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Information Requests Submission

Baffinland Iron Mines Corporation
Mary River “Phase 2 Development” Project Proposal and
Water Licence Application

Submitted to: Nunavut Impact Review Board/Nunavut Water Board

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Table of Contents

Executive Summary.....	2
1 Introduction	3
2 Mandate, Relevant Legislation and Policy	3
3 Technical Review Comments	5
3.1 Freshwater Environment	5
3.1.1 Watercourse Crossings, Diversions, Encroachments, and Fish Passage.....	5
3.2 Marine Environment.....	8
3.2.1 Shipping and Marine Mammals	8
4 Summary of Requests	13

Executive Summary

The Mary River “Phase 2 Development” Project proposal (the Project) and application to amend the Type “A” Water Licence 2AM-MRY1325 proposes a modification to an approved iron ore mine operated by Baffinland Iron Mines Corporation (the Proponent) located on Baffin Island approximately 100 km south of Pond Inlet, Nunavut within the Qikiqtani Region of Nunavut. The Project is focused on an increase in production to 12 Mpta (million Tonnes per annum), the transportation of ore to Milne Port via the construction of a new railway running largely parallel to the existing Tote Road, and the construction and operation of a second ore dock which will support increased shipping activities.

On behalf of Fisheries and Oceans Canada (DFO), the Fisheries Protection Program (FPP) has reviewed the application and supporting documents related to the Project, as it relates to the departmental mandate under the *Fisheries Act*, to maintain the sustainability and ongoing productivity of commercial, recreational and Aboriginal fisheries, including marine mammals and their habitat. DFO-FPP’s primary focus of this review was to ensure that works, undertakings and activities are conducted in compliance with the applicable provisions of the *Fisheries Act*.

The fisheries protection provisions of the *Fisheries Act* (2013), specifically subsection 35(1), state: “No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery or to fish that support such a fishery.” However, under paragraph 35(2)(b) of the *Fisheries Act*, the Minister of Fisheries and Oceans may issue an authorization with terms and conditions in relation to a proposed work, undertaking or activity that may result in serious harm to fish. Serious harm to fish is defined in Section 2 of the *Fisheries Act* as the death of fish, or permanent alteration to or destruction of fish habitat.

DFO-FPP is providing the following Information Request submission in response to the Nunavut Impact Review Board (NIRB) and the Nunavut Water Board’s (NWB’s) joint correspondence dated October 12, 2018, requesting final Information Requests (IRs) related to the Project for consideration. The comments in this submission are categorized under the Freshwater environment and Marine Environment:

The following proposed project works, undertakings and/or activities have the potential to negatively impact freshwater and/or marine fish (including marine mammals) and fish habitat before the consideration of mitigation and offsetting measures:

- a) Watercourse Crossings, Diversions, Encroachments, and Fish Passage – impacts of the construction and operation of various structures and barriers to fish passage in the freshwater environment.
- a) Proposed increases in shipping – potential to impact marine mammals resulting in behavioural changes, loss of habitat and/or other disturbances resulting from increased frequency of noise, and injury or mortality due to ship strikes.

1 Introduction

The Mary River “Phase 2 Development” Project Proposal (the Project) and Application to Amend Type “A” Water Licence 2AM-MRY1325 (Water Licence) Information Requests submission summarizes Fisheries and Oceans Canada (DFO), Fisheries Protection Program’s (FPP) assessment and information requests to date.

As directed by the NIRB in their letter dated October 12, 2018, this submission focuses on analysis of information presented by Baffinland Iron Mines Corporation (the Proponent) as part of the Project application and Water Licence application, including the Project proposal and technical supporting documents. The objective is to seek clarification and obtain additional required information (Information Requests) for the assessment of the Project in relation to DFO-FPP’s mandate.

2 Mandate, Relevant Legislation and Policy

The *Constitution Act* (1982) provides the Federal Government with exclusive authority for coastal and inland fisheries within Canada’s territorial boundaries. DFO exercises this power through, the administration of the *Fisheries Act* and some aspects of the *Species at Risk Act*. Under the *Fisheries Act*, DFO is responsible for the management, protection and conservation of fish (which include marine mammals as defined by the *Fisheries Act*) and their habitats.

