

**Mackenzie Valley
Review Board**



**Report of Environmental Assessment
and
Reasons for Decision
GNWT
Tłıchǵ All-Season Road Project
EA1617-01**

March 29, 2018

Review Board decision

To make its decision in this environmental assessment, the Mackenzie Valley Environmental Impact Review Board (Review Board) has considered all the evidence on the public record and made its decision under section 128 of the *Mackenzie Valley Resource Management Act*.

Based on the evidence on the public record, the Review Board finds that the proposed Tłıchǵ All-Season Road Project (the Project) is likely to cause significant adverse impacts on the environment. The Review Board has recommended 23 measures, many of which will result in adaptive management, to mitigate these impacts so they are no longer significant. Specifically, the measures require the developer (the GNWT) and others to do the following:

- Track and manage project-related changes to well-being of Whatì residents, including harmful behaviours associated with increased access to drugs and alcohol, traffic accidents, safety of young women and changes in harvest success.
- Require policies that increase the safety of young women in work camps and communities.
- For boreal caribou (tǫdzı) in the Project area, make a range plan with actions to reduce or avoid impacts and protect boreal caribou, offset habitat, and create a temporary no-hunting corridor where non-Aboriginal hunting of boreal caribou (tǫdzı) will be prohibited.
- Use Traditional Knowledge in barren-ground caribou (ʔekwǫ) habitat monitoring.
- Complete the *Bathurst Caribou Range Plan* as soon as possible.
- Create an Integrated Fisheries Management Plan that prevents significant impacts from additional fishing pressure resulting from increased access.
- Monitor harvest and manage wildlife to help maintain successful Aboriginal harvesting.
- Conduct, and take actions based on, a bird survey before construction.
- Include important details in the *Wildlife Management and Monitoring Plan*.
- Establish and fund the Tłıchǵ All-Season Road Corridor Working Group.

With these and other measures to reduce or avoid identified impacts, the Review Board has concluded that the Project may proceed to the regulatory phase for approvals. By addressing the significant adverse impacts in these and other ways, the Project will be

improved, and meaningful actions will mitigate the significant impacts that would otherwise occur.

The Review Board recommends, under subparagraph 128(1)(b)(ii) of the *Mackenzie Valley Resource Management Act*, that the Project be approved subject to the measures described in this report, which are necessary to prevent significant adverse impacts on the environment.



JoAnne Deneron
Chairperson
Mackenzie Valley Environmental Impact Review Board

March 29, 2019

List of Abbreviations

ASR	<i>Adequacy Statement Response</i>
CGW	Community Government of Whatı
COSWEIC	Committee on the Status of Endangered Wildlife in Canada
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
DFO	Fisheries and Oceans Canada
GNWT-INF	Government of the Northwest Territories-Department of Infrastructure
INAC	Indigenous and Northern Affairs Canada
MVLWB	Mackenzie Valley Land and Water Board
MVRMA	<i>Mackenzie Valley Resource Management Act</i>
NRCan	Natural Resource Canada
NSMA	North Slave Métis Alliance
NWT	Northwest Territories
NWT SARC	Northwest Territories Species At Risk Committee
PDR	<i>Project Description Report</i>
RoW	Right-of-way
SARA	<i>Species at Risk Act</i>
TASR	Tłıchǵ All-season Road
TG	Tłıchǵ Government
ToR	<i>Terms of Reference</i>
WLWB	Wek'èezhìı Land and Water Board
WRRB	Wek'èezhìı Renewable Resources Board
YKDFN	Yellowknives Dene First Nation

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Executive summary

Introduction

This report describes the process, evidence, conclusions and decisions of the Mackenzie Valley Environmental Impact Review Board (Review Board) environmental assessment (EA) conducted on the proposed Tłıchǵ All-Season Road Project (the Project). The Project involves building and operating a new all-season highway from Highway 3 near Behchokǵ to Whatı, located in the Wek'èezhì Resource Management Area of the Northwest Territories.

The developer of the Project is the Government of the Northwest Territories (GNWT).

Proposed development

The Project involves constructing and operating a permanent 97 kilometre long, two-lane gravel all-season highway. The Project starts at Highway 3 approximately 30 km southwest of Behchokǵ and goes north to the Community of Whatı boundary. It will follow a trail along an abandoned winter road. It will provide Whatı with all-season road access for the first time in its history.

The road right-of-way is 60 metres wide. It crosses the Duport River, James River and Tsotıdeè [La Martre River] with bridges. Approximately 77 kilometres of the route is on territorial lands and 17 kilometers are on Tłıchǵ lands, which the GNWT and Tłıchǵ Government have agreed will be transferred to the to the GNWT.

The GNWT expects the road to be used by 20-40 vehicles per day, including industrial traffic from the NICO Mine. The GNWT will hire a private company (the “P3 operator”) to build the Project and operate it for 25 years and will take over road maintenance after that period. At least two 150-person camps would likely be required for construction. Approximately 50 possible quarries have been identified along the route but may not all be needed.¹

¹ See Section 1.4 for a more detailed description of the Project.

The Review Board's findings

The Review Board has carefully considered the following issues. It has provided a series of measures and suggestions that will reduce or avoid the Project's significant adverse impacts and improve monitoring and managing the potential impacts.

The precautionary approach and adaptive management

There was too much uncertainty in developer's impact predictions, particularly about boreal caribou and bird species at risk in the area of the Project, and about a "spike" in harmful behaviours in Whatì once the road is open. In this EA, when there was 1) a lack of full scientific certainty and 2) a risk of serious or irreversible harm, the Review Board took a precautionary approach in its decision making.¹

Community well-being

The Project will increase Whatì residents' access to medical and social services, events (such as cultural and sporting events) and family in other communities, reduce the cost of living and create employment opportunities. The Project is also likely to cause certain significant adverse impacts. It will likely: cause a significant increase in health and social problems for a period after it is opened; reduce harvesting success around the road, increasing dependence on the wage economy; and, increase stress on existing social services in Whatì. Construction camps close to Whatì add to young women's health and security risks.

The Review Board agrees with the evidence pointing to the beneficial impacts on the well-being of the Community of Whatì, and commends the proactive approach taken by the Tłıchǵ Government and the Community Government of Whatì. The Board has recommended measures to reduce or avoid certain potentially significant impacts that would likely affect vulnerable groups such as youth, women and Elders. Where the Project is likely to cause significant adverse impacts to community well-being, the Tłıchǵ Government and the Community Government of Whatì will be responsible for actions to reduce or avoid the impacts, and the developer will provide them with support and funding. The measures include:

¹ See Section 4.4 for a more details about the Review Board's use of the precautionary approach.

- tracking and managing Project-related changes to the well-being of Whatì residents, including harmful behaviours associated with increased access to drugs and alcohol, traffic accidents, safety of young women and changes in harvest success;
- requiring policies that increase the safety of young women in work camps and communities;
- requiring policies and employee training to promote a safe and culturally inclusive work environment;
- community engagement with the developer in Whatì and Behchokò, and grievance mechanisms for people to raise concerns in work camps and communities;
- including Behchokò in emergency response planning; and,
- prioritizing Northern hiring, and Tłıchǫ citizen hiring in particular.

Boreal caribou (tòdzı)

Boreal caribou (tòdzı) is a species at risk. For millennia, caribou have been vital to the survival of Aboriginal people in the area where the Project is now proposed, and they continue to have a profound relationship. The amount of habitat disturbance in the southern part of species' range in the Northwest Territories suggests that boreal caribou (tòdzı) numbers are already going down around the Project area. Building and operating the road is likely to cause significant adverse impacts on boreal caribou (tòdzı). These include impacts from:

- direct habitat loss;
- sensory disturbance and the behavioural impacts it causes;
- barriers to movement and habitat fragmentation;
- increased predation success for wolves; and,
- increased hunting pressures because of increased access.

Parties to the EA were concerned about impacts of the Project on boreal caribou (tòdzı) in the Project area. The developer did not assess impacts on boreal caribou (tòdzı) in this area. Instead, the developer assessed the effects of the Project on the entire population of boreal caribou across the whole Northwest Territories. The developer could not provide necessary information about the present state of caribou in the area of the Project, and had limited information for the rest of the Northwest Territories. These uncertainties that made the developer's predictions unreliable.

Based on the evidence from other parties, the Review Board concludes that the potential impacts of the Project on boreal caribou (tǫdzı), taken together, are likely significant. The Review Board has prescribed measures to:

- make and carry out a range plan for boreal caribou (tǫdzı) in the Project area, which requires many actions to reduce or avoid impacts and protect boreal caribou (tǫdzı);
- create a temporary no-hunting corridor where non-Aboriginal hunting of boreal caribou (tǫdzı) will be prohibited until the range plan is in place; and,
- offset habitat for boreal caribou (tǫdzı) elsewhere to make up for habitat lost due to the Project.¹

Barren ground caribou (ʔekwǝ)

Barren-ground caribou (ʔekwǝ) is a threatened species that is very important to Aboriginal people. They are at a historic low point in their population cycle, and are particularly vulnerable. Traditional Knowledge confirms that barren-ground caribou (ʔekwǝ) use the Project area. The Project will extend the time that harvesters can reach the winter range of barren-ground caribou (ʔekwǝ) each year, resulting in increased harvest. The impacts resulting from increased permanent access from the Project to barren-ground caribou (ʔekwǝ) is likely to adversely affect caribou for future generations. Range planning is incomplete and is not ready to deal with impacts from the Project in the near term. Better harvest reporting is needed for herd recovery and sustainable management of barren-ground caribou (ʔekwǝ).

The Review Board has recommended measures to prevent significant adverse impacts to barren-ground caribou (ʔekwǝ). These measures require the developer to:

- support and work with the Tłıchǵ Government to use Traditional Knowledge in winter habitat monitoring and management of barren-ground caribou (ʔekwǝ); and,
- complete the *Bathurst Caribou Range Plan* as soon as possible.²

Fish and water

Fishing is important to the Tłıchǵ and Whatı way of life. The Review Board finds that the Tłıchǵ All-Season Road is likely to cause significant impacts on fisheries and fish

¹ See Chapter 6 for details.

² See Chapter 7 for details.

harvesting, because it is likely to increase fishing pressure, by increasing access of recreational non-Aboriginal fishers to Lac la Martre and to the rivers and small lakes along the road. The current lack of data on fish populations and fish harvesting will make this additional fishing pressure hard to manage. The Review Board has made a measure requiring Fisheries and Oceans Canada and the Tłıchǵ Government to create an Integrated Fisheries Management Plan. This will help understand the fishery and harvesting, manage impacts from the Project, design monitoring plans and manage future changes as they are identified, to prevent significant impacts from additional fishing pressure resulting from increased access.¹

Cultural well-being

The Project is likely to cause significant adverse impacts to culture, due to a combination of factors including reduced harvesting success for residents of Whatı, reduced language use, and changing perceptions of the land. To mitigate this, the Review Board has made measures that require the developer to:

- work with the Tłıchǵ Government and WRRB to monitor harvest and manage wildlife to maintain successful harvest;
- ensure programs and policies to promote cultural sensitivity in work camps and communities are implemented; and,
- manage the Project using Traditional Knowledge made available by all Aboriginal groups that traditionally use the area.²

Species at risk and other wildlife

Bird species at risk, their nesting sites and crucial habitat are likely present along the Project right-of-way and quarries. Without additional mitigation, the Project is likely to cause adverse impacts to bird species at risk by disturbing them at sensitive times and by destroying nests and habitat. To prevent these impacts, and impacts to other wildlife, the Review Board has made a measure requiring the developer to survey for birds and manage the Project to mitigate impacts. Another measure includes additional detailed requirements of the developer's *Wildlife Management and Monitoring Plan* to reduce or avoid impacts on other wildlife.³

¹ See Chapter 8 for details.

² See Chapter 9 for details.

³ See Chapter 10 for details.

