

## Information Requests Related to Permafrost and Marine Wildlife

**Re:** Grays Bay Road and Port Project Impact Statement, NIRB File No. 24XN038

**Subject:** Information Requests Related to Permafrost and Marine Wildlife

**Submitted by:** William D. Halliday, Ph.D., Conservation Scientist/Arctic Acoustics Program Lead, Wildlife Conservation Society Canada; Adam Kirkwood, Ph.D., Peatland Conservation Scientist, Wildlife Conservation Society Canada; and Stephen J. Insley, Ph.D., Conservation Scientist/Arctic Canada Program Director, Wildlife Conservation Society Canada

**Date:** 23 June 2026

### Purpose and Scope

We are writing to provide targeted comments during the Information Request phase for the Grays Bay Road and Port Project Impact Statement. Our comments are restricted to permafrost and marine wildlife, including marine birds.

Together, we bring decades of experience in permafrost and peatland ecology and marine wildlife ecology, including the impacts of vessels and underwater noise on fish, marine mammals, and marine birds.

We also append a separate caribou-focused brief, *Information Requests Related to Caribou and Cumulative Effects*, co-authored by Chris J. Johnson, Ph.D., University of Northern British Columbia, and Justina C. Ray, Ph.D., WCS Canada, and submitted independently to NIRB on June 22.

This submission and the appended caribou brief identify information gaps, clarifications, and targeted analyses that we recommend NIRB request from the Proponent before the review proceeds to later stages.

### Permafrost:

We found that the following information described in the NIRB's guidance was missing from the Impact Statement:

- **Assessment of future sensitivity of permafrost:** The impact statement guidance document requires that the vulnerability of valued components to climate change is described, including how this may change into the future. During our review of the Impact Statement, we found that this was not addressed in the main report or within Appendix 14A. Numerical modelling of permafrost conditions around relevant infrastructure is explicitly

identified under 8.1.4.2, item vii, where short-term and long-term predictions of permafrost evolution are required where permafrost thaw is anticipated. Given the high likelihood of infrastructure development altering the thermal regime of permafrost, it is therefore necessary to anticipate permafrost thaw. At present, any numerical simulations of future permafrost conditions are absent from the Impact Statement, which is a critical omission in relation to the Guidance document. Therefore, we request that to meet the requirements of the Guidelines, projected response of permafrost to climate change and infrastructure development is included in the Impact Statement.

The following topics require more information and clarification:

- **Assessment of sensitivity of permafrost to past climate change:** In order to understand sensitivity of permafrost to future climate change (required under 8.1.4.2, item vii), a thorough understanding of how permafrost has responded to past climate change is required. The impact statement provides mean annual ground temperature (MAGT) for only a minimal number of locations along the LAA/RAA. Further, it contains no analysis of if or how MAGT has changed through time -- a critical gap in understanding how permafrost has been responding to climate change. We request that more information on the thermal regime of permafrost be presented, including an analysis of MAGT change through time, how MAGT differs by surficial material units within the LAA/RAA, and projections of how trends in warming may progress into the future around proposed infrastructure.
- **Component-specific permafrost regime information** (required under 8.1.4.1, item ix): While ranges of MAGT are provided, the Impact Statement and Appendix 14A do not adequately address ground temperatures, sediment stratigraphy, or ground ice content from the approximate locations of each major facility, road segment, aerodrome area, or port area. While numerous geotechnical boreholes were identified within the LAA/RAA from previous studies, inadequate interpretation of the data is provided in Appendix 14A regarding how the results of boreholes relate to the thermal characteristics and behaviours of permafrost and what this means for sensitivity of permafrost to thaw and thaw subsidence potential, which should be included in the final version of the Impact Statement.
- **Systematic sensitivity ranking of landscape units to permafrost thaw:** Information on sensitive landforms, ice-rich permafrost, thaw sensitive terrain, and the potential impacts of project facilities and infrastructure on these valued components is required under Guidance item 8.1.4.2 (v and vi). The Impact Statement and Appendix 14A currently identify that regional ground-ice mapping may underestimate ground ice and marine sediments that can be ice rich. However, this does not satisfy the requirements of the Guidance document, and there is minimal discussion around spatial variability of ground ice content within the LAA/RAA, which does not resolve baseline uncertainty. In order to satisfy the requirement to identify thaw-sensitive terrain, we request that a systematic sensitivity ranking of landscape units (e.g. [Scheer et al., 2024](#)) is completed that takes into account physiographic characteristics (e.g. slope, aspect), modelled or measured permafrost characteristics (e.g. [O'Neill et al 2024](#), [Obu et al., 2019](#)), landcover classification and/or vegetation composition, and spatial variability in climate. This is especially necessary as the proposed mitigation options for minimizing disturbance to permafrost is “avoid sensitive permafrost