DFO-FPP undertakes the regulatory review of the proposed Project in and around fisheries waters to ensure that works, activities and undertakings are conducted in such a way that the proponents are in compliance with the applicable provisions of the *Fisheries Act*.

The mandate of DFO-FPP is to maintain the sustainability and ongoing productivity of commercial, recreational and Aboriginal fisheries. Sub-section 35 (1) of the *Fisheries Act* states that “No person shall carry on any work, undertaking or activity that results in *serious harm to fish* that are part of a commercial, recreational, or Aboriginal fishery or to fish that support such a fishery.”

Fisheries and Oceans Canada interprets *serious harm to fish* as:

- the **death of fish**;
- a **permanent alteration** to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes;
- the **destruction of fish habitat** of a spatial scale, duration, or intensity that fish can no longer rely upon such habitats for use as spawning grounds, or as nursery, rearing, or

food supply areas, or as a migration corridor, or any other area in order to carry out one or more of these life processes.

However, under Paragraph 35 (2) (b) of the *Fisheries Act*, the Minister of Fisheries, Oceans and the Canadian Coast Guard may issue an authorization with terms and conditions in relation to a proposed work, undertaking or activity that may result in serious harm to fish. The above are subject to the consideration of the four factors in Section 6 of the *Fisheries Act*:

1. The contribution of the relevant fish to the ongoing productivity of commercial, recreational or Aboriginal fisheries;
2. Fisheries management objectives;
3. Whether there are measures and standards to avoid, mitigate or offset serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or that support such a fishery; and
4. The public interest.

DFO-FPP is guided by the “Fisheries Protection Policy Statement (2013)”, which is intended to provide guidance to Canadians and ensure compliance with the *Fisheries Act*. The *Fisheries Protection Policy Statement* addresses key threats to the productivity and sustainability of our fisheries, through standards and guidelines to avoid, mitigate, and offset impacts to fisheries.

The “Fisheries Productivity Investment Policy: A Proponent’s Guide to Offsetting (2013)” provides guidance on undertaking effective measures to offset serious harm to fish that are part of or that support a commercial, recreational or Aboriginal fishery, consistent with the fisheries protection provisions of the *Fisheries Act*. The objective of offsetting is to counterbalance unavoidable *serious harm to fish* and the loss of fisheries productivity resulting from a project. For more information, see: <http://www.dfo-mpo.gc.ca/pnw-ppe/pol/index-eng.html>.

The *Species at Risk Act* (SARA) is intended to prevent Canadian indigenous species, subspecies and distinct populations of wildlife from being extirpated or becoming extinct. SARA facilitates the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity and manage species of special concern (to prevent them from becoming endangered or threatened). The Minister of Fisheries, Oceans and the Canadian Coast Guard is the competent minister for listed aquatic species that are fish as defined in the *Fisheries Act* Section (2) and for marine plants as defined in the *Fisheries Act*, Section 47.

Environmental and Climate Change Canada (ECCC) is responsible for the administration and enforcement of the pollution prevention provisions of the *Fisheries Act*, Sections 34 and 36-42 on behalf of DFO.