Permafrost

The Project is in an area with permafrost, but the developer has not provided information on, or mitigations for, potential impacts from the road on permafrost, or from permafrost on the road. To reduce or avoid significant permafrost impacts from the Project the Review Board requires the developer to make and carry out a permafrost management plan.¹

Climate change

The Project is partly proposed to respond to the effects of climate change on the Whatì winter road. Climate change could affect the Project, such as by thawing permafrost, which increases maintenance costs and safety risks to road users. Climate change is expected to cumulatively affect many of the same parts of the ecosystem as the Project, although the details of the effects are uncertain. The Review Board believes that the project's contribution to climate change is likely not significant, partly because of the Project's low predicted traffic levels. If the project's emissions were predicted to be a much larger portion of the Northwest Territories' total emissions, the Review Board may have reached other conclusions.²

Sustainability

The Review Board believes the Project is a positive contribution to the long-term sustainability of the Community of Whatì and the Tł̨chq̨ people by delivering lasting benefits while mitigating significant adverse impacts. With the mitigations proposed by the developer and Tł̨chq̨ Government, and the measures and suggestions in this Report of EA, this project is likely to meet the needs of the current generation without compromising the ability of future generations to meet their own needs.³

Adaptive management, follow-up and reporting

Adaptive management is a critical part of the Review Board's overall mitigation strategy described in the measures in this Report of EA. For the measures to be fully effective, follow-up monitoring and reporting are needed to:

- verify that the measures are being carried out and evaluate how well they are working;

¹ See Chapter 11 for details.

² See Chapter 12 for details.

³ See Chapter 13 for details.

- confirm that significant adverse impacts are not occurring;
- test EA predictions; and,
- inform adaptive management, to identify and effectively respond to changes.

The Review Board has required adaptive management frameworks for several measures in this Report of EA and has, in Appendix B, set out essential parts of these frameworks.

The Review Board has also made measures so that:

- The developer, government and regulatory authorities will report on actions they take to carry out measures and on how well the measures work.
- The developer will create and fund the Tłıchǫ All-Season Road corridor working group, to involve Aboriginal parties in monitoring and mitigating impacts.
- In the final contract with the P3 operator, the developer will require all measures and commitments that apply to the P3 operator to be carried out.¹

Conclusion

Based on the evidence, the Review Board finds that the Project is likely to have significant adverse impacts on the environment. It has made measures to mitigate impacts, many of which will result in adaptive management of these impacts. Measures require the developer and others to do the following:

- Track and manage project-related changes to well-being of Whatì residents, including harmful behaviours associated with increased access to drugs and alcohol, traffic accidents, safety of young women and changes in harvest success.
- Require policies that increase the safety of young women in work camps and communities.
- For boreal caribou (tǫdzı) in the Project area, make a range plan with actions to reduce or avoid impacts and protect boreal caribou, offset habitat, and create a temporary no-hunting corridor where non-Aboriginal hunting of boreal caribou (tǫdzı) will be prohibited.
- Use Traditional Knowledge in barren-ground caribou (zekwǫ) habitat monitoring.
- Complete the *Bathurst Caribou Range Plan* as soon as possible.

¹ See Chapter 14 for details.

- Create an Integrated Fisheries Management Plan that prevents significant impacts from additional fishing pressure resulting from increased access.
- Monitor harvest and manage wildlife to help maintain successful Aboriginal harvesting.
- Conduct, and take actions based on, a bird survey before construction.
- Include important details in the *Wildlife Management and Monitoring Plan*.
- Establish and fund the Tłıchǫ All-Season Road Corridor Working Group.

With these and other measures to reduce or avoid identified impacts, the Review Board has concluded that the Project may proceed to the regulatory phase for approvals. By addressing the significant adverse impacts in these and other ways, the Project will be improved, and meaningful actions will reduce or avoid the significant impacts that are otherwise likely to occur.

1. Introduction

This is the Mackenzie Valley Environmental Impact Review Board's (Review Board) *Report of Environmental Assessment and Reasons for Decision* (Report of EA or REA) for the proposed Tłıchǫ All-Season Road Project, including¹ all supporting infrastructure. The Review Board conducted the environmental assessment (EA) in accordance with Part 5 of the *Mackenzie Valley Resource Management Act* (MVRMA or the Act).

The developer of the Tłıchǫ All-Season Road Project (the road, TASR or the Project) is the Government of the Northwest Territories (GNWT). The Department of Infrastructure led the GNWT's participation in the EA. The Project is in the Wek'èezhì Resource Management Area, in the Tłıchǫ region of the Northwest Territories (NWT) (see Figure 1-1).

The developer applied to construct and operate an all-season highway that starts at kilometre 196 on Highway 3 and goes to the Community Government of Whatì boundary. The 97-kilometre (km), two-lane gravel highway consists of a 60 metre (m) right-of-way (RoW) and includes 16 water crossings requiring culverts or bridges. The estimated footprint of the proposed road corridor is approximately 564 hectares, with an additional 220 hectare footprint estimated for the borrow sources and access roads (PR#7). Approximately 17 km, or 18%, of the alignment is located on Tłıchǫ lands and the remaining 77 km, or 82%, of the route is located on territorial lands. The GNWT and Tłıchǫ Government have entered into an agreement that would transfer the 17 km segment of the RoW that is on Tłıchǫ Government lands to the GNWT. One of the reasons that the developer chose the route is because it will follow an existing disturbance corridor – an old winter road alignment that is no longer in use.

1.1. Outline of the report

This Report of EA includes 15 chapters and 5 appendices:

Chapter 1 - Introduction discusses the regulatory history of the Project. This chapter also provides a current Project description and describes the environmental setting within which the Project is proposed.

¹ Note: All instances of "include" in this report should be understood to mean "including, but not limited to", in accordance with the normal definition of the word.

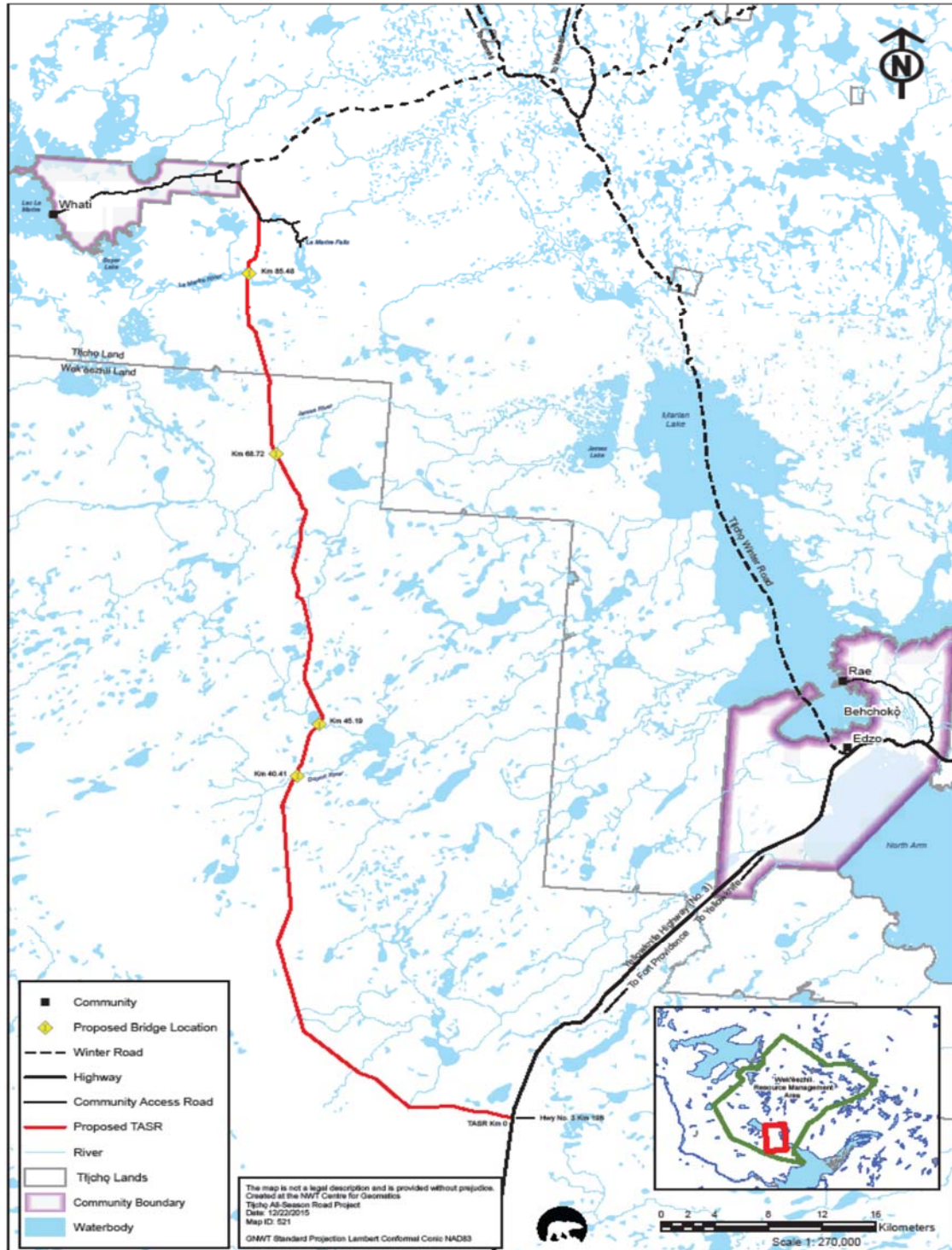


Figure 1-1. Location of the proposed Tłı̨chǫ All-season Road.
(Source: PR#7 p111)

Chapter 2 – Scope of the environmental assessment describes the scope of the environmental assessment, including the scope of development, scope of assessment, alternatives and other statutory considerations. The scope of development includes changes to the Project that occurred during the EA.

Chapter 3 – Environmental assessment process describes the Review Board’s steps for the EA, including MVRMA process requirements. It also provides information about the parties to the environmental assessment.

Chapter 4 – General considerations describes the unique considerations and relationships the Board has taken into account for this environmental assessment.

Chapters 5-11 focus on the environmental impacts of the Project to valued components, including:

- a summary of the evidence from parties and the developer;
- the Review Board’s analysis and conclusions; and,
- any recommended mitigation measures (and suggestions) to prevent significant adverse impacts on the environment, as required by section 128 of the MVRMA.

Within most of these chapters, section x.1 provides a summary of the evidence from parties and the developer. section x.2 presents the Review Board’s analysis and conclusions and section x.3 sets out the Review Board’s recommended mitigation measures to prevent significant adverse impacts. In Chapter 6 the evidence and analysis for each subtopic are presented together.

Chapters 12-14 present the Review Board’s conclusions on the topics of climate change, sustainability, and follow-up and monitoring.

Chapter 15 presents the Review Board’s overall conclusion.

Appendix A – Measures and Suggestions lists the Review Board’s recommended measures and suggestions to mitigate adverse impacts from the Project.

Appendix B – Adaptive management framework provides an adaptive management framework to be followed by the developer where adaptive management is explicitly required in the measures in this report.

Appendix C – Monitoring objectives provides standard monitoring objectives to be used by the developer where monitoring is explicitly required in the measures in this report.

Appendix D – Developer commitments provides a list of the developer’s commitments made for the Project, including commitments made in the developer’s *Project Description Report* and *Adequacy Statement Response*, in response to information requests and at the technical sessions.

Appendix E – Tł̥chq̓ Government commitments provides a list of the Tł̥chq̓ Government’s commitments made in relation to the Project.

Appendix F – Public registry index lists the items and numbers of documents in the Review Board’s online public registry.¹

1.2. Regulatory history of the Tł̥chq̓ All-Season Road

The GNWT currently operates and maintains a winter road system beginning at Highway 3 near Behchok̓ and connecting the communities of Whatì, Gamètì and Wekweètì (PR#7 pii). In 2011, the Tł̥chq̓ Government and GNWT, working under the Tł̥chq̓ Roads Steering Committee (the “Steering Committee”) assessed the feasibility, desirability and implications of realigning the Tł̥chq̓ winter road system to provide improved community access. In May 2013, the Steering Committee resolved to pursue development of an all-season road. The road would predominantly follow the ‘Old Airport Road,’ an existing overland alignment that was used until the late 1980s as a winter road, ending at the boundary of the community of Whatì (PR#110 p1-7).

