| Information Request | Baffinland Response |
|---|---|
| The shipping corridor through the Baffin Bay and Greenlandic waters must be illustrated and described in the report. Likewise, affected marine habitat and sensitive fauna in the zone of influence along the shipping corridor must be described. The assessment should include an evaluation of the shipping route and season in relation to migration corridors and periods for marine mammals. | Baffinland does not maintain an established shipping corridor through Baffin Bay for vessels coming to Milne Port. Vessel Captains are responsible for finding the safest route between their ports of origin and the entrance to Eclipse Sound, and complying with all international law applicable to shipping through the Exclusive Economic Zones of other nations. For clarity, Baffinland does not expect vessels coming to Milne Port to transit through Greenland's Territorial Seas (>12nm from shore). An assessment of shipping through Baffin Bay on the marine environment, including marine mammals, was not required by the Environmental Impact Statement Guidelines for the Mary River Project and is not available for summary within the Espoo Report. |
| The effect on using Store Hellefiskebanke as anchoring site is not described in the report. Store Hellefiskebanke is recognized as a particular sensitive sea area, and the effect of the proposed activities must be described in detail in the report. | Based on the limited, incidental usage of Store Hellefiskebanke in relation to the Phase 2 Proposal, an effects assessment was not included as part of the Environmental Impact Statement Addendum. A detailed description of the potential use of Store Hellefiskebanke is included in this submission as Attachment 1 and supports the finding that the Project-environment interactions are well understood, are common to projects of this nature, and can be addressed through the application of standard, proven mitigation or prevention approaches.<br><br>It is noted that in all matters of marine transportation, the Vessel Captain has an overriding obligation to protect the safety of their vessel, crew, and the environment for which they are ultimately responsible. As such, a vessel may seek refuge, or stop in anchor in any suitable area along their route as required. This includes anchoring at Store Hellefiskebanke. |
| Information on the type of fuel used in the ore carriers must be described in the report. | Ore carriers will use fuels that are compliant with international and national regulations. The general fuel types to be used by ore carriers throughout the life of the Phase 2 Proposal include:<br>• Heavy Fuel Oil (HFO) contains a particularly high viscosity and density. In the MARPOL Marine Convention of 1973, heavy fuel oil is defined either by a density of greater than 900 kg/m$^3$ at 15°C or a kinematic viscosity of more than 180 mm$^2$/s at 50°C.<br>• Low Sulphur Fuel Oil (LSFO) is a heavy fuel oil with sulphur content is below 1%. Usually these are marine fuel types IFO 180 or IFO 380, which have been desulfurized.<br>• Marine Gas Oil (MGO) usually consists of a blend of various distillates. Marine gasoil is similar to diesel fuel, but has a higher density. The quality grades DMX, DMA, DMB and DMZ according to ISO 8217 "Petroleum Products – Fuel (class F)" are also commonly referred to as marine gasoil.<br><br>The mix of fuels used by ore carriers will change with the planned implementation and exemptions allowed under the new Arctic heavy fuel oil ban.<br>• **2021-2023:** Use and carriage of HFO is allowed if a vessel is equipped with scrubbers. Ore carriers may use a mix of HFO, LSFO and lighter distillates (MGO or similar).<br>• **2024-2029:** Use and carriage of HFO is banned in the Arctic, with some exemptions based on the location of HFO fuel tanks and installation of scrubbers. Ore carriers may use a mix of HFO, LSFO and lighter distillates (MGO or similar)<br>• **2030+:** Use and carriage of HFO is completed banned in the Arctic, only lighter distillates (MGO or similar) |
| Mitigation measures and emergency response plans in case of any major accidents in Greenlandic waters must be described in the report. | This is addressed in Section 6 of the Espoo Report. Vessels in transit to and from Milne Port are responsible for maintaining Shipboard Oil Pollution Emergency Plans (SOPEP). Regulation 37 of Annex I of MARPOL provides direction for the contents of a SOPEP, including all the information and operational instructions related to the emergency procedure, including a listing of equipment in the SOPEP kit. |