3 Technical Review Comments

3.1 Freshwater Environment

Review Comment Number	3.1.1 Watercourse Crossings, Diversions, Encroachments, and Fish Passage
Subject/Topic	Fish passage issues and inconsistent/incomplete information
References	<ul style="list-style-type: none"> • Addendum to the Final Environmental Impact Statement, Mary River Project – Phase 2 Proposal (FEIS Addendum): Table 1-1 (p. 1.8-1.13; p. 122-127 of 236); Section 10.8 Navigable Waters (p. 10.25; p. 227 of 236); • Water License Application (TSD 02 Appendix D): Section 2.5 Watercourse Crossings and Diversions (p. 16-17 of 48; p. 24-25 of 1839); • Surface Water Assessment (TSD 13): Section 2.5.2 Increased Flow Velocity at North Railway Watercourse Crossings (p. 15-16 of 67; 26-27 of 173); Section 2.5.3 Flow Diversions at Stream Crossings along the North Railway (p. 16-21 of 67; 27-32 of 173); Section 4.3.3.2 Proposed Works (p. 60 of 67; 71 of 173); Appendix D Hydrologic Impacts of Flow Diversions (p. D-1 to D-52; p. 125-173 of 173); • Freshwater Biota and Habitat Assessment (TSD 14): Section 2.2.2 Tote Road (p. 7-8; p. 16-17 of 120); Section 2.5.1.2 Habitat loss and Alteration (p. 19-24; p. 28-33 of 120); Appendix 1: North Railway Fish Habitat Quantification, Section 2.2. Results (p.6; p. 59 of 120); Appendix 1, Section 4.1.3 Diversions (p. 17; p. 70 of 120); Appendix 1, North Railway Fish Habitat Quantification, Section 4.2.3.2 Stream Crossings: Culvert Installations,(p. 31-32; p. 84-85 of 120); and, • Conceptual Freshwater Offsetting plan (TSD 15): Section 5, Serious Harm Assessment, 5.3 Northern Transportation Corridor, 5.3.2 Culverts (p. 19 of 39; 24 of 78).
Summary	<p>The Proponent identified several fish passage issues associated with the proposed watercourse crossings, diversions, and encroachments that are a part of the Project. For example, for the proposed North Railway, <i>“Of the 130 stream crossings in Arctic char habitat for which hydraulic modelling was completed, passage of a 100 mm Arctic char would not be impeded at 57 (44%) and 19 (15%) sites [...]. Of the remaining sites, 72 (55%) and 99 (76%) culvert crossings may partially impede upstream movements of Arctic char of 100 mm in length under average open-water season flows (Appendix 1). Total loss of fish passage under average flow conditions are predicted for one (1%) crossing under Vmin and 12 (9%) crossings under Vmax”</i> (TSD 14, Appendix 1, Section 4.2.3.2 Stream Crossings: Culvert</p>

Installations, p. 31-32; p. 84-85 of 120, and TSD 14, Section 2.5.1.2 Habitat loss and Alteration, Fish Passage, p. 22; p. 31 of 120).

Fish passage concerns are amplified when coupled with impacts from diversions, encroachments, and existing or modified watercourse crossings, examples include:

- *“The 10% increase in flow threshold will be exceeded at 19 of the 26 diversion locations”* (TSD 13 Section 2.5.3, Flow Diversions at Stream Crossings along the North Railway; p. 16-21 of 67; 27-32 of 173);
- Percent increased flow ranges from 0 to 7332% (TSD 13 Appendix D Hydrologic Impacts of Flow Diversions; p. D-1 to D-52; p. 125-173 of 173);
- *“A total number of 12 and 22 encroachment/infill sites were identified within lakes/ponds that may support Arctic char and Ninespine stickleback, respectively”* (TSD 14 Appendix 1: North Railway Fish Habitat Quantification, Section 2.2. Results, p.6; p. 59 of 120);
- *“Four sites [...] where the rail will encroach upon or cross pond habitat and potentially affect access between pond and stream habitat are each predicted to result in some degree of fish passage impediment”* (TSD 14, Appendix 1, Section 4.2.3.2 Stream Crossings: Culvert Installations, p. 31; p. 84 of 120); and,
- *“In some instances, the road and rail crossings will effectively become one installation. In these cases, fish passage may be impeded by the cumulative effect of the road and rail crossings”* (Freshwater Biota and Habitat Assessment, TDS 14, Section 2.5.1.2 Habitat loss and Alteration, p. 22; p. 31 of 120).

There are inconsistencies throughout the documentation regarding the number of watercourse crossings, diversions, and encroachments that are required for the Project. For example, for watercourse crossings, the FEIS Addendum, Table 1-1 (p. 1.8-1.13; p. 122-127 of 236) indicates that that North Railway will require *“up to 425 crossings (421 culverts and 4 bridges)”*, while Section 10.8 Navigable Waters (p. 10.25; p. 227 of 236) states *“construction of the North Railway will require 433 watercourse and drainage crossings along its route.”* The Water License Application (TSD 02 Appendix D, Section 2.5 Watercourse Crossings and Diversions (p. 16 of 48; p. 24 of 1839) states that the North Railway *“will cross 465 watercourse and drainage crossings”*.