as much as possible”, yet there is no systematic method, proposed or realized, that would allow for this avoidance.

- **Implications of permafrost thaw on infrastructure sustainability:** Information on the thermal regime of permafrost, sediment stratigraphy, and ground-ice content is required under 8.1.4.2 (v-vii) and 8.1.5.1 (viii) as it relates to the sustainability of infrastructure. We found that only high-level baseline information is provided on these factors. Given the indicated availability of geotechnical boreholes and ground temperature monitoring sites along the proposed route (Appendix 14A; Appendix B), information is not presented at a sufficient level of spatial or technical detail to evaluate the two way-interaction between the project and permafrost. Namely, how project construction and operation may affect permafrost conditions, and how permafrost thaw or degradation may affect the stability, safety, and long-term sustainability of project infrastructure. A more detailed synthesis of available geotechnical and ground temperature data relevant to proposed infrastructure is required, including how baseline conditions from boreholes can be used to evaluate the response of permafrost to future climate change and anticipated effects of infrastructure. At a minimum, this should include presenting available ground temperature profiles, ground-ice content, and thaw subsidence potential, and connecting these interpretations to the susceptibility of project infrastructure to permafrost thaw.

## Marine Wildlife:

We found that the following information described in NIRB’s guidelines was missing from the Impact Statement:

- **Non-native species:** Potential introduction of non-native aquatic species is a well-documented phenomena related to shipping and marine construction that can have significant negative impacts on local flora and fauna. We found that information on this issue was mostly lacking from the Impact Statement, and needs to be considered more thoroughly, including examples from other Arctic areas about non-native species that have been introduced, what the potential is for Grays Bay, what the ecological consequences of species introductions will be, and what avoidance and mitigative procedures would be carried out.
- **Direct effects on marine wildlife:** The Impact Statement did not adequately discuss the direct impacts of the project on distribution, abundance, migration patterns, species health, or reproduction of marine wildlife, other than occasionally saying that it would have non-significant impacts on distribution, for example. A more thorough assessment of direct effects is required. Species health, for example, is effectively not examined at all, despite issues such as increased stress levels from disturbance or increased contaminant loads in marine wildlife brought on by the construction or contaminants from the ships.
- **Indirect effects on marine wildlife:** While the project described direct effects on marine wildlife behaviour, the proponent did not discuss indirect effects other than in passing (e.g., loss of foraging opportunities for marine mammals when prey species such as fish are disturbed). Indirect impacts such as prey field scattering are a known phenomenon and can often have more severe impacts than direct impacts, especially with large batch-feeding

marine mammals such as bowhead whales where prey concentration is critical. A more thorough assessment that includes indirect effects as well as direct effects is needed.

