December 16, 2024

DELIVERED VIA EMAIL

Catherine Fairbairn
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Mackenzie Valley Environmental Impact Review Board
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Dear Catherine Fairbairn:

EA1213-02: Mackenzie Valley Highway Technical Sessions – Responses to Pehdzéh Kį First Nation Questions

On behalf of the Government of the Northwest Territories (GNWT), the Department of Infrastructure is pleased to provide the attached responses to the Pehdzéh Kį First Nation (PKFN) questions posed during the Mackenzie Valley Highway Technical Sessions.

Please see the attached responses to PKFN Undertakings 1-3, 5, 11, 13, 15, 16, 21, 22. Responses to PKFN Undertakings 4, 6-10, 12, 14, 17-20, 23 were provided verbally during Day 3 of the Mackenzie Valley Highway Technical Session. Responses have been prepared in accordance with the GNWT's Whole of Government Approach to the Mackenzie Valley Highway Environmental Assessment. The GNWT confirms that subject matter expertise from all relevant line departments has been considered in the drafting, review, and approval of these responses.

If you have any questions regarding the responses, please contact Seth Bohnet at (867) 767-9082 ext. 31305, or by email at Seth_Bohnet@gov.nt.ca. Alternatively, you can reach out to Patricia Coyne, Manager Mackenzie Valley Highway Environmental Affairs, at (867) 767-9082 ext. 31033, or by email at Patricia_Coyne@gov.nt.ca.

Regards,

Patricia Coyne
Manager, Mackenzie Valley Highway
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Pehdzeh Ki First Nation Questions – Infrastructure re: Road Design and Routing

Please see the below responses to PKFN Undertakings 1-3, 5, 11, 13, 15, 16, 21, 22. Responses to PKFN Undertakings 4, 6-10, 12, 14, 17-20, 23 were provided verbally during Day 3 of the Technical Sessions, which were held in Yellowknife from November 21-23, 2024.

1. *QUESTION: Project objective prevents meaningful route comparison, meaningful consultation, and meaningful accommodation*

In Section 7.2.3.3, the developer states: "The GNWT's preferred route is the Project Route, as it is the only route that makes use of all existing bridges constructed by the GNWT and meets the objective of following the MVWR as closely as possible."

a. Why does the GNWT not use the objective "to build an all-weather road with the least environmental impact possible"?
b. Why does the GNWT not use the objective "to build an all-weather road with the least impact possible on Aboriginal and Treaty rights"?

RESPONSE:

a. The GNWT does not use the objective "to build an all-weather road with the least environmental impact possible" as a project of this scale requires a careful balance of a range of design parameters and objectives that extends beyond environmental considerations, and the subjective nature of what constitutes the "least" environmental impact would not only be challenging to define, it also most certainly would vary between stakeholders.

   Section 5.2.2 of the Developers Assessment Report (DAR) outlines the design parameters and objectives that have been and will continue to be applied to the project design. As stated, the projects design is guided by safety requirements, engineering and environmental standards and best practices, engagement input including traditional knowledge, and the findings of the climate change and resilience assessment. The GNWTs selection of the preferred route takes into consideration the full range of these design parameters and objectives.

   Reducing significant environmental impacts is implicit throughout the MVH environmental assessment and the GNWT has committed to mitigations that will eliminate, reduce or control potential environmental impacts.

   The GNWT remains committed to additional engagement with the Pehdzéh Kį First Nation (PKFN) to discuss environmental impacts of the MVH project and proposed mitigations.

b. The GNWT does not use the objective "to build an all-weather road with the least impact possible on Aboriginal and Treaty Rights" as the perspective of Indigenous governments and Indigenous organizations on what constitutes the least possible impact on their asserted or established Aboriginal and/or Treaty rights would almost certainly vary and avoiding or mitigating impacts to those rights has to be carefully balanced with a range of design parameters and objectives. The project was designed to avoid and/or mitigate adverse impacts on asserted or established Aboriginal and/or Treaty rights where possible.

   Section 2.2 of the Developers Assessment Report (DAR) outlines the GNWT consultation duties both as the project proponent and as a final decision maker. The GNWT initiated consultation with potentially affected Indigenous governments and Indigenous organizations in the summer of 2023; that process is ongoing. The GNWT also continues to rely on the MVEIRB's EA process to assist in fulfilling the duty to consult.

2. QUESTION: Earlier alignment studies

At section 5.2.1, the developer states that the project highway route has been informed by previous routing studies completed by Public Works Canada in the 1970s.

PKFN requests that the developer provide these studies and show the alignments that were studied.