In the Surface Water Assessment, TSD 13, Section 4.3.3.2 Proposed Works, the Proponent states *“the North Railway will cross an estimated 443 watercourse and drainage crossings”* (p. 60 of 67; 71 of 173) and Appendix D, Stream Morphology Assessment, 3-Culvert depth and velocities (p. 3 of 6; 128 of 173) states *“[...] at each of the 462 crossings”*. Approximately 27 to 32 diversions are required: according to the Water License Application, Section 2.5 Watercourse Crossings and Diversions (p. 17 of 48; 25 of 1839) there will 27 diversions; in TSD 13 Surface Water Assessment, Section

	<p>4.3.3.2 Proposed Works (p. 60 of 67; 71 of 173) there will be 32 stream diversions, and in the Freshwater and Biota Habitat Assessment (TSD 14) Appendix Section 4.1.3 Diversions (p. 17; p. 70 of 120), a total of 31 streams will be diverted.</p> <p>The Proponent posits that they will “<i>incorporate additional measures to reduce streamflow velocities during detailed engineering design</i>” and “<i>with additional engineering design, flow velocities that currently exceed fish passage thresholds will be able to be reduced below the thresholds</i>” (Surface Water Assessment TSD 13, Section 2.5.2 Increased Flow Velocity at North Railway Watercourse Crossings, p. 15-16 of 67; 26-27 of 173). The Proponent’s position is that “<i>with implementation of design and mitigation measures, effects of culvert installations on fish passage are assumed to be negligible</i>” (Conceptual Freshwater Offsetting plan, TSD 15, Section 5 Serious Harm Assessment, 5.3 Northern Transportation Corridor, 5.3.2 Culverts, p. 19 of 39; 24 of 78).</p>
Importance of issue to the impact assessment process	<p>The majority of proposed watercourse crossings do not allow fish passage. Fish require access to habitat and the ability to move among habitat types to complete one or more life processes. In order to maintain compliance with the <i>Fisheries Act</i>, all crossings or other structures must allow for fish passage, for all flow scenarios and all life stages. Inconsistent information related to proposed watercourse crossings, diversions, and encroachments may result in an inaccurate assessment of impacts to fish and fish habitat.</p>
Detailed Review Comment <ol style="list-style-type: none"> 1. Gap/Issue 2. Disagreement with EIS conclusion 3. Reasons for disagreement with EIS conclusion 	<ol style="list-style-type: none"> 1. DFO-FPP is concerned about the number of crossings, diversions, and encroachments that may result in barriers to fish passage. 2. DFO-FPP disagrees with the proponent’s perspective that “<i>with implementation of design and mitigation measures, effects of culvert installations on fish passage are assumed to be negligible</i>”. (Conceptual Freshwater Offsetting plan, TSD 15, Section 5 Serious Harm Assessment, 5.3 Northern Transportation Corridor, 5.3.2 Culverts, p. 19 of 39; 24 of 78). 3. There is concern that the mitigation measures provided may be inadequate to address passage issues. DFO-FPP has difficulty understanding how the mitigation measures provided will adequately address issues to fish passage. DFO-FPP notes that there are persistent issues with existing Tote Road watercourse crossings (TSD 14 Section 2.2.2 Tote Road, p. 7-8; p. 16-17 of 120).
Information Request	<p>IR 3.1.1:</p> <p>Provide an updated table which contains all information related to watercourse crossings, diversions, and encroachments. The table should include:</p>