The following topics require more information and clarification:

- **Current knowledge on marine mammal abundance and distribution:** Marine mammal abundance and distribution data can be complimented by Inuit, Indigenous, and community observations. For example, people in Cambridge Bay have observed beluga, narwhal, and bowhead whales very close to Cambridge Bay within the last 5 years, suggesting that these species may be more common in the Regional Assessment Area than currently shown by the aerial survey data. Moreover, the acoustic data collected near the project area (presented in Appendix A of the Marine Volume), was insufficient for detecting larger patterns in species presence, given that only a single month of data was collected. The acoustic analysis also did not assess beluga whale presence, despite beluga being sighted during the aerial surveys. Finally, the acoustic analysis was not sufficient for determining patterns in ringed seal presence based on vocal behaviour. Ringed seals generally remain vocally active during summer months in nearshore areas such as this (e.g., [Halliday et al. 2018a, 2019, 2020](#)), but full manual acoustic analyses may be required to detect them due to their faint vocalizations.
- **Marine birds:** The section on marine birds should explicitly include sensory disturbance as in the section on marine wildlife. Marine birds can be impacted by both in-air and underwater noise from vessels. Moreover, the project has not appropriately considered vulnerable stages of some species of marine birds when they are moulting on the ocean. Especially during the wing-moult stage, their ability to avoid vessels will be greatly diminished, putting them at greater risk of mortality. Finally, marine birds were not considered at all in the section on transboundary issues (see below).
- **Ice-breaking:** Clarification on ice-breaking activities is important. The Impact Statement mentions that shipping will only occur during the ice-free season, but different sections use different ranges of dates. For example, the bird section states early June to November, whereas the marine wildlife section states late June to October. Clarity is needed on which timeframe is expected, especially since the early June to November range would have to include ice-breaking or at least ice management. Is the proponent explicitly committing to no ice-breaking, both during construction and operation? Will the port allow users to break ice when traveling to or from the port? If there is the possibility of ice-breaking to occur in the future, it should be explicitly considered in this Impact Statement (see appended caribou brief).
- **Vessel impact avoidance and mitigation:** More information on the mitigation of vessel noise and strike risk needs to be provided, specifically around why the 14-knot speed limit was chosen. The proponent references older studies (e.g., Laist et al. 2001) to justify the 14-knot speed limit, yet more recent studies suggest lethal strike can occur at much lower speeds (e.g., [Kelley et al. 2020](#), [Keen et al. 2023](#)), and many modern vessel slowdowns in Canada use lower speed limits. Were alternative speed limits considered, and can this justification be provided?
- **Reconciling Vessel Impact Assumptions across Sections:** The Impact Statement currently states that vessel traffic supporting construction and operations will have minimal

impacts because there will only be a few vessels per year, and this will allow for large amounts of time for marine wildlife to resume normal behaviour following disturbance. However, in sections on cumulative effects, the Impact Statement assumes that up to 45 non-project vessels per year may use the port, leading to roughly one vessel every 1.4 days throughout the season on average. The proponent should explain whether the assumption that animals will have sufficient time to resume normal behaviour remains valid under the cumulative vessel traffic scenario. These cumulative effects must be considered in statements around project vessels, since the project vessels will not be in isolation of the other vessels. While it is treated appropriately in the cumulative effects section, it must be considered earlier in the Impact Statement, especially when assessments assume that animals will have time to recover before subsequent disturbance events.