RESPONSE:

From 1973 to 1976, Public Works and Government Services Canada (PWGSC) completed geotechnical, hydrotechnical, archaeological and terrain evaluation studies to inform the detailed design of an all-season road alignment ("the 1974 PWGSC Alignment"), which was based on generally following the winter road where conditions were favorable. A winter road route (mostly the winter road as is present today) pre-dates any available documented studies. The PWGSC Alignment recommended deviations around wetlands and lakes, sensitive terrain and soils, and areas with excessive side slopes; and revising steep approaches to some major stream crossings. This background is available on the GNWT's website Mackenzie Valley Highway Extension: Scoping, Existing Information and the Regulatory Regime. The PWGSC alignment reports and other design criteria discussed in the linked background report are not on the GNWT's website but can be forwarded to Pehdzéh Kį First Nation (PKFN). The PWGSC studies and designs, and subsequent engineering and environmental studies completed by the GNWT since 2010, have informed the present routing, which also generally follows the Mackenzie Valley Winter Road (MVWR). Regarding consideration of ecological conditions, as one example, the GNWT prefers to follow the MVWR alignment to reduce potential effects of the Project on wildlife – particularly boreal caribou – associated with change in habitat.

3. QUESTION: Proposed route does not meet archaeological and heritage criteria

At section 5.2.2, the developer states that the highway must avoid known archaeological and heritage resources "where practicable".

How is this possible when the design criteria require the alignment to use the bridges which were installed in areas of archeological and heritage use?

RESPONSE:

Known archaeological site locations, as recorded within the territorial archaeological sites database maintained by the Culture and Heritage Division, GNWT Department of Education Culture and Employment (ECE) at Prince of Wales Northern Heritage Centre (PWNHC), were identified to support the preparation of the Developers' Assessment Report (DAR) (see Chapter 22 and Appendix 22A, Section 3.2 for sources of information used). These locations, and other heritage resources information, are considered as this information becomes available and as the project design progresses. The GNWT welcomes Indigenous participation in the evaluation of site potential, and the sharing of Traditional Land Use and archaeological information that can be used to plan site investigations and mitigations. All portions of the project footprint are evaluated for potential to contain archaeological sites during a desktop-based Archaeological Overview Assessment (AOA). Field-based Archaeological Impact Assessments (AIAs) are conducted in areas where there is a high likelihood of containing archaeological sites and to identify archaeological sites that have not previously been recorded within the territorial archaeological sites database. During the AIAs, known sites that are recorded in the project footprint are also revisited to confirm and, in some cases, better define the site locations and extents, as some sites were recorded before the standard use of hand-held GPS devices. During AIAs conducted in 2021, 2022 and 2024 for the Project, community field assistants from Pehdzéh Kį First Nation (PKFN) participated in the surveys.

Permit applications for AIAs are issued to community organizations for comment, providing opportunities for input. As noted in Appendix 22A, as of December 2022, 13 sites were on record within the overall Project Area (within 100 m of the alignment and/or borrow/quarry). During the 2024 AIA, which was focused on areas near existing bridge crossings, three precontact period archaeological sites were recorded within the Dehcho Region and one previously recorded site was revisited; the GNWT has committed to presenting those findings to PKFN, as required under the NWT Archaeology Permit. Additional sites may be identified during additional AIAs to be conducted for the Project. The GNWT will investigate all 'known and suspected sites' as identified by Indigenous governments and Indigenous organizations during Consultation, affected parties during engagement, and/or through Traditional Land and Resource Use (TLRU) studies. The GNWT looks forward to receiving and reviewing PKFN's project-specific TLRU study and integrating heritage information into desktop AOAs and/or field-based AIAs.

Project effects on archaeological sites will be mitigated in discussion with the Territorial Archaeologist at GNWT-ECE and with affected Indigenous governments and Indigenous organizations. Archaeological sites are spatially defined. Once identified, the preferred mitigative option is avoidance of impact through project redesign, by moving the footprint/route, or by reducing

footprint width within the area adjacent to the known site. Sites that are close to the project footprint can be fenced and/or flagged to facilitate avoidance of inadvertent impact during project construction activities. If a site is contained within and/or extends into the project footprint and avoidance is not feasible, alternate mitigative options will be developed in discussion with the territorial archaeologists within the Culture and Heritage Division and with affected Indigenous governments and Indigenous organizations. Mitigative options include archaeological excavation and/or monitoring during construction; both activities would be developed and conducted in cooperation with territorial archaeologists at GNWT-ECE and with affected Indigenous communities. These activities are conducted under territorial Archaeology Permits, which are distributed to Indigenous governments and Indigenous organizations for review, allowing for further input into methods, team compositions, and/or protocols. An Accidental Finds Protocol will also be developed, as well as a contractor training program to enable an effective application of the Protocol.