	<p>a) A numbered list of proposed crossings, diversions, and encroachments;</p> <p>b) If the crossing is permanent, temporary, new, replacement, extension, or modification;</p> <p>c) The type of crossing structure (e.g. bridge, culvert). In cases where a single or multi barrel culvert crossing is proposed, please indicate if a box culvert or bridge is a feasible alternative;</p> <p>d) Information regarding locations that will have more than one crossing, diversion, or encroachment on the same waterbody;</p> <p>e) Fish-bearing status and species present. For fish-bearing status, please indicate yes/no. In cases where uncertainty exists (e.g. “possible”, “probable”, “possible”, “unlikely”), DFO will consider these habitats to be fish-bearing;</p> <p>f) Description of fish habitat and waterbody characteristics; and,</p> <p>g) Amount (m²) of fish habitat permanently altered or destroyed at each site.</p> <p>IR 3.1.2: Provide the approaches that will be used to provide passage in watercourses where Arctic char are present.</p>
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3.2 Marine Environment

Review Comment Number	3.2.1 Shipping and Marine Mammals
Subject/Topic	Potential Shipping Impacts to Marine Mammals
References	<ul style="list-style-type: none"> • Project Description (TSD 02): Section 5.2.1 Proposed Shipping Activities from Milne Port for the Phase 2 Proposal (p. 5.3-5.5; p. 71-73 of 251); • Ship Wake and Propeller Assessment (TSD 22): Section 2.0 Model Inputs, Section 2.1 Vessel Specifications and Schedule (p. 5; p. 15 of 64); • Marine Mammal Effects Assessment (TSD 24): Section 2.1.4 Auditory Masking (p. 13-14; p. 24-25 of 365); Section 2.3 Project Monitoring (p. 14-15; 25-26 of 365); Section 2.5.2.2 Shipping (p. 24; p. 35 of 365); Section 2.6 Effects Assessment Narwhal, Section 2.6.2.2 Shipping (p. 33-35; p. 44-46 of 365); Section 2.8 Effects Assessment – Bowhead Whale, 2.8.4 Mortality (p. 47-48; p. 58-59 of 365); Section 3.0 Uncertainty (p. 53-54; p. 64-65 of 365); and, • Cumulative and Transboundary Effects Assessment (TSD 27), Section 1.4.14, Marine Mammals (p. 42-46; p. 50-55 of 76).

<p>Summary</p>	<p>Potential Effects to Marine Mammals</p> <p>Overall, the Proponent indicates that effects to marine mammals will be minimal, and that concerns will be addressed through effective implementation of mitigation.</p> <p>For example, The Marine Mammal Effects Assessment (TSD 24), Section 2.6 Effects Assessment Narwhal, Section 2.6.2.2 Shipping (p. 33; p. 44 of 365) states: <i>“Since 2013, Baffinland has conducted shore based monitoring at Bruce Head to study narwhal response to shipping traffic along the shipping route in Milne Inlet during the open-water season, with data collected on abundance, distribution, group composition, and behavior (Moulton et al. 2016). Most narwhal occurring along the shipping route near Bruce Head were shown to be in transit, with some evidence of nursing, mating and foraging behavior also observed. Approximately 40% of the group sightings included calves or yearlings, supporting the hypothesis that southern Milne Inlet is an important area for calf rearing. Results collectively indicated that narwhal do not respond to large vessels by fleeing; but rather remain in the area with some individuals showing temporary avoidance behavior during active ship transits. Animals demonstrated a more pronounced avoidance behavior to ships approaching from the south (Milne Port) than from the north. No changes in yearly relative abundance or distribution were observed, nor any evidence of long-term displacement or avoidance behavior (Moulton et al. 2016).”</i></p> <p>Additionally, the Proponent states in the Cumulative and Transboundary Effects Assessment (TSD 27), Section 1.4.14.1 Climate Change and Marine Mammals, 1.4.14.2 Ringed Seal (p. 44; p. 52 of 76): <i>“The potential future development scenario would involve shipping in ice as late as mid-March, which is the time that ringed seals establish their birth lairs (FEIS Volume 8, Section 5.1.1). Pups are born in April. Shipping will not be undertaken during the pupping season. Ringed seals will nonetheless experience changes to its habitat due to disturbed ice. The habitat change was estimated at 4% to 6% of the available landfast ice in Section 1.4.14.2, which less than the 10% threshold applied in the ringed seal habitat loss assessment in the FEIS (Volume 8, Section 5.6.2.1).”</i></p> <p>Noise</p> <p>In the Cumulative and Transboundary Effects Assessment (TSD 27), Section 1.4.14 Marine Mammals (p. 42; p. 50 of 76), the Proponent states: <i>“given the physics of underwater sound, the cumulative sound level is not predicted to increase when multiple vessels are present in the same area (TSD-24). Therefore, [...] it is not expected that marine mammals including species at risk would be affected at the population level.”</i> Whereas, in TSD 24, Section 2.6.2.2 Shipping, Residual Effect (p.35; p. 46 of 365), it indicates that narwhal are expected to exhibit temporary and localized</p>
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avoidance behavior when encountering Project vessels along the shipping route and in Milne Port, with no abandonment or long-term displacement behavior anticipated.