- **Transboundary issues for marine wildlife:** Finally, we reassert that this Impact Statement needs to include the impacts of vessel traffic beyond the regional study area, both with vessels servicing the port during construction and operations and with the cumulative effects of other vessels in the region, especially those that are induced by this port development. The Transboundary Effects section of Volume 10 does describe some of the issues for the Inuvialuit Settlement Region, but it applies assumptions from the Regional Assessment Area (e.g., whales are at low density and therefore impact will be low), many of which are not valid for this broader transboundary issue. It also does not include an assessment of transboundary issues for marine birds. Vessels will travel through many important habitats for marine wildlife along the Northwest Passage to the east in Nunavut and to the west in the Inuvialuit Settlement Region. For example, if half of the expected 45 vessels using the new port every year travel through the Inuvialuit Settlement Region, that would increase current traffic levels by roughly one third ([Halliday et al. 2025](#)). Vessels traveling through the Inuvialuit Settlement Region travel directly through concentration areas for beluga whales and bowhead whales on the Mackenzie Shelf and near Cape Bathurst ([Halliday et al. 2018b](#)) and will increase acoustic disturbance to these species and cause increased risk of vessel strikes to bowhead whales in particular ([Halliday et al. 2022a](#)). Vessels travelling to the east through Nunavut will similarly travel through bowhead whale concentration areas near Isabella Bay and the Gulf of Boothia ([Halliday et al. 2022a](#)) and narwhal and beluga areas in Lancaster Sound ([Halliday et al. 2022b](#)). There are also important concentration areas for marine birds (e.g., king and common eider, thick-billed murre) in both the Inuvialuit Settlement Region and further east in Nunavut, which would include moulting areas at sea. Given the importance of these species to Inuit in these other regions, including concerns raised by Inuvialuit, we strongly suggest that the section on transboundary effects requires much more information on vessel impacts in other regions, and should not apply assumptions from the Regional Assessment Area to these other regions, but rather needs to properly assess impacts within those other regions. For example, this section states that risk of vessel strike should be considered low, yet the ocean north of Tuktoyaktuk in the Inuvialuit Settlement Region is considered a potential hotspot for vessel strike risk to bowhead whales based on current vessel traffic levels and bowhead distribution ([Halliday et al. 2022](#)). The final statement on marine mammals in section 33.4.9 states that mitigation measures for the project area could be applied to other regions to deal with transboundary affects. However, mitigation measures for the project

area do not consider existing management measures in other regions, which should be thoroughly outlined in this document. For example, the Inuvialuit Settlement Region has a voluntary Notice to Mariners ([Canadian Coast Guard 2025](#)) in place which requests that vessels travel 10 knots or less in identified marine mammal areas. Information should be provided on how the proponent will work to ensure that project vessels follow those recommendations in areas outside the Regional Assessment Area, and should ideally describe a plan for more thorough engagement with Inuvialuit and other Inuit groups (e.g., Victoria Island Waterway Safety Committee) to identify appropriate vessel management strategies to reduce the impacts of underwater noise and vessel strikes on marine mammals and broader vessel impacts on marine wildlife such as marine birds.

## Closing

Thank you for your consideration of these information requests, and we welcome any further discussion or questions.

Sincerely,

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# Brief to the Nunavut Impact Review Board

**Re:** Grays Bay Road and Port Project Impact Statement, NIRB File No. 24XN038

**Subject:** Information Requests Related to Caribou and Cumulative Effects

**Submitted by:** [Chris J. Johnson, Ph.D.](#), Professor, University of Northern British Columbia ([chris.johnson@unbc.ca](mailto:chris.johnson@unbc.ca)); and [Justina C. Ray, Ph.D.](#), President and Senior Scientist, Wildlife Conservation Society Canada, and Adjunct Professor, University of Toronto ([jray@wcs.org](mailto:jray@wcs.org))

**Date:** June 22, 2026

## Purpose and Scope

We are writing to provide targeted information requests during the Information Request phase for the Grays Bay Road and Port Project Impact Statement. Our requests are restricted to caribou and cumulative effects, with a particular focus on the Bathurst Caribou Herd and the Dolphin and Union Caribou Herd.

Together, we bring decades of experience in caribou ecology and conservation, species-at-risk assessment, spatial ecology, resource selection and movement modelling, cumulative effects assessment, conservation policy, and environmental assessment. Our combined experience includes work on caribou population status and recovery, cumulative disturbance and habitat effects, the consideration of Indigenous and community knowledge in conservation decision-making, and the assessment of major project effects on wildlife populations and northern ecological systems. Our review focused primarily on Volume 6, Section 16, including the relevant appendices and cumulative-effects material, as well as related sections of the Impact Statement necessary to understand the Proponent's conclusions.

We acknowledge at the outset that the caribou assessment component of this draft Impact Statement is substantial and contains a considerable amount of relevant information. The Proponent has identified generally appropriate categories of caribou effects, including range disturbance, habitat, movement, mortality risk, and health. The assessment draws on extensive collar data and uses relevant analytical tools, including resource selection functions, Brownian bridge movement models, and caribou herd vulnerability modelling. The range-disturbance framing is also appropriately connected to the Bathurst Caribou Range Plan.