On March 31, 2016, the GNWT submitted applications for a Type A Land Use Permit (W2016E0004) and a Type B Water Licence (W2016L8-0001) to the Wek’èezhì Land and Water Board (WLWB) to construct an all-season road from Highway 3 to the community of Whatì (PR#16). On July 21, 2016, the Review Board referred the Project to environmental assessment (PR#1) and published reasons for its decision (PR#2).

1.3. Land use plans

Where a land use plan is in effect, all proposed developments must conform to the land use plan. The MVRMA does not set out any explicit statutory responsibilities for the Review

¹ This report references documents on the Review Board’s public registry with the initials “PR” followed by the registry number of the document and specific page numbers where appropriate. Appendix E provides a list of the documents on the public registry by number.

Board in relation to the conformity of developments with land use plans that are in effect in the Mackenzie Valley.¹ Ideally, the initial application or preliminary screening phase should determine whether a development proposal is fundamentally inconsistent with an established land use plan. Regarding the EA process and outcomes (including any recommended measures), the Review Board's view is that any applicable land use plan should be kept in mind to ensure that a proposed development conforms to the land use plan.

For the proposed Project, approximately 17 km would be on Tłıchǵ Lands.² The Review Board acknowledges that the Tłıchǵ Land Use Plan, established under Tłıchǵ law on June 1, 2013, is applicable to these lands. The area of the proposed road is designated as Tłıchǵ Nawoo Ké Dét'ahot' ñi (Cultural Heritage Zone) in the Tłıchǵ Land Use Plan. Page 40 of the Plan provides a description, the goal and objectives and the land uses considered in this zone: "transportation corridor" is one of the uses considered. The Review Board also acknowledges the Tłıchǵ Government's stated intention of granting the developer access to Tłıchǵ Lands, by way of an interim access agreement.³

The Tłıchǵ Government has authority over access to Tłıchǵ Lands and authority over the Tłıchǵ Land Use Plan. The Tłıchǵ Government is also a decision-maker on this EA. The Review Board also notes that the MVRMA (subsection 61(2)) requires any permit or licence issued by the Wek'èezhìi Land and Water Board to be in accordance with the Tłıchǵ Land Use Plan. The Project appears to be consistent with the Tłıchǵ land use plan.

1.4. Development description

The following sections describe the Project components and activities as proposed by the developer⁴.

1.4.1. Road construction⁵

The developer expects that the construction of the road may take four years. However, the successful contractor's final proposal will ultimately determine how long construction will

¹ There is no mention of land use plans in Part 5 of the MVRMA.

² There is no land use plan in effect for the rest of the project area (that is, the area of Wek'èezhìi outside of Tłıchǵ Lands).

³ March 24, 2016 joint letter from GNWT & TŁİCHǵ GOVERNMENT regarding access to Tłıchǵ Lands (appended to PDR)

⁴ The project description provided here reflects the Project components and activities proposed by the developer in its *Project Description Report* (PDR) and *Adequacy Statement Response* (ASR) and was updated based on new information provided by GNWT during the environmental assessment, including developer commitments.

⁵ Road construction details are contingent upon the type of financing secured for the Project.

take (PR#110 p 1-11). The developer's *Adequacy Statement Response* presents two potential construction schedule options¹ (Appendix B in PR#110).

It is expected that geotechnical investigations prior to construction (for example, during detailed design) will inform which sections of the Project to construct during which season (PR#7 p4-36). Consideration of permafrost and subgrade will also inform construction techniques. The developer expects year-round construction (PR#7 p4-36). It is common in northern regions to complete certain construction activities during the winter to take advantage of winter conditions. For example, frozen water bodies and frozen soils mean easier construction over rivers and less ground compaction. Geotechnical investigations will also inform corridor refinement; however, changes are expected to be small and should not affect the details presented in the Project Description Report (PDR) (PR#7 p4-12).

Based on existing road design in regions with similar terrain type, a 1.5 m thick (average) embankment is considered as a design standard thickness for the road (PR#7 p4-15). Figure 1-2 shows a cross-section of a typical Northwest Territories highway; the developer expects geotextile to be used between the existing ground and the embankment along the entire alignment (PR#7 p4-15). Bridge design will include foundation requirements, backfill material specifications and slope and channel protection measures. Culvert design will include requirements for bedding materials, geotextiles and insulation to provide strength in the foundation and to protect the surrounding permafrost and ice-rich soils from thaw (PR#7 p4-36).

All maintenance and construction equipment, as well as materials, will generally be parked within the right-of-way and suitable spill containment units will be utilized where required; however, equipment may also be parked within adjacent borrow pits or stockpile sites (PR#7 p4-38). The developer's PDR lists the typical equipment that will be required for road construction and maintenance (Table 4-9 in PR#7 p4-39).

Water usage for construction is expected to be less than 5 m³/day² (PR#7 p4-41).

¹ One option would have construction starting at Highway 3 and moving northward (one spread approach), and the other option would have simultaneous construction from both the north and south ends (two spread approach).

² Total daily water usage for the Project (including camps and construction) is estimated to be less than 99 m³/day, to a maximum of less than 300 m³/day in the event of a shortened construction schedule (PR#7 p4-42).

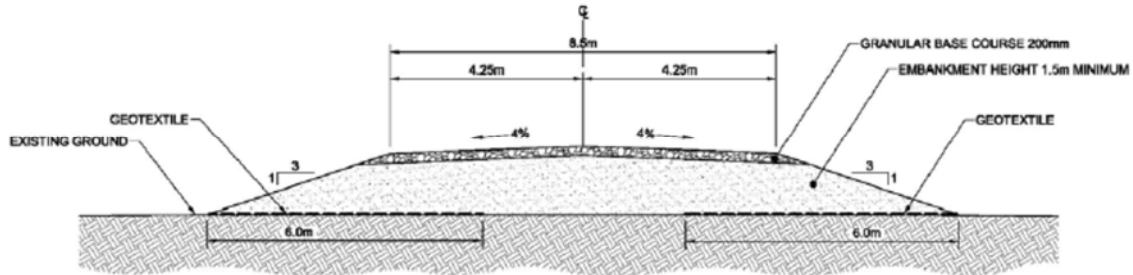


Figure 1-2. Typical Northwest Territories roadway cross section.

(Source: PR#7 p4-16)

1.4.2. Road operations, use and maintenance

Traffic on the proposed road is estimated to be approximately 20-40 vehicles per day¹ (PR#7 p4-3). Road design will allow for year-round use by commercial and private vehicles according to the size and weight limitations outlined in Northwest Territories regulations, such as the *Large Vehicle Control Regulations* (PR#7 p4-14).

The road will require standard maintenance activities such as snow clearing, grading and brush clearing. The developer proposes that the successful P3 contractor will maintain and operate the road for a period of 25 years. After this period road operations and maintenance will be the responsibility of the GNWT.

1.4.3. Water crossings

Construction of the road will require 12 culverts and four bridges at major crossings (Duport River, unnamed tributary near kilometer 45, James River and La Martre River) (Table 1-1). Figure 1-3 shows the crossing location of the La Martre River. In addition to these structures, the developer expects that small-diameter equalization culverts will be needed every 500 meters along the road (PR#7 p4-3). The proposed location and type of culverts were selected based on input from Fisheries and Oceans Canada and Tł̥ch̥q̥ Elders; site topography, hydrology, fish passage requirements and road geometry were also

¹ This estimate considers potential traffic volumes from a metal mine north of Whatì (PR#7 p4-3).

considered. The final sizing will be determined once geotechnical information is obtained and on-site studies can be completed including input from Tłchq Elders and Fisheries and Oceans Canada (PR#7 p4-22, PR#273 pp139-141). Appendix I of the PDR (PR#7) provides conceptual bridge and culvert designs.

Table 1-1. Required bridges and culverts along the Project.

Crossing ID	Crossing KM	Bridge Description: Length
8	40.4	Duport River: 48 m
9	45.2	Unnamed tributary: 24 m
14	68.7	James River: 80 m
15	85.4	La Martre River: 100 m
Crossing ID	Crossing KM	Culvert Description
1	2.0 and 2.4	1x900 CSP and 1x1200 CSP
2	3.2	2x1400 CSP
3	7.9	2x1400 CSP
4	13.2	3x1400 CSP
5	16.5	1x2430 SPCSP
6	19.4	2x2430 SPCSP
7	23.6	2x1400 CSP
10A	48.2	3660x1910 Arch Culvert
10	48.3	1x1200 CSP
11	54.5	2x1400 CSP
12	56.6	1x1000 CSP
13	62.7	3x1400 CSP

Note: CSP = corrugated steel pipe; SPCSP = structural plate corrugated steel pipe
(Source: PR#7 piv)

1.4.4. Camps, borrow sources and fuel storage

The developer expects that two or three large temporary camps will be located along the Project route and that at most two camps would be operational at any one time (PR#7 pii; PR#110 p1-10). These 150-person camps would be located at borrow source locations to reduce the Project's disturbance footprint. In its *Adequacy Statement Response*, the developer indicated that the number and type of camps may change depending on the contractor used for road construction. There is the possibility that camps may be located

on Tłchq lands (PR#110 p1-10).¹ In addition to the large camps, smaller camps may also be needed during construction. These would also be located in existing disturbed areas, for example, in borrow sources or in the road right-of-way (PR#110 p1-10).



Figure 1-3. Crossing at La Martre river Km 85.4.

(Source: PR#7 p4-31)

The developer estimates that each 150-person camp will require approximately 30,000 litres (30 m³) of water per day (PR# 7 p4-40). Sewage and greywater from the camps will either be: collected in sewage holding tanks and transported to Behchokq or Whati for appropriate disposal; deposited into sumps² (pending approval by an Inspector); or, for the

¹ The GNWT stated it will discourage the contractor from placing camps on Community Government of Whati lands (PR#110 p1-10).

² All sewage from larger camps will be collected in holding tanks and transported to a community for disposal.

smaller camps, deposited onto the land (pending approval by an Inspector). For more information, see the draft Waste Management Plan in PDR Appendix N (PR#7).

Out of a total of 39 granular and 21 bedrock potential borrow sources along the Project corridor, the developer identified 13 preferred sources (PR#110 p1-9). All 13 may not be needed, or some may not turn out to be viable pending the results of detailed geotechnical and geochemical investigations. The developer may also develop borrow sources on Tłchq or Community Government of Whatl lands. The developer will either construct all-season access from the Project to the borrow sources or use winter (snow and ice) access roads to these sites. The developer will consider the shortest available routes, avoidance of water bodies, as well as the most economical and environmentally acceptable¹ options when selecting and constructing access roads (PR#7 p4-33).

Fuel and oil needed for the camp facilities, borrow pits and road construction activities will be stored in double-walled storage tanks. The developer expects that each temporary camp will require fuel tanks to accommodate 2,000 L of gasoline, 50,000 L of diesel for camp use and 90,000 L of diesel for the mechanic shop. To transport and store fuel, the developer expects to use three 50,000 L double-walled diesel fuel tanks mounted on highway licensed trailers or skids and a 2,000 L double-walled gasoline fuel tank mounted on a similar system. Propane tanks (30 to 500 pounds [lb]) with an aggregate capacity of up to 1000 lbs may also be required at camps (PR#7 p4-41). Heavy equipment will be fueled by mobile fuel tankers, other vehicles will be refueled on the road right-of-way at a minimum of 100 m from the ordinary high-water mark of any waterbody. Use and storage of fuel will be subject to the Spill Contingency Plan and follow applicable regulations (PR#7 p4-41).

1.4.5. Geotechnical investigations

The developer conducted geotechnical investigations along the right-of-way at culvert and bridge locations as part of the design phase of the Project during the winter of 2017. The purpose of the work was to provide a more accurate assessment of the subsurface conditions at key locations. Geotechnical investigations were also completed on the 13 proposed borrow sources from June 24 – July 27, 2017 (PR#110 p1-10; PR#200). A draft borrow source investigation report based on the summer borrow source fieldwork was submitted to the public registry on September 29, 2017 (PR#200 – PR#208).