However, Section 2.6 Effects Assessment Narwhal, 2.6.2.2 Shipping (p. 34; p. 45 of 365) indicates that noise beyond the disturbance threshold was shown to reach out to several tens of kilometers from a Cape sized carrier, in some cases extending from shoreline to shoreline. The Proponent acknowledges that animals exposed to ship noise in these areas may have limited options for avoidance. The Proponent also acknowledges that uncertainty remains regarding the degree (e.g. magnitude and duration) to which some effects may occur (TSD 24, Section 3.0 Uncertainty; p.53-54; p. 64 -54 of 365).

In the Marine Mammal Effects Assessment (TSD 24), Section 2.1.4 Auditory Masking (p. 13-14; p. 24-25 of 365), the Proponent indicates that some degree of auditory masking was predicted for both narwhal and beluga given overlap of ship noise at the lower end of their communication range. However the Proponent states that given the lower frequency and short duration of vessel noise, it is unlikely that masking from ship noise would significantly affect narwhal or beluga. The Proponent also clarifies that auditory masking effects are most relevant for bowhead whales, to be localized in Milne Port, and of a short-term along the shipping route relative to the interval between ship transits. The Proponent states: *“With the effective implementation of mitigation, the residual environmental effect of auditory masking from pile driving and shipping was predicted to be “Not Significant” for all marine mammals.”*

Vessel Strikes

In the Marine Mammal Effects Assessment (TSD 24), Section 2.8 Effects Assessment – Bowhead Whale, 2.8.4 Mortality, (p. 47-48; p. 58-59 of 365) the Proponent states: *“Project shipping along the Northern Shipping Route overlaps within the summer range of bowhead in the RSA. Potential collisions between bowhead and Project-related vessels could result in serious injury or death.”* The Proponent states: *“The lower vessel speeds during operations are predicted to reduce the likelihood of ship strikes on bowhead [...], as well as time for crew on Project vessels to detect and avoid marine mammals during active vessel operations.”* However, in the Marine Mammal Effects Assessment (TSD 24), Section 2.3 Project Monitoring (p. 14; p. 25 of 365) Section 2.3 Project Monitoring (p. 14-15; 25-26 of 365) it states: *“A marine mammal surveillance monitoring program was [...] discontinued in 2016 as it was determined that very few marine mammals were visible to observers on board the vessels, and there were safety concerns regarding observers boarding the vessels at sea.”*