**We are not asking NIRB to make final findings on significance at this stage. Rather, our requests identify information gaps, clarifications, and additional analyses that are needed to determine whether the Proponent's conclusions are supportable, whether remaining uncertainty has been adequately addressed, and what issues, mitigation measures, monitoring requirements, or enforceable conditions may need to be considered in later stages of review.**

Several focused information gaps remain that are material to evaluating the Proponent's conclusion that residual and cumulative effects on caribou are not significant. **This brief**

**therefore focuses on four primary information requests and four additional clarifications that would help NIRB and reviewers test the robustness of that conclusion.**

We recommend that NIRB request the following additional information from the Proponent:

### 1. Scenario analysis for future, larger, or shifted Bathurst seasonal ranges

The Impact Statement appropriately recognizes that Bathurst caribou seasonal ranges, including calving and post-calving areas, have shifted over time. This is well documented through collaring data and Kitikmiut Knowledge, including in Section 16.2.2.4. However, the assessment appears to rely heavily on recent mapped seasonal ranges and recent collar-based spatial-use patterns, much of which reflects a period when the Bathurst herd was already severely depleted. The record does not clearly show whether the Proponent tested how its conclusions would change under plausible future range expansion or range shift scenarios.

Because the Project is permanent infrastructure intended to operate over many decades, this is a material information need. It is reasonable to consider whether the Bathurst calving ground, post-calving range, or other seasonal ranges could shift westward or northward toward the road and Jericho Station over the life of the Project. It is also reasonable to consider whether adjacent herd distributions, such as Bluenose-East, could shift in ways that increase interaction with the Project area. We did not identify information in the assessment that evaluates the potential consequences of greater future overlap between core calving or other seasonal ranges and the LAA, or that identifies additional or more restrictive mitigation that would be triggered if such shifts occurred.

If the Bathurst herd recovers, expands its seasonal ranges, or shifts calving, post-calving, or late-summer distribution westward or northward, the degree of overlap with the road, Jericho Station, associated infrastructure, and induced development could change materially. The information request is not based on predicting any specific future shift with certainty. Rather, it is intended to help NIRB determine whether the assessment conclusions remain robust under plausible future caribou-range scenarios.

#### Requested information:

The Proponent should provide a spatial sensitivity analysis that tests future caribou-range scenarios, including:

1. enlarged seasonal ranges reflecting possible population recovery;
2. shifted seasonal ranges, including westward or northward shifts toward the road and Jericho Station;
3. specific analysis of calving, post-calving, and late-summer ranges;
4. comparison with earlier periods when the Bathurst herd was more abundant, to the extent available collar or other data allow;

5. estimates of range disturbance, habitat overlap, movement interactions, and mortality-risk implications under each scenario; and
6. identification of any additional or more restrictive mitigation, monitoring, or enforceable conditions that would be required if calving, post-calving, or late-summer use shifted closer to Project infrastructure.

The Proponent should provide the results in a format that allows NIRB and reviewers to understand how each scenario affects the assessment conclusions, including maps, tables, assumptions, and a clear explanation of whether the significance conclusion would remain unchanged under each scenario. This analysis would materially improve NIRB's ability to assess whether the Proponent's conclusions are robust over the life of the Project and whether additional mitigation, monitoring, or enforceable conditions may be required under plausible future caribou-range scenarios.

## 2. Treatment of population-level effects and the Russell and Gunn (2025) vulnerability assessment

Appendix 16B of the Impact Statement includes the Russell and Gunn (2025) vulnerability assessment for the Bathurst, Beverly/Ahiak, and Dolphin and Union caribou herds (referred to in Section 16.6.3 as the Caribou Herd Vulnerability Model). That assessment applies the Caribou Cumulative Effects model -- a specialized modelling framework built on published, peer-reviewed caribou energetics and movement modelling that has been applied in multiple northern caribou assessment contexts -- to evaluate how development-related exposure, associated roads and infrastructure, mitigation, and climate change may affect caribou energetics and demography.