| | |
|---|---|
| The majority of ore is planned to be shipped through the Hudson Strait where the shared stocks of bowhead whale and walrus are present during summer. The effect of the shipping through the southern route on shared stocks must be described in the report. | Shipping through the Hudson Strait is part of the original project proposal, approved in 2012. Phase 2 does not propose additional shipping through Hudson Strait.<br><br>Effects of the Project (including transboundary effects) that do not change from activities associated with the Phase 2 Proposal have not been revisited. This includes potential transboundary effects associated with project effects to marine mammals resulting from shipping along the southern shipping route to and from Steensby Port. |
| The predicted effect on marine mammals (especially narwhals) caused by shipping in Milne Inlet and Eclipse Sound (and adjacent waters) is based on the past experience from shipping with smaller vessels in a shorter period of time. The possible long term effect caused by the current shipping is yet to be determined and the proposed upscaling of the shipping period and size of the vessels will add to the uncertainty of the long term effect on the narwhal stock which is shared with Greenland. This uncertainty must be quantified in the report in order to make it possible to take the uncertainty into account in the biological advice on sustainable harvest from the stock. | Uncertainty was addressed in standalone sections in all marine mammal assessments for Phase 2. According to the Phase 2 assessment methodology, uncertainty levels are only assigned where the potential residual effect rating is significant, which is not the case for any of the predictions related to marine mammals. Despite this, at the request of the Department of Fisheries and Oceans through the review process, Baffinland provided an updated combined effects assessment as part of a technical memorandum update on the results of the 2019 marine mammal monitoring programs. The updated residual effects ratings and significance determinations for marine mammals, with assignments of ratings for ‘probability’ and ‘certainty’ is included in this submission as Attachment 2.<br><br>References<br>• Technical Supporting Document 24 – Marine Mammal Effects Assessment, Section 3 ‘Uncertainty’<br>• Assessment of Icebreaking Operations during Shipping Shoulder Seasons on Marine Biophysical Valued Ecosystem Components (VECs), Section 5.9 Uncertainty<br>• Technical Memorandum - Summary of Results for the 2019 Marine Mammal Monitoring Programs, Section 8 ‘Combined Effects Assessment’ |
| Relevant mitigation measures to the abovementioned key concerns must be addressed in the report. | Mitigation measures and monitoring programs designed to address uncertainty within the assessment are described within the paragraphs contained in Section 5.4.2 of the Espoo Report. |

# Attachment 1
# Store Hellefiskebank Anchorage

**Background**

In the Assessment of Icebreaking Operations during the Shoulder Season, a process is described for Project vessels to use a recognized anchorage location off the west coast of Greenland, known as Store Hellefiskebank (or the Bank), as an alternative to anchoring and/or drifting in Baffin Bay at the mouth of Eclipse Sound at the start of the shipping season. The following provides additional information regarding the potential use of the Bank as a temporary refuge area for vessels prior to entering Baffinland's Regional Study Area (RSA).

**Need**

Two key mitigations committed to for the Project influenced Baffinland's decision to identify Store Hellefiskebank as an alternative anchoring area for vessels calling to Milne Port. The first mitigation includes Baffinland's commitment to limit the number of Project vessels allowed in the RSA at any given time, which was developed largely in response to community concerns. Baffinland has also committed to limiting the number of vessels that will enter the RSA in July when ice conditions are greater than 3/10[1].The purpose of these vessel transit restrictions is to limit disturbance to narwhal as they enter the RSA during their spring migration.

Operationally, this means that some vessels may arrive in Baffin Bay before they have obtained clearance from the Port Captain to begin their transit into the RSA. In such instances where a vessel may have to wait an extended period to time to enter the RSA (i.e. over a 24-hour period), rather than drift and/or anchor in Baffin Bay at the mouth of Eclipse Sound, the Vessel Captain may instead determine to anchor at Store Hellefiskebank as a safer alternative. It is noted that in all matters of marine transportation, the Vessel Captain has an overriding obligation to protect the safety of their vessel, crew, and the environment for which they are ultimately responsible. As such, a vessel may seek refuge, or stop in anchor in any suitable area along their route as required.

**Location**

Store Hellefiskebank extends approximately 100nm off the west coast of Greenland into Baffin Bay (between 66-68°N) with depths ranging from approximately 50-100m. As described in the Sailing Directions for West Greenland produced by the Danish Geodata Agency, Store Hellefiskebank is identified

[1] Between the period of 01 July and 30 July, a maximum of one transit1 or two half-transits) will occur per day (24-h period) where ice concentrations of 6/10 or greater cannot be avoided along the shipping route.Between the period of 01 July and 30 July, a maximum of two transits or four half transits will occur per day (24-h period) where ice concentrations less than 6/10 but greater than 3/10 cannot be avoided along the shipping route.

as an area suitable for anchoring as it is generally ice free during the Shoulder Seasons (see Section 4.2.6.3.2).

Figure 1 shows the general area where vessels may anchor along the bank. As depicted, the area that may be used for anchoring is outside of Greenland's Territorial Seas (>12nm from shore) but within the Exclusive Economic Zone (EEZ) (<200nm from shore). It should be noted that the potential anchoring area is larger than both Eclipse Sound and Milne Inlet combined.