	<p>Shipping Season</p> <p>The proponent provides a range of seasonal shipping schedules, and varying number of vessel transits per season across various technical documents. Dates range from the nominal open water season (August 5 to October 15) to shoulder seasons which potentially involving ice breaking.</p> <p>For example, the Marine Mammal Effects Assessment (TSD 24), Section 2.5.2.2 Shipping (p. 24; p. 35 of 365) states: <i>“An estimated 176 ore carrier round trips (upper limit) will be required [...] between July 01 and November 15.”</i> While the Project Description (TSD 02), Section 5.2.1 Proposed Shipping Activities from Milne Port for the Phase 2 Proposal (p. 5.3-5.5; p. 71-73 of 251) states: <i>“estimated total shipping window is 79 days of open water (mid-July to October) [...] For the Phase 2 Proposal, shipping will also occur, as required, during periods of ice-break up (early July) and ice formation (up to mid-November) which will effectively extend the annual shipping window to approximately 137 days.”</i> However, Ship Wake and Propeller Assessment (TSD 22), Section 2.0 Model Inputs, Section 2.1 Vessel Specifications and Schedule (p. 5; p. 15 of 64) states: <i>“peak shipping months are expected to occur during the ice free open water season of July, August and September; with an estimated total of 184 round-trips respectively.”</i></p>
<p>Importance of issue to the impact assessment process</p>	<p>Increased shipping activities have the potential for significant adverse effects to marine mammals and may cause tissue injury, behaviour disturbance, displacement and minimize auditory abilities. Consequences may be loss of habitat, failure to maintain social groups/separation injury, and/or mortality.</p>
<p>Detailed Review Comment</p> <ol style="list-style-type: none"> 1. Gap/Issue 2. Disagreement with EIS conclusion 3. Reasons for disagreement with EIS conclusion 	<p>DFO-FPP suggests potential effects and cumulative effects to marine mammals may not have fully been assessed by the Proponent and that proposed mitigation measures may be inadequate to address issues.</p> <p>DFO-FPP disagrees with the Proponent’s assertion that “with mitigation measures in place, residual environmental effects to marine mammals were predicted to be “Not Significant” for <u>all</u> marine mammals” (emphasis added); Marine Mammals Effects Assessment, TSD 24, Section 2.1.5 Mortality, p. 14; p. 25 of 365) and is concerned that the mitigation measures proposed will not adequately address all potential impacts.</p> <p>DFO-FPP understands that reduced speeds can assist with mitigating the potential for strikes. However, there is uncertainty regarding the reduced speeds offering “ample time for these animals to avoid oncoming vessels” when animals are resting or feeding. Also, reduced speeds are viewed as providing crew on Project vessels opportunity to detect marine mammals, however, as of 2016 there have been no observers, and there is</p>

	<p>uncertainty as to the likelihood baleen whales may be detected to avoid strikes.</p> <p>DFO-FPP is concerned that the modelling of impacts and mitigation may not be adequate, and that cumulative effects have not been sufficiently considered. Given uncertainty, and the potential limitations of mitigation measures in some areas, DFO-FPP is concerned that the assertion that residual effects from auditory masking are non-significant for all marine mammals may not be accurate. The Proponent indicates that the short duration of vessel noise, and intervals between ship transits are factors which contribute the conclusion that the effects of auditory masking will result in “not significant” impacts for all marine mammals. DFO-FPP disagrees that marine mammals may be only subject to short term noise along the shipping route. DFO-FPP notes large ships that transmit sound shore to shore may limit the effectiveness of sound mitigation measures if marine mammals are limited in their options for avoidance. For example, if narwhal movements are limited, the narwhal may have greater exposure to cumulative multiple stressors of varying magnitude and duration.</p> <p>DFO also notes that for the Eclipse Sound narwhal stock, which use the area as breeding and nursing grounds, acoustic disturbance is a concern when mothers are communicating with calves. Given information varies across technical documents, DFO-FPP is unclear which vessels will be active during which seasons, including shoulder seasons, and the extent to which ice breaking may be required. Additionally, DFO-FPP is uncertain what the increase of vessel traffic frequency will be per year, and the amount of time vessels will spend in Milne Inlet/outside the Regional Study Area (RSA) as they wait to access the port. There is the potential that ships awaiting access to port while in marine mammal habitat will limit the amount of time mammals can use the habitat; this includes limitations to mammals accessing Eclipse Sound.</p>
Information Request	<p>IR 3.2.1: Provide an updated/consolidated table which contains all information related to shipping. The table should include information from 2019-2035 regarding:</p> <ul style="list-style-type: none"> a) Numbers of ships (totals for types and overall total for all vessels); b) Types of ships (e.g. Panamax/Cape Sized); c) Number of round trips for all types of vessels; d) Shipping season schedules in relation to a, b, and c; and, e) Support vessels (number and type) in relation to all the above, this includes tugs and icebreaking vessels. <p>IR 3.2.2: Provide additional information on:</p>