For the Bathurst Caribou Herd, the assessment provides an important herd-level line of evidence because it links road exposure to body condition, pregnancy rates, calf survival, and projected population trend. Although the results are reported by the Proponent in Section 16.6.3 of the Impact Statement, population-level effects do not appear to be carried forward as an explicit effect measure or core line of evidence in the Section 16 significance determination. This creates a material information need for NIRB, because the record does not clearly explain how population-level evidence was considered in determining significance. Population-level effects are not commonly incorporated into project-level significance determinations, mainly because the empirical basis for modelling demographic consequences is usually unavailable for most species. In this case, however, Appendix 16B provides an empirically-based project-specific analysis of whether the Project and associated development could affect herd-level demographic outcomes, recovery potential, or population trajectory.

As with any population-level modelling, the projections in Appendix 16B involve assumptions and uncertainty. However, the relative evidence is directly relevant to significance, particularly because several of the effect measures used in Section 16, including habitat, movement, mortality risk, and health, rely on thresholds that are at least partly qualitative or judgement-based. If uncertainty in Appendix 16B affected the weight assigned to population-level results, the Proponent should explain how that uncertainty was evaluated and why it supports the role assigned to the model results in the significance determination.

To support technical review, the Proponent should explain:

1. whether, and on what basis, it decided not to treat predicted population change, demographic risk, recovery potential, or population trajectory as an explicit effect measure or core line of evidence in the Section 16 significance determination;
2. how the Appendix 16B results regarding body condition, pregnancy rates, calf survival, and projected population trend are reconciled with the conclusion that residual and cumulative effects on the Bathurst Caribou Herd are not significant;
3. what weight was assigned to the relative comparisons in Appendix 16B among development, climate change, and mitigation scenarios, recognizing that relative model outputs may be informative even where absolute population projections involve uncertainty; and
4. whether the mitigation scenarios assessed in Appendix 16B correspond to enforceable Project commitments, including traffic management, road closures, hunting controls, and other measures relied on to reduce effects.

If the Proponent considers that population-level effects should not be treated as a core line of evidence for significance, despite the analysis presented in Appendix 16B, the Impact Statement should clearly explain and justify that position, so that NIRB and reviewers can understand how the Appendix 16B results were used, limited, or excluded in the assessment conclusions.

### 3. Cumulative effects from reasonably foreseeable and induced development

The cumulative effects assessment is especially important because the Project is not framed only as a transportation project serving existing activity. The Impact Statement describes substantial economic benefits, including benefits associated with “unlocking the critical mineral wealth” of the region. That stated purpose makes the treatment of reasonably foreseeable and induced development central to the caribou assessment. If the Project’s benefits depend in part on enabling future mines, roads, and related infrastructure, then the cumulative effects of that enabled development need to be clearly identified, bounded, and explained in the assessment record.

The proposed corridor should also be understood in the context of Nunavut’s broader land-use planning and governance framework. The Nunavut Planning Commission submitted the 2023 Recommended Nunavut Land Use Plan for approval, but the plan has not yet been approved and brought into force. Nunavut devolution is scheduled to take effect on April 1, 2027, transferring responsibilities over public lands, natural resources, and water from Canada to Nunavut. In the absence of an approved territory-wide land-use plan before that transfer of land and resource responsibilities, NIRB’s review will require a clear project-level record to test whether the Project’s corridor-opening implications, including induced development and cumulative effects on caribou, have been adequately assessed.

We are requesting additional information to explain how the Proponent reaches a conclusion of no significant cumulative effects on the Bathurst Caribou Herd, given that the assessment itself indicates that the Project, in combination with reasonably foreseeable and induced physical

activities, moves range disturbance in BCH-RAA1 into the cautionary range identified in the Bathurst Caribou Range Plan.