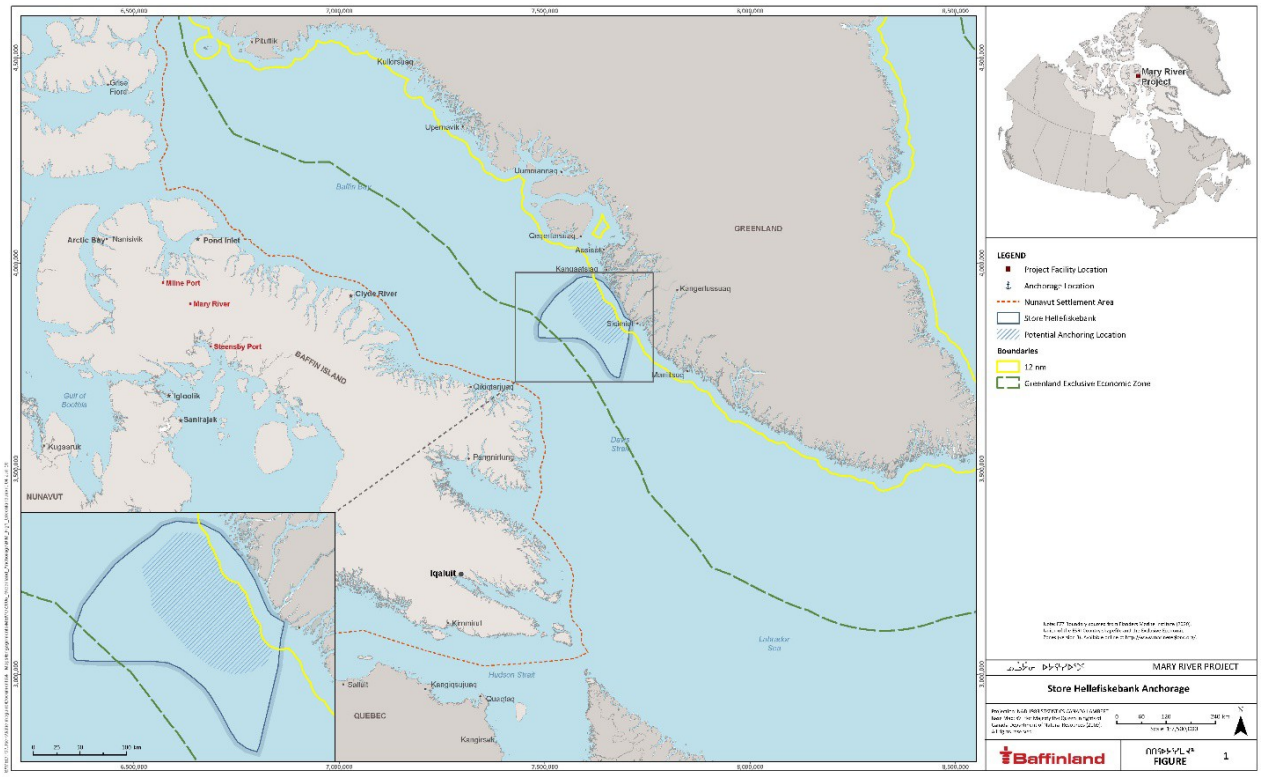


***Figure 1: Location of Area for Anchoring at Store Hellefiske Bank***

## Description of Activity

For the sake of providing certainty in the operations, scheduling of vessels assumes a consistent flow of vessels to Milne Port, using all available anchorages and berths along the way. At the start of the shipping season when vessel transit limitations apply, the ability to escort all vessels to available anchorages and berths in Eclipse Sound (Ragged Island) and at Milne Port is limited, and some vessels will be required to hold outside the RSA, awaiting instruction to enter from the Port Captain.

A less likely scenario can also occur at other points throughout the shipping season (i.e. even when vessel transit restrictions do not apply) if there are unanticipated interruptions of loading activities at Milne Port, delays due to weather, or a vessel arrives earlier than expected.

If the Port Captain identifies that vessels cannot not yet enter the RSA, it is at the Vessel Captain's discretion to choose a safe area to await further instructions. Store Hellefiskebank is typically ice free at the time of the start of the shipping season, has suitable depths for anchoring and offers a safer alternative to waiting in the middle of Baffin Bay where the vessel is more exposed to weather conditions.

Accordingly, some vessels may choose to use that area. While there, it is expected vessels will anchor rather than drift in order to save fuel, although this decision ultimately rests with the Vessel Captain.