5. QUESTION: Proposed route does not meet criteria to avoid wetlands

At section 5.2.2, the developer states that the highway must avoid areas of wetlands, "to the extent possible."

How is this achieved when the chosen alignment travels through the highest concentration of low wetlands in the Mackenzie Valley, close to the water source? This includes several existing bridge crossings that are constructed close to important wetlands.

RESPONSE:

As stated during the recent Technical Sessions, the GNWT notes that the 13 design guidelines, parameters, and objectives identified in Section 5.2.2 were selected to align with published standards and best practices, and the findings of the climate change and resilience assessment. These guidelines are intended to be considered collectively, not in isolation, and not all objectives will be able to be met for the entire length of the highway. One of these objectives is to "avoid areas of wetlands, to the extent possible".

Wetlands are prevalent throughout the Mackenzie Valley, from the river to the mountains, and should be avoided where possible. From an engineering perspective, wetlands pose challenges due to their high moisture content, which results in a weaker subgrade. Crossing wetlands necessitates the construction of a thicker, stronger, and more expensive embankment, and therefore it is preferable to avoid wetlands where possible. This principle applies regardless of the wetland's location. The Project is predicted to result in a loss of 300.0 hectares of wetland landcover (-2% change in the Local Assessment Area [Section 18.4.3.3, Table 18.11 of the DAR]). The preference to avoid wetlands will be further considered during the detailed design of the alignment within the alignment routing corridor.

There is sufficient suitable ground along the current route corridor to enable routing that avoids most wetlands. The GNWT acknowledges, as stated in Section 7.2.3.2.1, that an inland route alternative in the Dehcho Region generally benefits from better drainage and avoids many of the lakes and wetlands located closer to the Mackenzie River (Deh Cho), which are present along the Project Route; however, the GNWT also re-emphasizes that an inland route alternative will have greater magnitude effects associated with new clearing, "relocation" of major watercourse crossing structures, and construction access, with other considerations as noted in Section 7.2.3.2. As stated earlier though, the GNWT has considered all design objectives collectively, in choosing its preferred route, and it is understood that not all objectives can be met for either route.

11. QUESTION: Proposed route fails to limit interactions between public and construction

In section 5.4.6, the developer states that the road may be constructed year-round, with embankment (the coarsest material placed at the base) generally placed in winter, and the sub-base and base course (upper layers) placed and compacted in summer.

The DAR talks about the benefit of the all-season road following the winter road to support the project access and streamlining the work. Generally, road work is completed attempting to separate public access from construction activities. However, the winter road alignment forces interaction with the public. Even more, the plan is to also to execute the largest volume of material movement in the winter when the winter road is being accessed by the public. The project is forcing the interaction of public with the construction fleet during the busiest time. An alternate route would allow most of the work to be completed in the summer months, with limited interaction with the public.

How has the developer compared options to separate the public from construction work? If this has not been done, why not?

RESPONSE:

The activities of highway right-of-way clearing and embankment placement will primarily occur in the winter, while ground is frozen, to mitigate for potential effects on migratory birds, bats, and soils and terrain. This is best practice in the NWT, reflected in Northern Land Use Guidelines, best practices for migratory birds, and statutory requirements for wildlife in the NWT (see draft Wildlife Management and Monitoring Plan). This would not be different for an alternate route.

The GNWT has experience managing concurrent construction of an all-season road with operation of the Mackenzie Valley Winter Road (MVWR), as this was done for the construction of the Canyon Creek All Season Access Road, and Prohibition Creek Access Road – Phase 1. The contractor will accommodate winter road traffic by constructing winter road detours within the existing right-of-way during the construction. Where needed, additional measures such as Traffic Control Management, will be used to manage traffic flow.

The GNWT has committed to the development and implementation of a traffic management plan which project contractors will need to adhere to during construction. As per Table 27.2 in the Developers' Assessment Report, the Traffic Management Plan will: a) identify the sections of the MVWR to be impacted by construction b) illustrates work zones and Project vehicle movements c) illustrates public vehicle detours d) specifies requirements for escorts, signage, lighting and speed reductions e) specifies work times and measures for public safety during non-work times f) specifies communication protocols between the Project construction team and MVWR operations team.

13. QUESTION: Winter road(s) and comparing construction costs for different routes

In Section 7.1.3.2.2, the developer states: "The Inland Route Alternative will require the construction of a winter road each season to support construction, leading to increased construction costs."

Can the Developer provide a quantitative estimate comparing winter road construction costs between the MVWR Project Route and the Inland Route Alternative?