This is a material information gap because range disturbance is the most clearly benchmarked of the Proponent's caribou effects measures. Unlike some other effects measures, it is tied to a pre-existing range-planning framework and disturbance-risk categories. If the cumulative effects analysis shows movement from a desirable to a cautionary disturbance condition, NIRB and reviewers require a clearer explanation of why that result does not alter the significance conclusion, particularly given the current vulnerability of the Bathurst Caribou Herd.

Requested information:

The Proponent should provide:

1. a clear explanation of how the movement of BCH-RAA1 from the Bathurst Range Plan "desirable" range to the "cautionary" range under Project-plus-RFI conditions was considered in the significance determination;
2. confirmation of which reasonably foreseeable and induced physical activities are included in the BCH-RAA1 range-disturbance calculation, and whether any known future or induced activities were excluded;
3. confirmation of the ZOIs used for mines, roads, and other physical activities included in the cumulative range-disturbance calculation, including whether Bathurst Caribou Range Plan ZOIs or alternative ERM-derived ZOIs were applied; and
4. an explanation of whether the shift into the cautionary range triggers additional mitigation, monitoring, adaptive-management thresholds, or enforceable conditions.

The purpose of this request is to clarify the logic connecting the Proponent's own cumulative-effects results to its significance conclusion. Without that explanation, NIRB and reviewers cannot determine how the assessment treated a cumulative disturbance condition that is materially more concerning than the direct Project effects alone.

## 5. Durability of the open-water-only port assumption

For Dolphin and Union caribou, the assessment appears to rely on the assumption that Project-related marine activities will occur only during the open-water season and will not involve icebreaking or activities that affect sea-ice migration. We understand that icebreaking is not currently proposed, and we are not requesting an assessment of icebreaking as a currently proposed activity. Rather, we are requesting clarification of how the open-water-only shipping assumption functions in the assessment of Dolphin and Union caribou effects, and whether any future change to that assumption would fall outside the Project as assessed and require further review.

This clarification is important because the open-water-only assumption appears to help define or limit the assessed effects on Dolphin and Union caribou in the draft Impact Statement, including effects related to sea-ice migration and any associated carryover or transboundary

effects. Dolphin and Union caribou depend on seasonal sea-ice movement across Coronation Gulf. If future Project operations were to include icebreaking, ice management, shoulder-season shipping, or a material extension of the shipping season into periods relevant to sea-ice migration, the effects pathway for Dolphin and Union caribou could well be different from the one assessed by the Proponent.

The information gap we highlight here is that the current version of the Impact Statement does not clearly state the status of the open-water-only shipping assumption, or the implications of that status for the Project as assessed, enforceable conditions, and future review requirements. The key question is whether the assumption constrains future operations, and if not, what further review would be required before operations could change in ways relevant to Dolphin and Union caribou sea-ice migration.

### **Requested information:**

The Proponent should clarify:

1. whether open-water-only shipping is a binding limitation on the Project as assessed and, if so, how that limitation would be secured through project design, regulatory terms and conditions, or other enforceable mechanisms;
2. how the open-water season would be defined for Project shipping, including whether that definition could change over the life of the Project as climate conditions change;
3. whether icebreaking, ice management, shoulder-season shipping, or other shipping activity that could affect Dolphin and Union caribou sea-ice migration is outside the scope of the current assessment; and
4. whether any future change to shipping operations that could affect Dolphin and Union caribou sea-ice migration would require additional regulatory review, effects assessment, and engagement before proceeding.

NIRB and reviewers need to know whether the open-water-only assumption constrains future operations, and if not, what review process would apply before operations could change in a way that affects sea-ice migration.

### **Additional information requests**

In addition to the four priority information gaps above, we recommend that the NIRB seek additional information from the Proponent on the following:

#### *A. Use of Inuit, Indigenous, and community knowledge*

The Impact Statement includes substantial Inuit, Indigenous, and community evidence regarding caribou calving areas, migration routes, disturbance from roads and mines, cumulative effects, and concern for the long-term survival of caribou herds. The current version of the Impact Statement, however, does not clearly show how that knowledge affected the structure and conclusions of the caribou assessment.

