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

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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.