¹ For example, borrow source options will be ranked to ensure that sensitive areas, such as eskers and the cultural heritage zone located within Tłchq lands, are considered and avoided where possible (PR#7 p4-33).

1.4.6. Waste management

Solid waste management options will include incineration and temporary storage for removal to an appropriate facility. Combustible solid wastes will be stored in odor-proof secure containers and then incinerated daily; incinerator residue will be removed from site. Non-combustible wastes will be organized in containers with secure lids and stored on site; this material will then be progressively removed from site during construction¹ (PR#7 p4-42). It is estimated that there will be approximately 75 m³ of non-combustible waste per year that will need to be taken to the community landfills in Behchokò or Whatì (PR#7 p4-43).

Hazardous waste, including sewage, waste oils, oil filters, used hydrocarbon containers and absorbents, waste antifreeze, waste solvents, used tires, explosives, animal carcasses, and contaminated soils and snow will be handled and managed as described in the Spill Contingency and Waste Management plans (PR#7 Appendix L and N).

1.4.7. Closure and reclamation

The proposed Project is intended to be a permanent all-season road, with no intentions to close the road within the foreseeable future. As such, there is no planned closure and reclamation for the Project itself (PR#7 p4-44). The Project does, however, include closure and reclamation activities for some project components; camps, borrow sources and temporary access roads will all undergo progressive reclamation during construction. A final Closure and Reclamation Plan will be completed prior to construction (and awarding of the construction contract) (PR#7 p4-44). Site-specific Quarry Operations Plans will cover closure and reclamation of borrow sources, focusing on the restoration of natural drainage patterns, slope grading, capping with organics/vegetation (from pre-stripping stockpiles) and revegetation with native plant species. See sections 4.12.1.1 and 4.12.1.2 of the developer's PDR (PR#7) for details on reclamation of camps and temporary access roads.

The GNWT and the Tłchq Government are also discussing reclamation of the existing winter road from Highway 3 (km 238.5) to Whatì. However, closure and reclamation of the existing winter road is not part of the scope of development for this Project.

¹ Project operations is the phase of the Project following construction, when the road is finished and open to the public for use.

1.5. Environmental setting

The following sections briefly describe the existing environment, including the human environment, for the area of the Project. Section 1.5.1 and 1.5.2 describe individual ecological and social components. This is followed in Section 1.5.3 by an illustrated description of how many of these components form part of an interrelated ecological, social and cultural system.

1.5.1. Components of the biophysical environment

The proposed Project location and alignment is shown in Figure 1-1. The text below summarizes information provided by the developer about the physical environment in which the Project is located.

Terrain, permafrost and soils

The proposed route of the Project is located near the western edge of the Slave Geological Province (Canadian Shield). The route is underlain with sedimentary bedrock covered with glacial till and other surface deposits (see Figure 1-4) (PR#7 p6-4). Surface deposits are well-drained and often found in the form of gravel and sand, in places creating raised landforms such as beaches and eskers. The Project route varies between 180 and 300 meters above sea level and its topography is characterized as undulating with slopes generally less than 10%. Lakes and rivers are present along the proposed road and include several water crossings, including the La Martre River (PR#7 p6-5).

The entire road alignment occurs within an area of extensive discontinuous permafrost. Ice-rich deposits are expected in areas of finer-textured sediment and organic matter. Geotechnical investigations during the final design stage will identify specific areas susceptible to permafrost and recommend route modifications and design techniques to protect permafrost as necessary (PR#7 p6-5).

Detailed soils mapping for the Project corridor has not been conducted. However, based on desktop studies and a baseline soil and terrain survey for the NICO project, the developer believes soils in the Project area to be predominantly cryosolic (that is, disturbed by frost action), common where permafrost exists. According to the developer, further soils information is not needed for final road design (PR#7 p6-5).

Based on a 2008 study by Kavik AXYS (PR#7 Appendix P), terrain conditions along the Project corridor are characterized by glaciolacustrine (surface deposits) and till material

that is generally well-drained with little to moderate slope. Vegetation assemblages along the Project consist of a variety of forest (including jack pine, spruce, tamarack, trembling aspen and balsam poplar) and shrub communities, fens, ephemeral stream crossings and swampland and various groundcover. For a detailed assessment of terrain conditions and vegetation by Project segment, see the PDR (Table 6-5 in PR#7, p6-10).

Vegetation

The entire Project area is located within the Taiga Plains Level II Ecoregion of the Northwest Territories and is characterized by slow growing forests. Wet, poorly-drained areas consist of low-canopy open black spruce, treed bogs, horizontal fens and peat plateaus; mixed wood stands occur in warmer, better-drained areas (PR#7 p6-12).

During 2014, fieldwork identified 12 main vegetation community types in the Project area: dense jack pine; dense spruce; closed mixed-stand; regenerating jack pine forest; dwarf shrubs; black spruce-tamarack; graminoid fen; shrub fen; peat bogs; ephemeral stream crossings/swampland; riparian edges; and, trembling aspen/balsam poplar (PR#7 p6-12).

Based on a desktop study, the developer identified the following rare plants as potentially-occurring in the Project area: American sweet flag; Holboell rockcress; many-headed sedge; Mackenzie hairgrass¹; spinulose woodfern; woolly beach-heath; vasey rush; northern mudwort; blunt-leaf pondweed; and, yellowcress (PR#7 p6-21). The precise location of these species along the road corridor is unknown due to limited accuracy of the source documents and lack of both original and historical vegetation surveys (PR#7 p6-16).

Burn areas

According to the developer, approximately 457,100 hectares of forest is wholly or partly burned along the proposed Project corridor. Approximately 345,300 hectares of forest burned in the Project area between the early-1970s and the end of 2013 (PR#7 p6-21) (see Figure 1-5). It is estimated that at least the first 38 kilometres and the last 4.5 kilometers of the proposed Project were affected by fires in 2014. Preliminary information on the 2015 forest-fire season indicate that wildfires once again passed through portions of the Wek'èezhì area but were not in direct proximity to the proposed Project corridor (PR#7 p6-22).

¹ Mackenzie hairgrass (*Deschampsia mackenzieana*) is listed as Special Concern under schedule 1 of the federal *Species at Risk Act*.

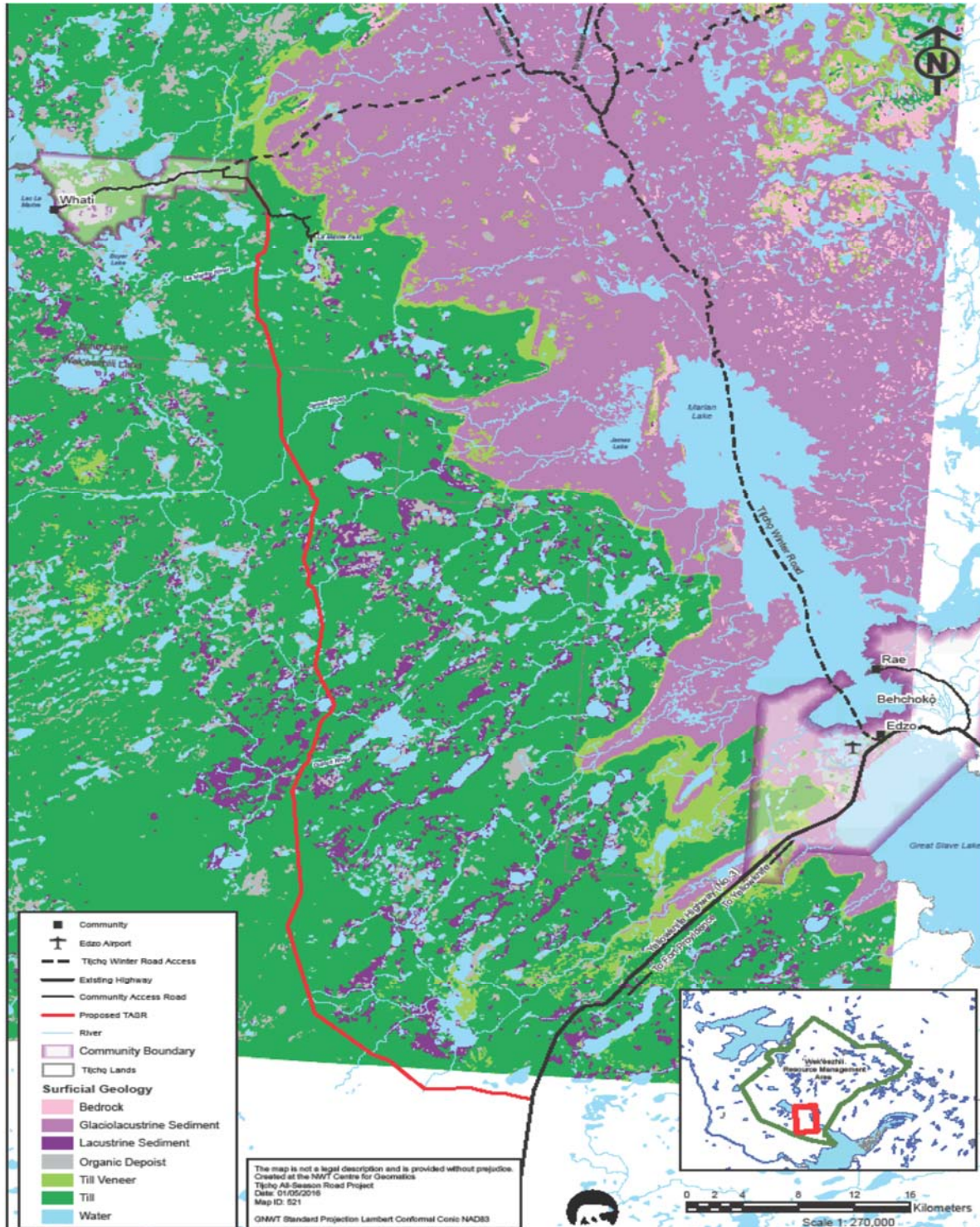


Figure 1-4. Surficial geology in the Project area.
(Source: PR#7 p6-8)

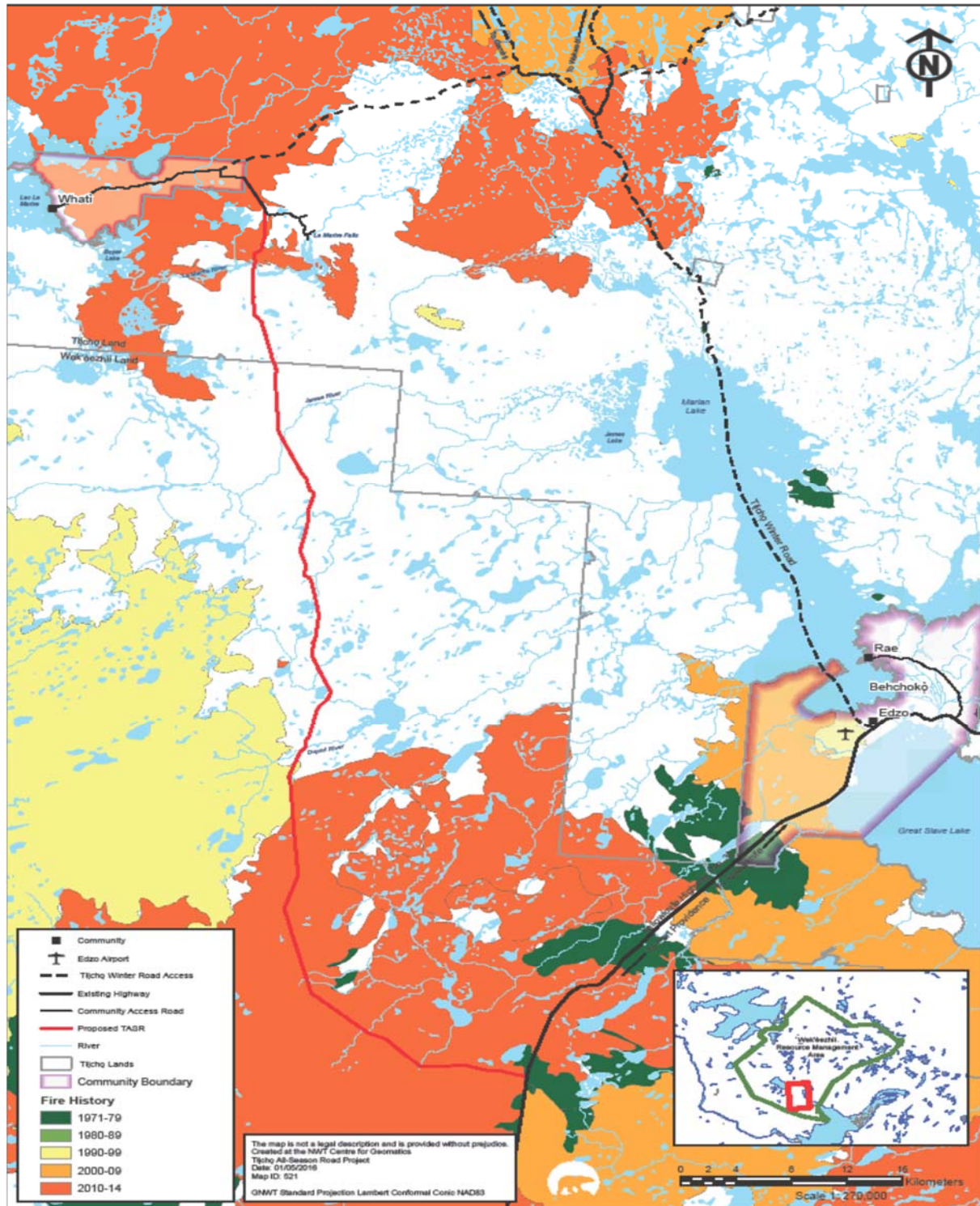


Figure 1-5. Forest fire burn areas in the Project area 1971-2014.
(Source: PR#7 p6-23)

