procurement of goods and services
- Baffinland is also committed to participation in collaborative socio-economic monitoring through the Q-SEMC.
- We have worked with the Q-SEMC Organising Committee to design a framework for collaboration.



Inuit Impact and Benefits Agreement

- Negotiations toward an IIBA are in progress:
 - 2009 MOU with QIA 'Schedule A Economic Provisions"
- IIBA components address:
 - training
 - employment
 - contracting and business opportunities
 - financial provisions
 - workplace conditions
 - marine shipping
 - wildlife compensation
 - executive/management committees



Path Forward

- Working with QIA to finalize the Inuit Impact Benefits Agreement
- Establishing formal multistakeholder Working Groups
 - Terrestrial Environment Working Group
 - Marine Environment Working Group
- Continue collaboration with all stakeholders to ensure the maximum benefits are achieved for all, while ensuring the highest environmental standards