	<ul style="list-style-type: none"> a) Areas that will be impacted by noise that may extend shoreline to shoreline and the potential impacts to mammals that are not expected to display displacement/abandonment; b) Information on proposed anchorage areas including routing, duration of vessels in anchored areas, and maximum number of vessels expected; c) The approaches that will be used to mitigate the cumulative effects of strikes and sound on habitats used by marine mammals in areas where avoidance behaviour may not occur; d) The approaches that will be used to mitigate the cumulative effects of strikes and sound on habitats used by marine mammals for nursery, rearing, and foraging, especially in areas where avoidance behaviour may not occur; and, e) The monitoring approaches that will be used to assess impacts of all activities to marine mammals during shoulder seasons. <p>IR 3.2.3: Provide a memorandum to summarize and discuss the results from 2014 and 2015 marine mammal surveillance monitoring program conducted onboard the Project ore carriers in 2014 and 2015.</p> <p>IR 3.2.4: Provide clarification on how acoustic modelling incorporated potential impacts of ice (e.g. ice cover, movement of vessels through ice-covered waters).</p>
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4 Summary of Requests

3.1 Freshwater Environment		
		<p>IR 3.1.1: Provide an updated table which contains all information related to watercourse crossings, diversions, and encroachments. The table should include:</p> <ul style="list-style-type: none"> a) A numbered list of proposed crossings, diversions, and encroachments; b) If the crossing is permanent, temporary, new, replacement, extension, or modification; c) The type of crossing structure (e.g. bridge, culvert). In cases where a single or multi barrel culvert crossing is proposed, please indicate if a box culvert or bridge is a feasible alternative; d) Information regarding locations that will have more than one crossing, diversion, or encroachment on the same waterbody; e) Fish-bearing status and species present. For fish-bearing status, please indicate yes/no. In cases where uncertainty exists (e.g. “possible”, “probable”, “possible”, “unlikely”), DFO will consider these habitats to be fish-bearing;

		<p>f) Description of fish habitat and waterbody characteristics; and,</p> <p>g) Amount (m²) of fish habitat permanently altered or destroyed at each site.</p> <p>IR 3.1.2: In watercourses where Arctic Char are present, provide the approaches that will be used to provide passage for Arctic Char.</p>
3.2 Marine Environment		
		<p>IR 3.2.1: Provide an updated/consolidated table which contains all information related to shipping. The table should include information from 2019-2035 regarding:</p> <ul style="list-style-type: none"> a) Numbers of ships (totals for types and overall total for all vessels); b) Types of ships (e.g. Panamax/Cape Sized); c) Number of round trips for all types of vessels; d) Shipping season schedules in relation to a, b, and c; and, e) Support vessels (number and type) in relation to all the above, this includes tugs and icebreaking vessels. <p>IR 3.2.2: Provide additional information on:</p> <ul style="list-style-type: none"> a) Areas that will be impacted by noise that may extend shoreline to shoreline and the potential impacts to mammals that are not expected to display displacement/abandonment; b) Information on proposed anchorage areas including routing, duration of vessels in anchored areas, and maximum number of vessels expected; c) The approaches that will be used to mitigate the cumulative effects of strikes and sound on habitats used by marine mammals in areas where avoidance behaviour may not occur; d) The approaches that will be used to mitigate the cumulative effects of strikes and sound on habitats used by marine mammals for nursery, rearing, and foraging, especially in areas where avoidance behaviour may not occur; and, e) The monitoring approaches that will be used to assess impacts of all activities to marine mammals during shoulder seasons. <p>IR 3.2.3: Provide a memorandum summarizing and discussing the results from 2014 and 2015 marine mammal surveillance monitoring program conducted onboard the Project ore carriers in 2014 and 2015.</p> <p>IR 3.2.4: Provide clarification on how acoustic modelling incorporated potential impacts of ice (e.g. ice cover, movement of vessels through ice-covered waters).</p>