Fish

A total of 17 fish species potentially occur within the Project area, including arctic grayling, burbot, inconnu, lake trout, lake whitefish and pickerel (PR#7 p6-44). Of these, the developer considers arctic grayling to be the valued species most likely to be affected by road construction activities (such as stream crossing structures) due to their dependence on stream habitats for spawning and other life stages and sensitivity to disturbance (PR#7 p6-44). According to the developer, only the larger streams along the Project corridor such as the La Martre River are likely to provide overwintering habitat¹ for grayling (PR#7 p6-44).

Fish habitat field investigations were carried out in 2014 that focused on proposed stream crossing sites and their potential to support valued fisheries. Of the 15 identified water crossings along the Project corridor, four major crossings were deemed as being suitable for fish habitat to support Aboriginal, recreational, or commercial species of fish: La Martre River, James River, Duport River and the crossing at km 45.2 (PR#7 p6-49). The La Martre River and parts of the James and Duport rivers may offer overwintering habitat. Because the remaining water crossings (mostly ephemeral streams) can still provide intermittent fish habitat, the Tłchq Roads Working Group considers all crossings to contain suitable fish habitat (PR#7 p6-49).

Wildlife, including birds

Terrestrial wildlife species occurring in the Project area include caribou – primarily boreal caribou (tqdzl) with the potential for barren-ground caribou (zekwq), moose, black bear, wolverine, wood bison and numerous furbearers (PR#7 p6-24). For a list of wildlife species observed during 2014 field and ground-truthing trips, see Appendix Q of the PDR (PR#7 Appendix Q). According to the PDR, 37 species of terrestrial mammals potentially occur in the Project area. Of these, only barren-ground caribou (zekwq; Bathurst and Bluenose East herds) are migratory, with their historic maximum winter ranges overlapping with the proposed Project corridor (PR#7 p6-24).²

¹ Of the freshwater streams and rivers in the Project area, fish and fish habitat assessments have only been completed for La Martre River, which is known to provide a wide variety of habitat (including overwintering habitat) (PR#7 p6-48).

² Despite their historic winter range, barren-ground caribou have not been observed within the Project area in recent years due to the current period of population decline (PR#7 p6-24).

Water quality and quantity

The proposed Project is located within the northern portion of the Great Slave sub-basin and crosses over the Marian watershed (PR#7 p6-37). There is limited site-specific water quality data for the proposed Project corridor. However, according to the developer, water quality of the major rivers and lakes throughout the region is generally good. Surface water in the Taiga Plains region tends to exceed guidelines for copper and iron while turbidity is generally higher due to the presence of sedimentary rock and glacial till, which is prone to erosion (PR#7 p6-38).

Precipitation in the Project area generally falls half as snow and averages 200 to 400 mm annually and average annual runoff ranges between 100 and 199 mm (mostly during spring freshet) (PR#7 p6-38).

1.5.2. Components of the human environment

The socio-economic impact assessment in the developer's ASR described the social, economic and cultural aspects of communities in the Tłıchǫ region, focusing primarily on the community of Whatì. Valued socio-economic components for the Project were defined by the developer based on scoping meetings in Whatì (PR#7 Appendix B) and by the Review Board based on meetings in Whatì and Yellowknife (PR#19; PR#26). Socio-economic valued components are defined as features of the human environment that are important to people's wellbeing and quality of life (PR#110 p5-1). To fulfill the requirements of the *Terms of Reference*, the developer's ASR focused on three broad valued socio-economic categories (PR#110 p5-2):

- economic well-being;
- stable and healthy communities; and,
- traditional-use, culture and heritage resources.

The developer presented existing socio-economic conditions in the Project area (with a focus on Whatì) from baseline studies described in Appendix B of its PDR (PR#7). Baseline studies from the PDR that are associated with the three broad categories listed above are summarized in the developer's *Adequacy Statement Response* (PR#110 p5-1 to 5-15).

Population, employment and education

The population of Whatì in 2012 was 519 people. Approximately 99% of residents are Aboriginal and 93% speak an Aboriginal language. Employment in Whatì is primarily with

the Tłıchǵ and Territorial governments. This work primarily includes infrastructure maintenance, including roads and providing public services. Some Whatì residents work in the mining industry, while others are seasonally involved in trapping, wildlife harvesting and selling traditional crafts (PR#110 p5-4).

The community school in Whatì educates residents from kindergarten through to grade 12. Aurora College offers courses in heavy-equipment operation and the Mine Training Society provides safety certificates. In addition, GNWT has provided apprenticeship workshops aimed at preparing youth for the workforce (PR#110 pp5-5, 5-6).

Business development and tourism

The limited number of small businesses in Whatì includes a community store as well as Tli Cho Air Inc., a joint venture between Air Tindi and the Tłıchǵ Investment Corporation. A commercial fishery operated briefly on Lac La Martre but was closed in 1973 due to a concern with declining fish stocks. The commercial fishery has not re-opened (PR#110p5-8).

There is a small fishing lodge on Lac La Martre that caters to approximately 150 guests per year during the summer. It is the only active lodge on Tłıchǵ lands. The Tłıchǵ Government recognizes the value of eco-tourism, provided it minimizes ecological impacts. A new hotel and café are being constructed in Whatì in anticipation that the Tłıchǵ All-Season Road will bring visitors and tourists into the community (PR#110 p5-8).

Housing and infrastructure

Information from the GNWT indicates that there are problems with housing in Whatì. For example, 47% of the houses in the community are considered to have core needs, including structural problems and cracks in the walls due to shifting permafrost, faulty furnaces and poor insulation. Homeowners can access funding through government programs to repair their homes so that residences are safe and healthy (PR#110 p5-9).

Whatì is currently accessed by a winter road constructed annually from Highway 3 near Behchokǵ and has a year-round airstrip. Electricity in the community is provided by a diesel generator. The water treatment plant is considered to be in good condition and there are plans to upgrade the sewage lagoon to accommodate a population of up to 800 residents (PR#110 p5-9 to 5-10).

Public safety

The community of Whatì has an Royal Canadian Mounted Police (RCMP) detachment with two full-time officers. The Community Government of Whatì deals with emergency response services within the community boundaries; it is not mandated to operate ground ambulance or highway rescue services. There are no formal rescue vehicles in the community (PR#110 p5-10).

Between 1989 and 2016, there have been seven collisions on the Whatì winter road; none had fatalities. Daily traffic on the winter road during the operating season averages 39-54 vehicles. There are spikes in use of the winter road depending on the year (PR#110 p5-10).

Traditional and non-wage economy

Whatì has a strong land-based and traditional-subsistence economy, which includes hunting, fishing and trapping. The traditional economy plays an important role in the community by (PR#110 p5-11):

- acting as a buffer against fluctuations in the wage economy;
- ensuring healthy eating;
- promoting intergenerational relations between Elders and youth;
- assisting in the communal sharing of food which strengthens family bonds;
- creating and sustaining spiritual relationships with animals and the natural world; and,
- sharing of knowledge and transmission of cultural practices.

The consumption of country foods is a part of the traditional economy and an important part of cultural life in Whatì. In 2014, nearly 60% of households in Whatì reported that country foods accounted for at least half or more of their diet. The traditional economy goes beyond hunting, trapping and fishing. It includes the preparation, cooking and distribution of country foods. The entire community— including women, men and children— are involved in these activities (PR#110 p5-11).

Harvesting and traditional way of life

The La Martre River, along with its surrounding small lakes, encompasses important areas that support the traditional harvesting activities of fishing, hunting and trapping in the vicinity of the Project. Fishing occurs year-round and many people camp on islands in the La Martre River to set fishnets and prepare dry fish. The existing winter road is used as a

snowmobile trail during the winter for trapping and to access lakes on both sides of the winter road via additional trails. The extensive trail system connects lakes, portages and trails as shown on Figure 1-6 taken from the K'agòò tı́ ı̀Deè Traditional Knowledge Study prepared for the Project (PR#28).

The main trapping season for beaver and muskrat is the spring. The La Martre River to Marian Lake and the area around Boyer Lake are parts of an interconnected water system that is important for trapping (PR#110 p5-13).

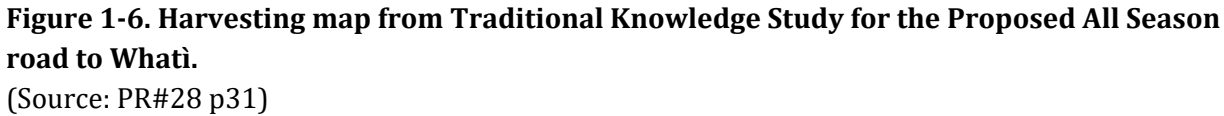
Harvesting areas for moose, boreal caribou (tòdzı) and barren-ground caribou (zekwò) in the vicinity of the Project are shown on Figure 1-6. The northern portion of the Project is within the winter range of barren-ground caribou (zekwò). When population numbers were higher, zekwò were harvested near Boyer Lake, La Martre River and at James Lake. Tòdzı are harvested throughout the area, but their main habitat is considered to be in the centre of the Project area, west of the old winter road. Tòdzı are mainly harvested south of Boyer Lake and towards Lac La Martre (PR#110 p5-13).

Moose are harvested throughout the Project area with a focus along the La Martre River, around Boyer Lake and along the shorelines of other lakes and rivers (Pr#110 p5-14). Moose and caribou are also harvested in the Project area by members of the Yellowknives Dene First Nation and North Slave Métis Alliance (PR#110 p5-14).

Heritage and cultural resources

The La Martre River (Tsołideè) between Lac La Martre and Marian Lake (Figure 1-6) is integral to the traditional economy and culture of the people in Whatı. Access to the river is at T'ooheèhoteè, located where the existing winter road route (K'agòò tı́ı) crosses the La Martre River. This location hosts a portage and camping site and is an important fishing area for grayling, suckers and whitefish, which are harvested primarily in the summer and fall. The Project proposes to cross the La Martre River with a bridge west of this portage (PR#110 p5-14).

The La Martre River water falls, or Nàııı and the lake above the falls (Nàııııı), are located east of the Project (Figure 1-7). These sites are considered sacred and treated with great respect. The site is culturally significant to the Tłıchǫ people. A culturally sacred site is adjacent to the Project route (Figure 1-7). This site is considered sensitive because Elders and harvesters are unsure of the nature of the site and the types of beings or spirits that might dwell there. The area is to be left alone to avoid any disturbance (PR#110 p5-14).