For clarity, this is a common and incidental activity to shipping through Baffin Bay and is consistent with the shipping route described in the Early Revenue Phase (ERP), which remains unchanged for Phase 2. The activity occurs at a Vessel Captain's discretion for purposes of safety and consistent with international maritime law. Lastly, it is not expected to happen with any regular occurrence outside of the Spring shoulder season, and even then it is anticipated to be limited (<10 occurrences/season).

**Right of Use**

The master of the vessel is responsible for:

- Selecting a safe anchorage; and
- Ensuring the vessel's safety at all times.

With respect to international waters, the United Nations Conventions on the Law of the Sea (UNCLOS) applies. Both Canada and Denmark are parties to UNCLOS. Under UNCLOS, vessels passing through a country's territorial waters, as well as its EEZ, have a "right of innocent passage." This right to innocent passage includes stopping and anchoring at any point along a route, where such anchoring is incidental to ordinary navigation, force majeure or a state of distress.

**Vessel Types**

The suite of ore carriers used for each shipping season will be a function of commercial availability and ice conditions. Baffinland will seek to procure a mix of the following vessel types:

- Supramax vessels (50,000 - 60,000 deadweight tonnage (DWT));
- Panamax vessels (65,000 - 80,000 DWT);
- Kamsarmax (Post Panamax) vessels (80,000 DWT); and
- Capesize vessels (150,000 - 250,000 DWT).

Other vessels that will be procured by Baffinland to support the Project include wet/dry resupply vessels, ice breakers and tugs. An estimate of 24 voyages for other vessels (e.g. wet/dry re-supply) has been considered in the assessment of Phase 2.

Depending on the timing of their arrival in Baffin Bay, any of these vessels might anchor near Store Hellefiskebank while waiting to be called to Milne Port. Many of these vessels will have different anchors (i.e. made by a variety of manufacturers) with unique specifications, but at a minimum, anchors will have a weight adequate to hold the vessel to the seabed and have a chain length capable of dropping to a depth in the locations they have identified for safe anchorage.

**Other Considerations**

In accordance with the federal *Ballast Water Control and Management Regulations,* Project vessels are required to conduct a mid-ocean ballast water exchange that occurs 200nm from shore, in waters that are at least 2,000m deep, prior to entering Canada's EEZ. Vessels will then retain ballast (primarily for safety reasons), until reaching Milne Port, at which point they will discharge ballast in accordance with

the protocols outlined in Baffinland's Ballast Water Management Plan. As such, no discharge of ballast water will occur at Store Hellefiskebank.

Vessels may release grey water or treated sewage while anchored at Store Hellefiskebank. Any discharges from the vessel will be conducted under the International Convention for the Prevention of Pollution from Ships (MARPOL, Annex IV), and the International Maritime Organization's International Code for Ships Operating in Polar Waters (Polar Code).

All vessels procured by Baffinland will follow the International Maritime Organization Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive species.

While at anchor, lighting on board the vessel (anchor and deck lighting) will be maintained in accordance with the Danish Maritime Authority's Order on regulations for preventing collisions at sea and Transport Canada's Collision Regulations.

# Attachment 2
# Residual Effect Ratings and Significance Determinations for Marine Mammal VECs - Phase 2

This table reflects the residual effects ratings provided in the Marine Mammal Effects Assessment (TSD-24) and the Assessment of Icebreaking Operations during Shipping Shoulder Seasons on Marine Biophysical Valued Ecosystem Components (VECs), with the addition of Qualifiers for Probability and Certainty. This table was submitted in Section 8 of the Summary of Results for the 2019 Marine Mammal Monitoring Programs, issued in final form on May 25, 2020.