And, why would the Inland Route Alternative require a winter road at all, if it were to be incrementally constructed between Wrigley and the Sahtu border?

RESPONSE:

To support construction access and resupply, a winter road or access trail is necessary to allow vehicles to turn around after placing embankment material, as construction progresses from both ends (construction headings). The embankment itself does not provide sufficient width for this purpose. Without a winter road or trail, whether using the existing winter road or a temporary trail within the highway right of way (ROW), vehicles would have to drive over bare ground, causing greater damage to the soil and vegetation. Constructing a winter road provides a compacted snow and ice surface for construction vehicles, thereby protecting the native ground and helping to mitigate erosion, rutting, and soil damage within the ROW.

In areas where the highway alignment will follow the existing Mackenzie Valley Winter Road (MVWR), the MVWR will be used to support construction vehicles in the winter during embankment placement. Both will share the 60 m wide ROW. In areas where the highway alignment deviates from the MVWR, the GNWT anticipates that a separate winter access trail will be constructed parallel to the embankment being constructed, also within the 60 m wide ROW. Based on the current alignment routing (Project Route), it is anticipated that approximately 12.3 km of winter access trail would need to be constructed between Hodgson Creek bridge and Blackwater River bridge where the highway route deviates from the MVWR. It is anticipated the that an Inland Route Alternative would require around 100 km of winter access trail to be constructed (depending on the routing).

15. <u>QUESTION: Information needed to compare environmental savings</u>

The last question referred to the developer's statement that fewer new culverts may be needed for an inland route.

At section 5.4.7.1, the developer estimates that the winter road route will need 85 large culverts, meaning culverts that are 1.5 metres in diameter or larger. It is likely that all the small diameter culverts will also need replacement.

The DAR talks about the benefit of using the existing winter road because uses existing culverts and water crossings, which has an environmental savings to the overall project.

There has not been any study of the number and size of culverts that would be needed on a route at a higher elevation with less run-off.

What is the developer's evidence that there are environmental savings regarding culverts on the winter road compared to any other alignment?

RESPONSE:

The GNWT would like to clarify that small-diameter culverts (drainage culverts) will need to be installed at smaller and undefined drainages along any new alignment to maintain and promote proper drainage through the embankment, as outlined in Section 5.4.7.1. These culverts are not currently present on the winter road. Large diameter culverts (as referenced in the question), are defined as those that are 1.5 m or greater in diameter.

No study has been conducted to determine the number and size of large-diameter culverts needed for a conceptual inland alternative route. However, as the alignment moves upslope, it is expected to encounter a greater number of smaller permanent and ephemeral streams also requiring culverts, corresponding to second, third, and fourth-order streams that have not yet merged into larger channels near the river. Whether this would result in a net cost benefit or detriment to the project has not been analyzed at this time.

If an inland route does not incorporate the existing bridges on the winter road, new watercourse crossings, including bridges and large-diameter culverts, would need to be constructed along the entire length of the route. Additionally, the GNWT would likely be obliged to decommission or demolish the existing bridges to address public safety.

The winter road route already utilizes existing bridges and bridge-sized culverts. Continuing to use these structures while they remain functional within their design life reduces the need for new installations and avoids the need to deconstruct the existing structures. This approach reduces material use and reduces potential environmental effects associated with construction activities, such as excavation, in-water works, and vegetation clearing.

In summary, the environmental savings are achieved by reducing the need for new infrastructure and reducing construction-related disturbances when reusing the existing major water crossings (i.e., bridges) along the MVWR. The GNWT is interested in discussing this aspect of the Project design objectives further with Pehdzéh Kį First Nation.

16. QUESTION: Quantitative assessment of wetland habitats to allow route comparisons

In Section 7.2.3.2.3, the developer states: "An inland route will avoid some of the wetlands and habitats associated with wetlands used by wildlife species, such as waterbirds and moose. An inland route will encroach further into the annual range of boreal caribou and result in more direct and indirect habitat loss compared to the Project Route, as it will not follow the existing cleared ROW of the MVWR."

PKFN has consistently expressed concerns to the developer regarding the proposed route's proximity to key moose habitat.

On pages 12-13, the Terms of Reference state: "The developer will provide some level of environmental assessment of the alternative routes to substantiate their inclusion as viable alternatives, even if they are not being considered as the developer's preferred route."

Can the developer provide a quantitative assessment of the impacts of the Project Route on wetlands and habitats used by waterbirds and moose compared to the impacts on the annual range of boreal caribou from the Inland Route Alternative?