The Project route follows an old overland military road, called “K’ągòò tlıì” by Elders, which means “tractor trail”. It is also referred to as the Old Airport Road. This existing trail is used as both a snowmobile and all-terrain vehicle route to access the many intersecting east-west trails. These important trails include the Campbell trail and an Ancestor’s trail from the southwest shore of Marian Lake to the proposed Tłıchǫ All-Season Road (K’ągòò tlıì) (PR#110 p5-15).

The Yellowknives Dene First Nation (YKDFN) has identified concerns about potential impacts on important cultural and archaeological sites (PR#110 p5-14; PR#24). The YKDFN submitted mapped information showing traditional and contemporary trails and routes used by Elders and land users in the Project area. Cultural information from the YKDFN in the area includes important hunting areas, wildlife migratory routes, trapping routes, archaeological sites, cultural sites and burial grounds (PR#123 PDF p3, 7). The North Slave Métis Alliance have also alerted the developer to the presence of heritage resources in the Project area (PR#72 PDF pp9-13).

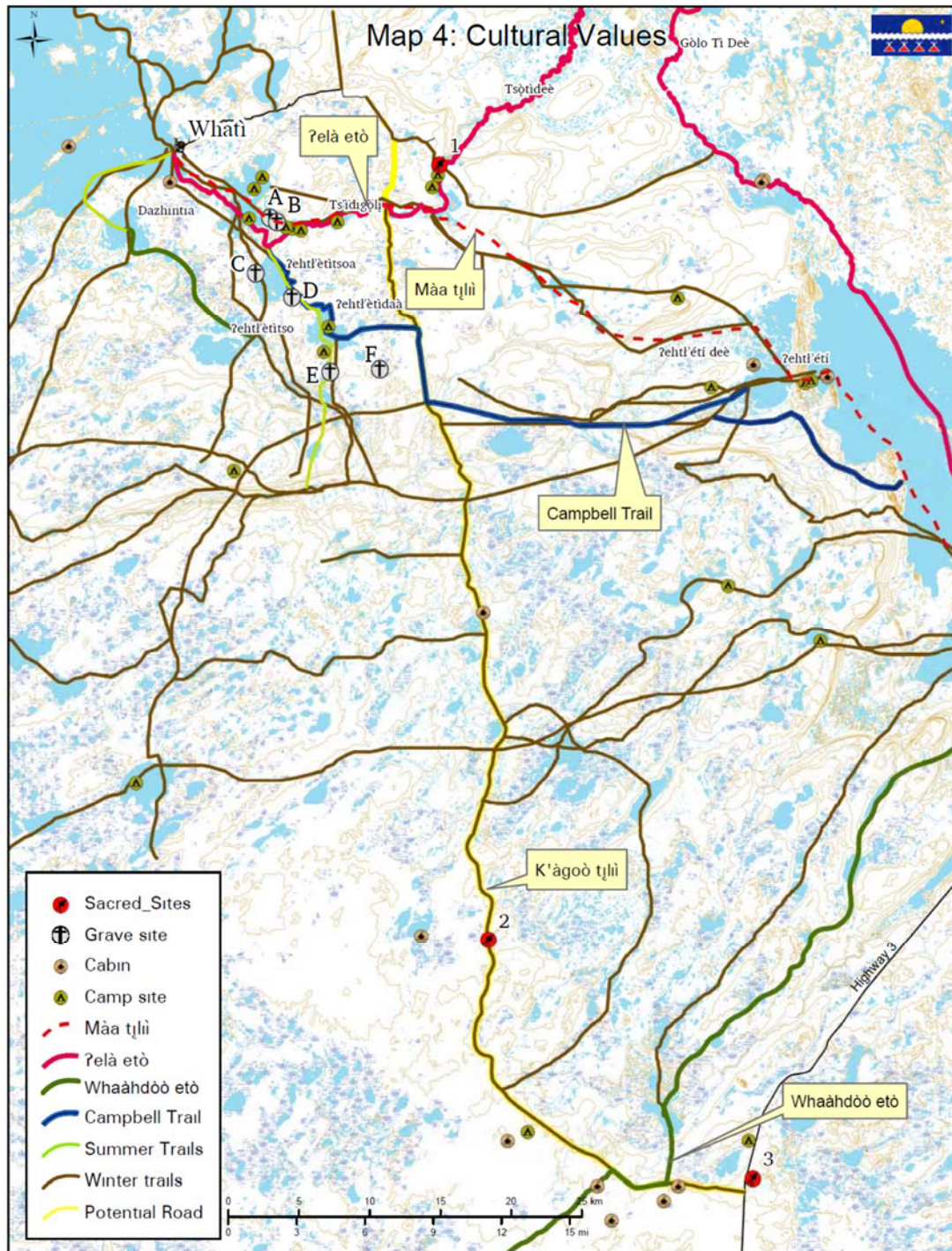


Figure 1-7. Cultural values map from the Tłıchǫ Traditional Knowledge Study.
(Source: PR#28 p27)

1.5.3. Interconnected ecological and social system

The sections above briefly describe individual components of the environment. However, the Review Board recognizes that a holistic approach to considering the interactions between all aspects of the environment, including people, as part of an interconnected system reflects the worldview of Aboriginal groups in the Northwest Territories. Traditional Knowledge holders describe the environment in this way, emphasizing functional linkages between parts of the human environment and parts of the ecosystem. For example, the Tłıchǵ Government submitted a Traditional Knowledge Study for the proposed all-season road which speaks to this interconnection (PR#28 p11):

Traditional knowledge has been defined as “the systems of knowledge gained by experience, observation and analysis of natural events that is transmitted among members of a community” (Huntington 1998). This definition depicts traditional knowledge as a system of knowledge parallel to that of field biology. Others define traditional knowledge as a knowledge system based on a worldview that focuses on the complex whole, and includes more than the physical, technical view of the environment (Freeman 1992). Spak (2005) provides an alternative definition: “the culturally and spiritually based way in which Indigenous people relate to their ecosystems.” This interpretation highlights the interrelationship between culture, nature, and spirituality and emphasizes the importance of respectful relationships between people and the land.

Figure 1-8 shows a high-level summary of the interactive system of valued components discussed in this Report of EA, with other social and ecological factors that interact with them. It shows features of the land and people and some of the ways they are connected. It is not exhaustive, and deliberately focusses on the relationships of the subjects which the Review Board heard about in this environmental assessment.

In

Figure 1-8, arrows indicate major connections, while the plus or minus signs indicate whether the connection increases or decreases that part of the system. Starting from the top, some of the connections that are illustrated in

Figure 1-8 are the following:

1. Climate change, wildfires, and the effectiveness of habitat for wildlife are inter-related parts of the boreal forest ecosystem. For example, climate change is expected to result in an increased frequency and intensity of wildfires, which changes the effectiveness of habitat for different wildlife species. Mature forest, with lichen, is preferred boreal caribou habitat, but after forest fires the successional plants that regenerate are preferred by moose.

2. Linear routes, such as trails, roads and any other linear feature that increases access can reduce effectiveness of habitat (through fragmentation), increase access and predation by wolves, and increase access for traditional harvesters and non-Aboriginal recreational hunters and fishers. All this affects the prey or hunted species. Increased human activity can also reduce numbers of some harvested furbearers, while roads may increase the presence of bison.
3. Increased boreal caribou mortality from wolves, Aboriginal harvesters, and non-Aboriginal hunters, in combination with impacts on habitat from fires, results in fewer boreal caribou.
4. Traditional harvesting may benefit from increased access but depends on healthy populations of hunted species such as caribou and moose, as well as furbearers and fish. Additional mortality of fish and wildlife is caused by recreational hunting and fishing.
5. Traditional harvesting supports cultural well-being, promotes the health of harvesters and of people who eat traditional foods, and supports the traditional economy.
6. Traditional culture and language can promote good health and family connectedness and reduce addictions. Recovery from addiction is also promoted by strong family connectedness, while addictions can erode family connectedness and health. Access to medical and health services (including mental health services) promotes recovery from addictions and promotes well-being in many ways.
7. Education can benefit health and increase employability, while wage employment and the traditional economy both help people manage the cost of living. The cost of living is reduced by cheaper access to goods and services.

Figure 1-8 provides only a superficial view of a much more complex set of relationships in a system of people and the land with many more moving parts. It is intended to illustrate some of the interdependence and dynamics of the many ecological and social components of the system where the Project is proposed. The system as illustrated suggests that effective habitat, wildlife, traditional harvesting, traditional culture and language, and health are important drivers of the system.¹

¹ Many other components, such as soils and water, are parts of the system, but are omitted from

Figure 1-8 because they were not subjects raised by parties in this EA. The illustration is not intended to be complete or exhaustive. Traditional knowledge and ecology offer further in-depth understandings of how this system functions and how its parts interrelate.

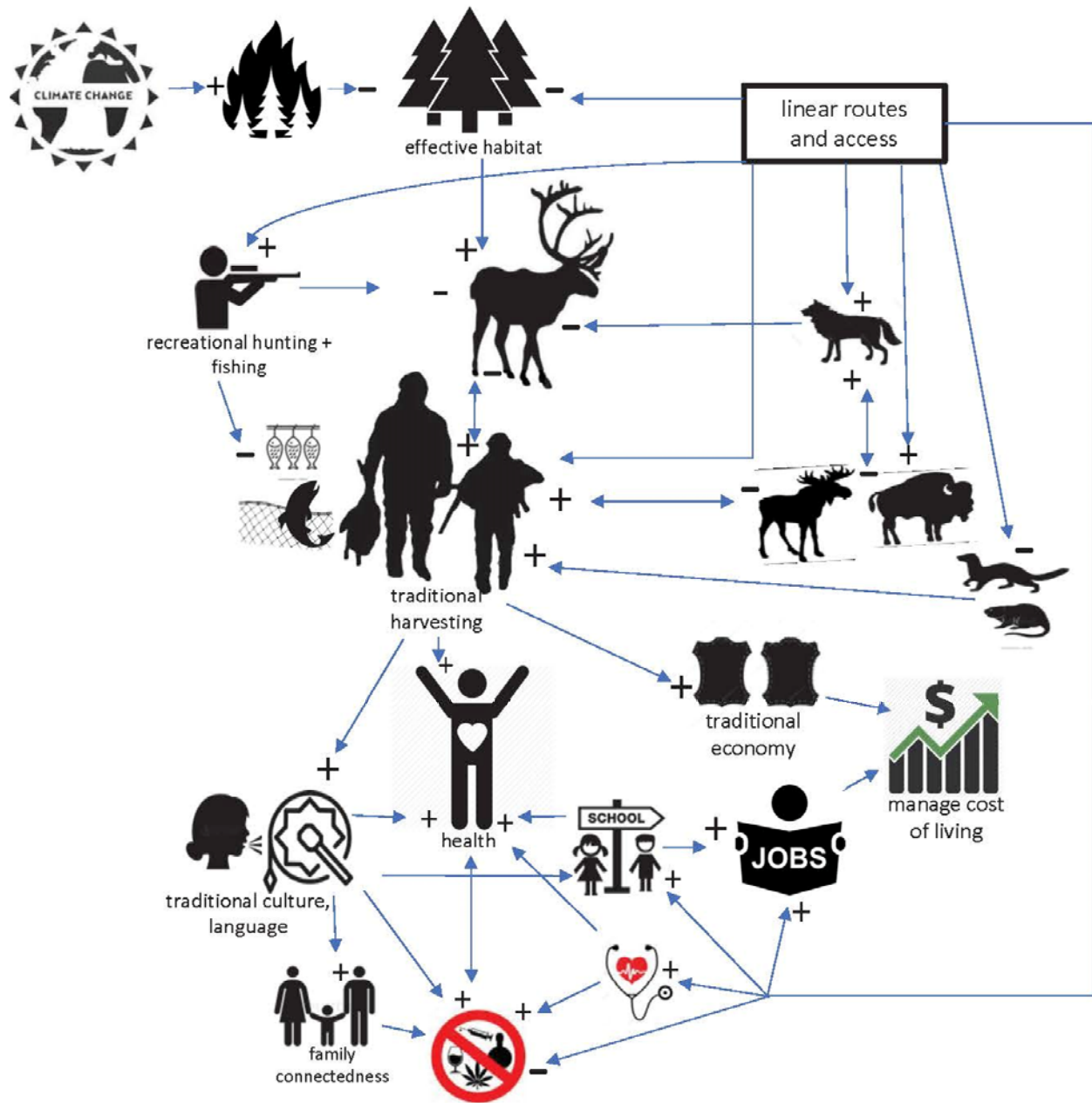


Figure 1-8. Integrated system of people and the land.

