Outlook

## Fw: LKFN Responses to Developer's IRs

**From** Catherine Fairbairn <cfairbairn@reviewboard.ca>
**Date** Thu 17/04/25 3:06 PM
**To** Clementine Bouche <cbouche@reviewboard.ca>

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**From:** Trieneke Gastmeier <trieneke@tamarackenvironmental.ca>
**Sent:** Thursday, April 17, 2025 11:46 AM
**To:** Catherine Fairbairn <cfairbairn@reviewboard.ca>
**Cc:** exdir <exdir@liidliikue.com>; housing@liidliikue.com <housing@liidliikue.com>; Dieter Cazon <resources@liidliikue.com>; monitoring@liidliikue.com <monitoring@liidliikue.com>; Annie Young <annie@tamarackenvironmental.ca>
**Subject:** RE: LKFN Responses to Developer's IRs

Hi Catherine, yes that should be fine.

Thank you,
Trieneke

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**From:** Catherine Fairbairn <cfairbairn@reviewboard.ca>
**Sent:** April 17, 2025 1:36 PM
**To:** Trieneke Gastmeier <trieneke@tamarackenvironmental.ca>
**Cc:** exdir <exdir@liidliikue.com>; housing@liidliikue.com; Dieter Cazon <resources@liidliikue.com>; monitoring@liidliikue.com; Annie Young <annie@tamarackenvironmental.ca>
**Subject:** Re: LKFN Responses to Developer's IRs

Thank you Trieneke,

I just want to confirm that you are comfortable with me PDF-ing your email and posting it and the table to the public registry for MVH? That will allow the Board to consider it as evidence in this EA.

Catherine

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**From:** Trieneke Gastmeier <trieneke@tamarackenvironmental.ca>
**Sent:** Thursday, April 17, 2025 11:23 AM
**To:** Catherine Fairbairn <cfairbairn@reviewboard.ca>
**Cc:** exdir <exdir@liidliikue.com>; housing@liidliikue.com <housing@liidliikue.com>; Dieter Cazon <resources@liidliikue.com>; monitoring@liidliikue.com <monitoring@liidliikue.com>; Annie Young <annie@tamarackenvironmental.ca>
**Subject:** LKFN Responses to Developer's IRs

Hi Catherine,

I hope you're well. While it is not officially a moment in the review process to respond to the developer's IR responses, LKFN asked its technical expert to review the responses provided. We are sharing this information with the Board here. Based on the proponent responses to our original comments, there have been some improvements to the DAR; however, there are still concerns/ questions outstanding. LKFN's technical reviewer has made the below key recommendations, highlighting the proponent's response. LKFN's technical reviewer also prepared specific responses to each comment which can be found in the attached spreadsheet.

1. Update Baseline Data: Update historic (1970s and 1980s) mapping data with new (2020 or later) data which include more recent impacts of climate change and re-establish key hydrologic monitoring stations.
    - *We appreciate that further data collection is planned, and a commitment has been made to include baseline data specifically referenced in the proponent's response, though a more comprehensive review of existing data is likely beneficial.*

2. Expand Mapping: Extend mapping beyond the immediate project area to include major water crossings and sensitive terrain and assess the suitability of other alignment options where the proposed alignment poses significant design challenges.
    - *Gaps in mapping were filled, and some areas were extended, but consideration of a broader potential alignment where geotechnical conditions are unfavourable is likely to enhance the resilience of the proposed infrastructure.*

3. Improve Mitigation Strategies: Consider more invasive techniques like cut-and-fill in certain regions, incorporate snow management techniques, and consider re-alignment in areas where fill material will be challenging to source/transport without causing permafrost damage.
    - *The proponent has committed that "The design remains flexible, and adjustments to the alignment will be considered based on the findings of future geotechnical investigations, within the presented design criteria and objectives of Section 5.2 of the DAR." as well as " Balancing anticipated future maintenance requirements and capital construction cost to minimize life cycle cost of the project." We look forward to continued consultation relating to results of geotechnical site investigations, proposed excavation of organic soils, and other specific design decisions as the project evolves.*

4. Clarify Mitigation Feasibility: Provide more detail on how the feasibility of mitigation measures will be assessed and propose alternatives where necessary.
    - *We acknowledge "the terms "where possible" and "to the extent possible" are used to reflect the practical and technical limitations of implementing all design objectives and best practices for the entire length of the highway. While the intent is to honor these commitments, the use of these terms acknowledges that certain site-specific conditions, unforeseen circumstances, or conflicting priorities (e.g., technical and environmental constraints) may limit the ability to apply a commitment in every instance." We look forward to further consultation regarding instances when technical limitations prevent the full implementation of design objectives.*

5. Re-assess Impact Categories: Revisit categories with "no interaction" and provide clarity on the temporal definition of reversibility.
    - *The proponent responses do not address the long-term thermal impact of altering soil profiles in a permafrost environment. If material is placed directly on the ground surface, it is still expected to*

*change the thermal regime of the system long-term, solely based on the change in thermal properties (albedo, thermal conductivity…)*

6. Consider Re-alignment: Re-align the proposed route in areas susceptible to ground movement and thermokarst features after geophysical data is collected.
    - *The proponent has put forth "Commitment #2: The area of direct ground disturbance will be limited by following the pre-existing Mackenzie Valley Winter Road (MVWR) road alignment to the extent possible. The geometric criteria for an all-season road (Table 5.1) are different from those of the Mackenzie Valley Winter Road. This, and other considerations such as engagement input, preclude following the MVWR along its length." The proponent has also stated that "Where relevant, the Project will incorporate regional geophysical data from other organizations and implement or facilitate local geophysical investigations to spatially extend substrate characterizations from geotechnical drilling at spatial scales similar to the PCAR and MGAR, where needed to support design." Concern remains relating to the magnitude of change to alignment proposed. Many thermokarst dominated wetland landscapes are included in the current alignment, and are unsuitable for the construction of a sustainable, long-lasting road. We ask that alternate routes be considered which explore higher terrain with near-surface rock. The annual maintenance cost of a road constructed on thawing permafrost-dominated wetlands is likely to far exceed the construction cost of a much more resilient, high-and-dry route. In addition to the presence of permafrost as a hazard leading to the need for increased maintenance, in several sections the ROW is planned in proximity to the Dehcho river where slope stability concerns have been noted. Realignment would also address these issues.*

7. Enhance Monitoring Plan: Implement early warning detection systems in regions where slope stability may be a concern, augment thermal and mechanical monitoring of ROW, LAA, and RAA.
    - *Though a monitoring plan is further developed, leveraging the experience and observations of people familiar with the region will enhance early detection. In addition, slope stability monitoring should be considered where the alignment is in proximity to the Mackenzie, such as soil moisture measurement*

Thank you and have a good weekend,
Trieneke