RESPONSE:

Without identifying a specific route, it is not possible to assess the potential impact on moose or caribou habitat. However, the suggestion to "move the alignment east... into the uplands" likely entails overlapping more selected boreal caribou habitats than transected by the Project route. This is demonstrated in DAR Chapter 10, Figure 10.2, which shows more selected boreal caribou habitats to the east of the Project route. Moving the route east could result in reduced intersection with "common" moose habitat and intersection with more "transient" moose habitat (e.g., as seen in DAR Appendix 10-A, Figure 3.4). The route will likely still intersect important moose areas identified in the Dehcho Region (DAR Appendix 10-A, Figure 3.5).

Similarly, it is not possible to quantify the potential effects of an alternate route on wetlands and waterbird habitat without a specific project footprint. Overall, moving the alignment approximately 5 km east would reduce the amount of overlap with the Middle Mackenize River Islands Important Bird Area (IBA); however, an alternate route would result in a Local Assessment Area (LAA) that would overlap the southern portion of the Brackett Lake IBA, which also contains important waterbird habitat (see Appendix 20A, Figure 3.6). In addition, an alternate route to the east would still intersect other waterbodies and wetlands (e.g., southeast of Tulita) that would result in direct and indirect habitat loss for waterbirds.

21. <u>QUESTION: Wetland habitats and road drainage</u>

At section 7.2.3.2.1, the developer states: "The Inland Route Alternative is situated at higher elevation along its length, on the long westward-facing slope of the Franklin Range. As such, the inland route generally has good drainage and avoids many of the lakes and wetlands located closer to the Mackenzie River (Deh Cho), which are present along the Project Route."

In the design criteria in section 5, the developer states that the highway "will avoid wetlands to the extent possible."

PKFN has repeatedly the developer about wetland habitats and drainage problems along the winter route, with specific examples.

Also, at section 7.2.3.2.2, the developer states that: "The inland route alternative, however, may require fewer new culverts compared to the project route because the watercourses to be crossed at the inland route location may be better defined, owing to the upland terrain location." This is stating that the upland alternate route has better drainage which will result in less numbers and less severe water crossings.

So, technical comments in the DAR note that an alternate route has good drainage, fewer and less severe water crossings, and avoids many lakes and wetlands.

Why have higher elevation alternatives not been considered?

RESPONSE:

Please refer to the GNWT 's response to Question 5 (wetlands), which expresses the need to consider design objectives collectively, and Question 15, which addresses a comparison of the number of culverts and watercourse crossings. The GNWT isn't clear on the Pehdzéh Kį First Nation's intended use of the term 'severe' in this context.

The GNWT's rationale for selecting the preferred route as the Project Route is presented in Section 7.2.3.3. The GNWT acknowledges the Pehdzéh Kį First Nation's comments expressing a preference for an inland route further from the Mackenzie River. The GNWT looks forward to receiving additional information from the Nation and engaging further to identify mutually acceptable route options.

22. <u>QUESTION: Lack of meaningful commitments or accommodations to mitigate route impacts</u>

On page 11-115, "Assessment of Potential Effects on Culture and Traditional Land Use, Including Harvesting", the developer lists the following recommendation from PKFN:

> "Relocation of the project alignment 5 km inland (outside of the 5 km protection corridor) to increase distance from the Mackenzie River, and avoiding disturbing numerous traditional land use areas, traditional activities sites, and natural resources harvesting along the river (based on feedback provided on the optimized alignment of the Project proposed by Pehdzéh Kį First Nation) (Dessau, 2012 [PR#13])."

The developer responded with the following commitment:

> "The project highway alignment route follows the MVWR as much as possible and ties into existing bridges at Ochre River, White Sand Creek, Strawberry Creek (culvert), Vermillion Creek South, Bob's Canyon Creek, Dam Creek, and Blackwater Creek. The GNWT is not proposing to relocate existing bridges. The GNWT is committed to ongoing engagement with Indigenous Governments, Indigenous Organizations, and other affected parties, such as renewable resources councils, during advancement of project design and planning."

Why has the developer not accommodated any of PKFN's concerns with, for example, the following potential commitments:

a. Thorough evaluation of Alternative Inland Route and quantitative assessment comparing of technical, economic, and environmental aspects of Alternative Inland Route with Project Route
b. Relocating the MVWR alignment beyond the 1 km corridor to avoid sensitive cultural and traditional land use sites?

RESPONSE:

The GNWT acknowledges the Pehdzéh Kį First Nation's (PKFN) comments expressing a preference for an inland route further from the Mackenzie River. The GNWT looks forward to receiving additional information from the PKFN, including traditional land use information and any suggested route alignments, to facilitate further discussions with the objective of identifying mutually acceptable route options for consideration in the environmental assessment.