This is a partial illustration of connections between related and interdependent parts of human and ecological systems in the Project area.

2. Scope of the environmental assessment

This chapter describes the scope of development and scope of assessment set by the Review Board for the environmental assessment (EA). It also explains how the Review Board satisfied other statutory obligations in relation to the scope of the environmental assessment.

To determine the scope of development and scope of assessment for the Tłchq All-season Road Project (the road, TASR or the Project), the Review Board considered the developer's original *Project Description Report* (PR#7) and the evidence on the public record up to the end of scoping phase, including comments received at the community scoping session in Whati and at the technical scoping session held in Yellowknife. Both sessions took place in August 2016 and the Review Board set the scope of development and scope of assessment in the *Terms of Reference* (PR#69) afterwards. The Review Board provided reasons for decision on the scope of the environmental assessment (PR#71) in support of its *Terms of Reference*.

Section 2.1 below describes the scope of development for this EA. Section 2.2 describes the scope of assessment, providing details on what was assessed during the EA.

2.1. Scope of development

Under subsection 117(1) of the MVRMA, the Review Board determines the scope of development for every EA it conducts. As described in the *Terms of Reference*, the scope of development consists of all physical works and activities required for the Project to proceed. The final scope of development described in this Report of EA includes all relevant Project changes made during the EA. In the Review Board's opinion, it accurately reflects the Project as currently proposed. In general, this includes construction, operation, use and maintenance of the road (including borrow sources and construction camps), as well as any reclamation activities associated with the Project.

In its *Project Description Report*, the developer confirmed that the Project, once fully constructed, will be designated a Public Highway pursuant to the *Public Highways Act* under the administration and jurisdiction of the GNWT, Department of Infrastructure (PR#7 p3-5).¹

¹ <https://www.justice.gov.nt.ca/en/files/legislation/public-highways/public-highways.a.pdf>

Specific components of the final scope of development for the Project include:

- construction of a 97 kilometre (km), public all-season road from Highway 3 (km 196) to the Community of Whatì boundary;
- operation of a public, all-season road from Highway 3 (km 196) to the Whatì access road, including maintenance¹ and use of the road;
- development of borrow sources and related access (e.g. roads) and their operation throughout the construction and operations phases;
- construction camps and related access (e.g. roads) to the camps and water sources; and,
- any reclamation activities carried out during the construction and operations phases.

Given that the Project is proposed for permanent use as an Northwest Territories public highway, the scope of development does not include a specific closure phase.

2.1.1. Project alternatives

Paragraph 117(2)(e) of the MVRMA states that EAs should include in their scope, a consideration of any other matter that the Review Board or responsible minister determines to be relevant, which can include available alternatives to a development. The developer consulted extensively on alternative routing for the road prior to the formal EA process. This section presents a brief discussion of issues raised regarding alternative routing of the road in the EA.

One alternative to the Project would be to not construct it at all and continue to rely on the existing winter road (and trails) to serve the community of Whatì. Given the potential socio-economic and other benefits of the road, and the Tłchq Government's and Community Government of Whatì's clear support of the GNWT's project proposal, the Review Board recognizes that this alternative would be unpalatable. This alternative also would not provide Fortune Minerals Ltd.'s proposed Nico Mine Project the access road it requires to build the mine, considered by many to be a major economic boon to the area.

The developer notes in the *Project Description Report* that alternative routes for an all-season road were presented to parties and feedback solicited on these routes while

¹ Section 1 of the *Public Highways Act* defines maintenance as: "... the preservation and repair of a highway and any other work necessary to keep a highway in serviceable condition."

creating the *Environmental Scoping, Existing Data Collection and Regulatory Requirement Identification Report* in 2008 (PR#7, Project Description p5-8), and again with Tłchq beneficiaries and community residents in 2011 (PR#7, Project Description p4-3). Three alternative routes were considered, assessed and consulted on (PR#7, Project Description, Fig. 4-2). The developer notes that the most economical route was chosen for the Project, with consideration of engineering and environmental factors (PR#7, PDF p434).

In prior community consultations in 2008, within the *Project Description Report* and during the Gamètì session of the project's consultation tour, there is reference to an 'Elders Route' (PR#7 p40; PR#7 Appendix E p434, 442). This routing was initially seen by communities as a preferred routing due to its highly scenic nature that could attract tourism. A change in scope, requested by the Tłchq Grand Chief in May 2013, was based on further field studies and discussions that noted concerns with this routing.

The developer notes that the 2008 proposed 'Elders Route' would require undisturbed land to be blasted with explosives, which is extremely costly and would have substantial environmental impacts of its own. The developer stated that the current corridor is on predominantly pre-disturbed land (along an old winter road), meets engineering requirements, has a limited overall environmental impact, and can be constructed in a timely manner that is relevant to the economical development of the proposed Nico Mine Project. All of these factors led to the current proposed routing becoming the preferred routing.

Other questions regarding the routing of the road came up on the 2016 Community Consultation Tour in Wekweètì, Gamètì and Behchokò. Concerns were raised about the length of the road (longer than the current winter route) (PR#7 Appendix E PDF pp433-434, 441-442). It was explained that travel-time was expected to be about the same, given the improved condition of the road, but that the access window would be increased (to all-season accessibility). Concerns were also raised about the incorporation of Traditional Knowledge from Elders, and Traditional Knowledge in general. The proponent noted that Traditional Knowledge was incorporated and that Elders' comments were noted and considered (PR#7 Appendix E PDF pp434, 437, 442, 445).

2.2. Scope of assessment

The scope of assessment defines which issues will be examined in the environmental assessment. The scope of assessment for EA1617-01 includes all potential impacts from the Project on valued components of the biophysical and human environment.

The Review Board identified the following valued components in its *Terms of Reference* that required additional investigation during the EA:

- fish and fish habitat
- caribou
- wildlife, including species at risk
- traditional use, culture and heritage resources
- economic well-being
- stable and healthy communities

The chapters 5 through 15 of this report discuss the predictions and analysis of significant impacts and their likelihood in relation to the valued components above. Not all valued components are discussed individually. For example, fish and water are considered together in Chapter 8. The Report of EA focuses on the topics that received the most discussion during the EA, on the Review Board's conclusions and on findings of significance, including the recommended measures and suggestions.

2.2.1. Other scope of assessment and statutory considerations

In addition to assessing impacts on the valued components listed above, the Review Board considered the following scope of assessment considerations, including statutory requirements.

Statutory consultation requirements with the Tłchq Government

To fulfill its statutory responsibilities under the MVRMA, including s. 114, 115, and 115.1, as well as 127.1, the Review Board's EA process provided numerous opportunities for meaningful engagement and involvement of the Tłchq Government, including:

- subscription to our public registry and online review system;
- in-person scoping sessions and written review of a draft terms of reference for the EA;
- written information requests and in-person technical sessions; and
- public hearings (including written submissions, in-person presentations and questioning, and written closing arguments).

Roles and responsibilities of the Tłchq Government in this EA are discussed in Chapter 4.

Well-being and way of life of Aboriginal peoples

The EA process exists to ensure the protection of the environment and the social, cultural and economic well-being of residents and communities in the Mackenzie Valley. section 115 of the *Mackenzie Valley Resource Management Act* (the Act) underscores “the importance of conservation to the well-being and way of life of [A]boriginal peoples of Canada to whom section 35 of the *Constitution Act*, 1982 applies and who use an area of the Mackenzie Valley.”

As described throughout this Report of EA, the Project area is important to and used by Aboriginal people. Throughout the EA process and its deliberations, the Review Board has therefore considered not only impacts on the environment, but also impacts on Aboriginal rights (such as harvesting), well-being and way of life. For example, Chapter 9 focuses on cultural well-being, which was a valued component in this EA and has linkages to socio-economic well-being, caribou and fish (Chapters 5, 6, 7, 8). The importance and traditional use of the Project area is discussed in detail in Chapter 9 and, briefly, in the wildlife and fish chapters.

Traditional Knowledge

The Review Board pays special attention to how Traditional Knowledge was incorporated into the Project design, the establishment of comprehensive baseline information and the assessment of Project impacts. In accordance with the requirements of section 115.1 of the Act, the Review Board considered all Traditional Knowledge that parties shared during the EA, including the *K’agòò ṯlì Deè: Traditional Knowledge Study for the Proposed All-Season Road to Whatì*, submitted by the Tłıchǫ Government (PR#28). The consideration of available Traditional Knowledge informed the Review Board’s decisions.

Decisions on significance

Section 128 of the Act requires that the Review Board decide — based on the evidence on the public record—whether the proposed development is likely to have a significant adverse impact on the environment, or cause for significant public concern. The *Terms of Reference* (PR#69) outlined how the developer was to predict and rate the overall significance of potential impacts and the Review Board asked parties to provide their own views of the predicted impacts and their significance. Parties provided this information through information requests, technical reports and closing arguments. After considering all the evidence on the public record, the Review Board made its final determination on the significance of impacts, as described in this Report of EA.

Cumulative impacts

Subsection 117(2)¹ of the Act states that the Review Board must consider any potential cumulative impacts of a project. Cumulative impacts are the combined effects of the development in combination with other past, present, or reasonably foreseeable future developments and human activities. The *Adequacy Statement* required the developer to conduct a cumulative effects assessment for any valued component that:

- is susceptible to cumulative effects; and,
- is predicted to have project-related residual impacts (PR#70 p9).

The Review Board's own analysis and conclusions of cumulative impacts are described in each relevant chapter of this Report of EA.

Accidents and malfunctions

According to subsection 117(2) of the Act, the Review Board must consider any potential impacts related to accidents and malfunctions. The Review Board's *Adequacy Statement* required the developer to assess impacts related to potential accidents and malfunctions, including the:

- provision of an effects assessment of the impacts of project-related accidents and spills on water quality, fish and fish habitat (including impacts on fish harvesting) (PR#70 p12); and,
- provision of projected traffic accident estimates and details on emergency response services and provide an emergency response plan (PR#70 p24).

Impacts on valued components of the environment from accidents and malfunctions are discussed in the chapters dedicated to each valued component.

Temporal Scope

Temporal scope refers to the temporal boundaries used to examine potential impacts of the Project on valued components. The *Terms of Reference* (PR#69) directed the developer to consider times during which Project activities are most intense, times when valued

¹ 117(2) Every environmental assessment and environmental impact review of a proposal for a development shall include a consideration of (a) the impact of the development on the environment, including the impact of malfunctions or accidents that may occur in connection with the development and any cumulative impact that is likely to result from the development in combination with other developments [...]

components are particularly sensitive to impacts (for example, during migration or calving seasons), as well as the duration of impacts in its determination of temporal scope. For cumulative impacts, the temporal scope includes the period of the impacts of past, present and reasonably foreseeable, future projects that are predicted to combine with the impacts of the Project.

The specific temporal boundaries proposed by the developer for impact predictions can be found in the developer's *Adequacy Statement Response* and other relevant assessment materials. The Review Board considered the temporal scope of Project impacts in its analysis and conclusions.

Geographic scope

Geographic scope refers to the spatial boundaries used to examine potential impacts of the Project on valued components. The *Terms of Reference* (PR#69) provided the minimum geographic scope of assessment for valued components, but also directed the developer to consider and provide rationale for the actual geographic scope used in the assessment of impacts on each valued component.

The specific geographic boundaries proposed by the developer for impact predictions can be found in the *Adequacy Statement Response* and other relevant assessment materials. The Review Board considered the geographic scope of Project impacts in its analysis and conclusions.