For example, where Inuit, Indigenous, or community knowledge identifies calving areas, movement routes, areas of heightened sensitivity, concerns about road disturbance, or concerns about cumulative effects, it is not always clear whether that information changed assessment boundaries, future range scenarios, effects pathways, mitigation design, or the interpretation of uncertainty. In several places, concerns appear to be summarized, but the record does not clearly show how they were carried through into the technical assessment.

The Proponent should provide a clear explanation, preferably in a table or crosswalk, showing how Inuit, Indigenous, and community knowledge informed assessment boundaries, future scenarios, effects pathways, significance thresholds, mitigation commitments, and cumulative-effects conclusions. Where relevant knowledge was summarized but did not affect the technical assessment or mitigation design, the Proponent should explain why. This would allow NIRB and reviewers to understand how this evidence was considered, not only where it was reported.

#### *B. Adaptive management and TARP details*

The Proponent relies on the TARP, mitigation and monitoring measures, adaptive road closures, traffic management, convoying, speed limits, wildlife right-of-way, and related measures to support its conclusion that residual and cumulative effects on caribou will not be significant. These measures may be appropriate in principle, but NIRB and reviewers require additional information to understand how they would operate in practice and how they would be secured, implemented, monitored, and escalated.

The Proponent should provide more specific information on the TARP and related mitigation measures. This information should address circumstances in which caribou approach or attempt to cross the road, hesitate near infrastructure, deflect from the road, aggregate near the Project, or monitoring shows greater-than-predicted effects. The Proponent should also identify what additional or more restrictive measures would be implemented if Bathurst caribou distribution shifts closer to the Project, particularly during calving, post-calving, migration, or late-summer periods.

#### *C. Transparency around zones of influence and spatial boundaries*

Because ZOI assumptions affect range disturbance calculations and related effects conclusions, the Proponent should provide a consolidated explanation of the zones of influence used for each caribou disturbance calculation. This should include the ZOIs used for roads, mines, port infrastructure, aerodromes, camps, and other relevant physical activities; the source and rationale for each ZOI; and whether the ZOI differs from those used in the Russell and Gunn (2025) Appendix 16B vulnerability assessment or recommended in the Bathurst Caribou Range Plan, including the 5 km ZOI for all-season roads and the 4 km ZOI for the Tibbitt to Contwoyto Winter Road.

The Proponent should also clarify whether any smaller ZOIs depend on assumed mitigation effectiveness. Where alternative defensible ZOIs are available, the Proponent should provide

sensitivity analyses showing how different ZOI assumptions affect range disturbance, habitat effects, movement effects, and significance conclusions.

#### *D. Precautionary treatment of already vulnerable caribou herds*

The Proponent should provide additional information on how the current status and vulnerability of the Bathurst and Dolphin and Union caribou herds were incorporated into the significance determination. This should include how herd status, demographic resilience, recovery potential, cumulative disturbance, and climate-related vulnerability were considered in evaluating residual and cumulative effects.

In particular, the Proponent should clarify whether current herd vulnerability affected the characterization of effect magnitude or the level of mitigation required. If herd vulnerability did not affect those elements of the significance determination, the Proponent should explain why.

### Closing

We appreciate the scale of work reflected in the Impact Statement and the effort to compile and analyze a large body of caribou information. At this Information Request stage, our concern is that the current record does not yet provide enough information for NIRB and reviewers to determine whether the Proponent's conclusion of no significant residual or cumulative effects on caribou is technically supported.

Given the long life of the Project, the precarious status of the relevant herds, and the importance of caribou to Inuit, Indigenous Peoples, and northern communities, additional information is needed to test whether the assessment conclusions remain robust under plausible future caribou distributions, cumulative induced development, assumptions about open-water-only shipping, and the mitigation measures relied on to reduce effects. These information requests should be addressed before the assessment proceeds to later stages of review.