| Residual Effect | Residual Effect Evaluation Criteria | | | | | | Qualifiers** | |
|---|---|---|---|---|---|---|---|---|
| | Magnitude | Extent | Frequency | Duration | Reversibility | Significance | Probability (Likelihood of Effect Occurring) | Certainty (Confidence in Effects Prediction) |
| Narwhal (BB and ES*) | | | | | | | | |
| Hearing impairment | - | - | - | - | - | - | I (Unlikely) | III (High) |
| Disturbance | Level II | Level II | Level II | Level II | Level I | N | II (Moderate) | II (Medium) |
| Acoustic masking | Level II | Level II | Level II | Level II | Level I | N | II (Moderate) | II (Medium) |
| Ice entrapment | Level I | Level I | Level I | Level II | Level I | N | I (Unlikely) | III (High) |
| Ship strikes | Level I | Level I | Level I | Level II | Level I | N | I (Unlikely) | III (High) |
| Combined Project Effects | Level II | Level II | Level II | Level II | Level I | N | | II (Medium) |
| Beluga | | | | | | | | |
| Hearing impairment | - | - | - | - | - | - | I (Unlikely) | III (High) |
| Disturbance | Level II | Level II | Level II | Level II | Level I | N | II (Moderate) | II (Medium) |
| Acoustic masking | Level II | Level II | Level II | Level II | Level I | N | II (Moderate) | II (Medium) |
| Ice entrapment | Level I | Level I | Level I | Level II | Level I | N | I (Unlikely) | III (High) |
| Ship strikes | Level I | Level I | Level I | Level II | Level I | N | I (Unlikely) | III (High) |
| Combined Project Effects | Level II | Level II | Level II | Level II | Level I | N | | II (Medium) |
| Bowhead whale | | | | | | | | |
| Hearing impairment | - | - | - | - | - | - | I (Unlikely) | III (High) |
| Disturbance | Level II | Level II | Level II | Level II | Level I | N | II (Moderate) | II (Medium) |
| Acoustic masking | Level II | Level II | Level II | Level II | Level I | N | II (Moderate) | II (Medium) |
| Ship strikes | Level I | Level I | Level I | Level II | Level I | N | I (Unlikely) | III (High) |
| Combined Project Effects | Level II | Level II | Level II | Level II | Level I | N | | II (Medium) |
| Ringed seal | | | | | | | | |
| Hearing impairment | - | - | - | - | - | - | I (Unlikely) | III (High) |
| Disturbance | Level II | Level II | Level II | Level II | Level I | N | II (Moderate) | II (Medium) |
| Acoustic masking | Level II | Level II | Level II | Level II | Level I | N | II (Moderate) | II (Medium) |
| Ship strikes | Level I | Level I | Level I | Level II | Level I | N | I (Unlikely) | III (High) |
| Change in habitat | Level I | Level I | Level II | Level II | Level I | N | I (Unlikely) | III (High) |
| Combined Project Effects | Level II | Level II | Level II | Level II | Level I | N | | II (Medium) |
| Polar bear | | | | | | | | |

| Residual Effect | Residual Effect Evaluation Criteria | | | | | Significance | Qualifiers** | |
|---|---|---|---|---|---|---|---|---|
| | Magnitude | Extent | Frequency | Duration | Reversibility | | Probability (Likelihood of Effect Occurring) | Certainty (Confidence in Effects Prediction) |
| Ship strikes | Level I | Level I | Level I | Level II | Level I | N | I (Unlikely) | III (High) |
| Combined Project Effects | Level 1 | Level1 | Level 1 | Level II | Level I | N | | III (High) |

Notes:
**Magnitude:** 1 (Level I) = an effect on the exposed indicator/VEC that results in a change that is not distinguishable from natural variation and is within regulated values; 2 (Level II) = an effect that results in some exceedance of regulated values and/or results in a change that is measurable but allows recovery within one to two generations; 3 (Level III) = an effect predicted to exceed regulated values and/or result in a reduced population size or other long-lasting effect on the subject of the assessment.
**Extent:** 1 (Level I) = confined to the local study area (LSA); 2 (Level II) = beyond the LSA and within the regional study area (RSA); 3 (Level III) = beyond the RSA
**Frequency:** 1 (Level I) = infrequent (rarely occurring); 2 (Level II) = frequent (intermittently occurring); 3 (Level III) = continuous
**Duration:** 1 (Level I) = short-term (<5 years); 2 (Level II) = medium-term (life of Project); 3 (Level III) = long-term (beyond the life of the project) or permanent
**Reversibility:** 1 (Level I) = fully reversible after activity is complete; 2 (Level II) = partially reversible after activity is complete; 3 (Level III) = non-reversible after the activity is complete. Note: Reversibility is considered for biological VECs at the population level. Therefore, although an effect like mortality is irreversible, the effect at the population level might be reversible.
**Significance Rating:** S=Significant, N=Not Significant, P=Positive
**Qualifiers- only applicable to significant effects****
**Probability:** 1 (Level I) = unlikely; 2 (Level II) = moderate; 3 (Level III) = likely
**Certainty:** 1 (Level I) = low; 2 (Level II) = medium; 3 (Level III) = high
*BB: Baffin Bay population; ES: Eclipse Sound summer stock (sub-population)
**Qualifiers provided for at the request of DFO. Inclusion is not consistent with FEIS methodology that indicates qualifiers are only applicable to significant effects.