3. Environmental assessment process

This Chapter describes the environmental assessment (EA) process for the Tłıchǵ All-Season Road Project. It provides information about participation in the EA and the process steps the Review Board took to identify any likely significant adverse impacts on the environment or any aspects of the Project likely to cause significant public concern.

3.1. Requirements of the Mackenzie Valley Resource Management Act

The Review Board conducted the EA in accordance with Part 5 of the *Mackenzie Valley Resource Management Act* (MVRMA or the Act) and the Review Board's *Rules of Procedure for Environmental Assessment and Environmental Impact Review Proceedings* and *Environmental Impact Assessment Guidelines*.

In every EA, the Review Board must consider the proposed development's impact on the biophysical, socio-economic and cultural environments (including the consideration of evidence provided by Traditional Knowledge) and take into account the concerns of Aboriginal people and the public¹. In addition, under subsections 117(1) and 117(2) of the Act, the Review Board must determine the scope of the development and consider a number of other factors—including public input—in conducting the environmental assessment.

After considering all the evidence on the public record, the Review Board must determine whether the Project is likely to cause a significant adverse impact on the environment or be a cause of significant public concern². The Review Board must prepare a report of environmental assessment that includes their conclusions and recommendations³ within 16 months of the Projects' referral.

Once completed, the Review Board must provide the report to both the Tłıchǵ Government and the GNWT Minister of Lands⁴, as well as provide copies of the report to the developer, preliminary screening and referral organization(s), if applicable. After considering the report, the Tłıchǵ Government, the GNWT Minister of Lands and any responsible ministers must decide among several alternatives, including 1) ordering an environmental impact

¹ Sections 114, 115, and 115.1.

² Subsection 128(1).

³ Subsections 128(2) and 128(2.1).

⁴ The territorial Minister of Lands will distribute the report to every responsible minister (any territorial or federal minister having jurisdiction in relation to the development under federal or territorial law).

review, 2) accepting, or 3) rejecting¹ the report's recommendation. If the Tłıchǵ Government and Minister of Lands decide to approve the Project subject to mitigation measures, the developer, governments (including the Tłıchǵ Government) and regulatory authorities must ensure that all approved measures are carried out².

3.2. Participation in the environmental assessment

All eight organizations that applied were granted party status in this EA (PR#174 p4-5). The developer is automatically considered a party to the proceedings according to the Review Board's *Rules of Procedure*. The other registered parties in the EA were:

- Fisheries and Oceans Canada (DFO)
- Environment and Climate Change Canada (ECCC)
- Indigenous and Northern Affairs Canada (INAC)
- Natural Resources Canada (NRCan)
- North Slave Métis Alliance (NSMA)
- Tłıchǵ Government (Tłıchǵ Government)
- Wek'èezhì Renewable Resources Board (WRRB)
- Yellowknives Dene First Nation (YKDFN)

The Tłıchǵ Government participated in this EA as a party. However, the Tłıchǵ Government stated its support for the Project prior to referral to EA and continued its support throughout the EA process. The Tłıchǵ Government worked closely and in collaboration with the developer to provide input on the developer's application and some of the developer's material submitted during the EA.

Parties had the opportunity to participate throughout the EA process, though some parties did not actively participate in all stages of the EA. Table 3-1 below illustrates the involvement of parties throughout the phases of the EA, including the submission of technical reports and participation at public hearings. During the EA process, other interested groups and individuals had the opportunity to submit comments to the Review Board or participate in the proceedings (for example, public hearings) as members of the public.

¹ Under paragraph 131.1(1)(b) of the MVRMA, the Tłıchǵ Government may, after consulting the Review Board, reject the Review Board's recommendation. Similarly, under 130(1)(b)(ii), the Minister may reject the recommendation and order an environmental impact review (EIR) of the Project.

² Section 62, subsections 131.1(2) and 130(5).

Table 3-1. Participation by parties in the environmental assessment.

Party	Information requests, technical session	Submitted Technical Report	Public Hearing (presentation and questioning)	Submitted Closing Arguments
Environment and Climate Change Canada	✓	✓	✓	✓
Fisheries and Oceans Canada	✓	✓	✓	✓
Indigenous and Northern Affairs Canada	✓			
Natural Resources Canada	✓	✓	✓	✓
North Slave Métis Alliance	✓	✓	✓	✓
Tłıchǫ Government	✓	✓	✓	✓
Wek'èezhì Renewable Resources Board	✓	✓	✓	✓
Yellowknives Dene First Nation	✓	✓	✓	✓

3.3. Phases of environmental assessment

After referral and initial EA start-up activities, the Review Board carried out the EA in four major phases: a scoping phase, an analytical phase, a hearing phase and a decision phase. The following sections outline the process steps and milestones throughout the major EA phases.

Referral and EA start-up

The Review Board referred the Project on its own motion on July 21, 2016 (PR#1). In its *Reasons for Decision*, the Review Board found that the project might cause significant adverse biophysical and social impacts and public concern (PR#2). The Review Board considered the evidence on the Wek'èezhìi Land and Water Board's public registry during the preliminary screening and identified several areas of concern. These included access to the Community of Whatì that may result in increased social issues (for example, drug and alcohol addiction, increased crime) and related stress on existing social services; impacts on caribou from increased harvesting pressure, predation (resulting from new access), road-induced mortality and barrier effects (for example, linear impediments, dust, noise, reduced air quality); and, uncertainty regarding the effectiveness of mitigation measures (PR#2 p1).

Scoping phase

After referral to environmental assessment, the Review Board published a notice of proceeding announcing scoping sessions to be held in Whatì and Yellowknife in August 2016 (PR#5). Following these meetings, the Review Board posted a notice to parties clarifying the Review Board's approach to setting terms of reference for the EA (PR#44). Because of the amount and quality of material available to the Review Board upon referral, which included the developer's *Project Description Report* (PDR) and information submitted to the Wek'èezhìi Land and Water Board during the preliminary screening, the Review Board decided to conduct an adequacy review of the PDR and issue an *Adequacy Statement* outlining what further information is needed. This *Adequacy Statement* (PR#70) was accompanied by the *Terms of Reference* (ToR) (PR#69) that was intended to be used by the developer for reference purposes when addressing the information requirements in the *Adequacy Statement*. The Review Board released a draft *Adequacy Statement* (PR#47) and draft *Terms of Reference* (PR#46) for public review before finalizing these documents in September 2016.

Following the release of the *Adequacy Statement* and the ToR, the Review Board issued *Reasons for Decision on the Scope of the Environmental Assessment* (PR#71) to clarify the scope of development and scope of assessment for the environmental assessment¹, as well as the reasons for varying its approach to the ToR. In addition to these documents, the Review Board issued preliminary information requests to the Tłı̨chǫ Government and

¹ For more information on the scope of the environmental assessment, see Chapter 2.

Community Government of Whatì (PR#73), as well as to four Aboriginal groups¹ and the DFO (PR#74). These information requests were based on concerns that were raised during the Review Board's adequacy review and—in the Review Board's view—were needed to address information gaps and inform the developer's response to the *Adequacy Statement*.

Analytical phase

In response to the Review Board's *Adequacy Statement*, the developer submitted its *Adequacy Statement Response* (ASR) on April 13, 2017 (PR#110). Following the ASR submission, the Review Board conducted a conformity check. In a letter to the developer, the Review Board advised the developer that despite some issues with the quality of the effect assessment presented in the ASR, the EA would proceed to the next phase (PR#111).

In May 2017, the Review Board asked parties to provide written information requests outlining their questions and clarifications related to the developer's PDR and ASR by May 29, 2017 (PR#113). The Review Board extended the due date for information request submissions to June 2, 2017, in response to an extension request from the Wek'èezhì Renewable Resources Board. The developer, the Tłıchǫ Government and the Government of Canada submitted responses to information requests on June 29, 2017. The developer submitted additional responses to information requests on July 7, July 14 and July 21, 2017².

From August 15-17, 2017, the Review Board staff hosted technical sessions in Behchokǫ for parties to seek clarification on information request responses and discuss outstanding issues face-to-face with the developer's representatives and consultants.

Hearing phase

On September 14, 2017, the Review Board staff hosted a meeting with parties and the developer to explain the purpose of technical reports and describe effective ways to prepare technical reports, including formatting. Participants attended in person and via tele-conference (PR#182, PR#183).

Parties submitted technical reports to the Review Board on October 11, 2017, except for the boreal caribou portion of the Wek'èezhì Renewable Resources Board submission,

¹ Tłıchǫ Government, Yellowknives Dene First Nation, North Slave Metis Alliance, and Deh Gáh Got'ie First Nation (Fort Providence)

² See PR#169 for a compiled list of all IRs and developer's responses.

which was submitted on October 23. The developer's response to technical reports was submitted on October 27 and November 1st 2017.

Review Board staff hosted a pre-hearing conference with parties and the developer on October 25, 2017 to discuss hearing procedures, present the draft agenda and set time allotments for presentations and questioning (PR#243). On November 3, 2017, parties submitted their hearing presentations; the developer submitted its presentations on November 6, 2017.

The Review Board held three days of public hearings in Whatì from November 15-17, 2017, to hear from the developer, parties to the EA and community residents (PR#272, PR#173, PR#274). Closing arguments were submitted by parties on December 15, 2017 and by the developer on January 19, 2018. The public record was closed on January 20, 2018.

Decision phase

After closing the public record, the Review Board deliberated on the evidence and parties' submissions to the public record. Chapters 5-14 of this report describe the Review Board's analysis of key issues and present its conclusions, including any measures required to address impacts that may result from the Project. The Review Board has prepared this report, with recommendations, for submission to the GNWT - Minister of Lands and the Tłchq Government in accordance with section 128 of the Act.

4. General considerations

4.1. Role of the Tłıchǵ Government

The Tłıchǵ Government has multiple roles and responsibilities with regard to the Project and this EA. In 2016, the GNWT told the Wek'èezhì Land and Water Board (WLWB) that it was submitting applications “in conjunction with the [Tłıchǵ Government]” (PR#7 Appendix A p1). The land use permit and water licence application submitted to the WLWB states that “[the developer] and the Tłıchǵ Government are working together to provide the community of Whatì with an all-season road...” (PR#17 p2). The Tłıchǵ Government provided clarification to the Review Board in August 2016 that it has “... been working in collaboration with the project proponent....to provide input on the applications being developed by DoT [the GNWT Department of Transportation]” but that the Tłıchǵ Government is not the proponent and will act as an intervenor, or party to the EA (PR#13 p1). The joint pursuit of the Project was described again during the hearing and in its closing argument, the Tłıchǵ Government stated that “(t)he project has been a continuous collaboration between the Tłıchǵ Government, the Community Government of Whatì and the Government of the Northwest Territories” (PR#272 pp3,20,25,29-30; PR#277 p1).

In addition to the role of collaborator and party to the environmental assessment (EA), the Tłıchǵ Government will also be required to exercise its decision-making authority and statutory powers in accordance with section 22.2.29 of the *Tłıchǵ Agreement* and section 131.1 of the *Mackenzie Valley Resource Management Act*.

The Review Board recognizes that a portion of the Project is on Tłıchǵ lands and that the end of the road will be in the Community of Whatì, and accordingly the Tłıchǵ Government has the responsibility, capacity, and resources to mitigate various potential impacts. Many of the mitigations for adverse impacts are proposed by, and will be implemented by, the Tłıchǵ Government and not by the developer (PR#7 Appendix D p1). Appendix E of this report lists the commitments of the Tłıchǵ Government.

4.2. Public-Private Partnership considerations

Unlike most developments the Review Board has assessed, this proposed development will not be constructed and operated by the developer (the GNWT), but rather by a third-party private company under a private-public partnership (or “P3”) contract. The developer has explained how it believes this approach will provide the best value for money (PR#272

p66). At the time of writing, the private company (referred to here as the “P3 operator”) has not been selected.

Although the measures in this Report of EA will be legally binding once approved by the Minister of Lands and the Tłıchǫ Government, many of the requirements of the measures (in terms of construction, operation, monitoring, management and ongoing engagement) will need to be implemented, at least in part, by the P3 operator.

The P3 approach will require the developer to ensure that the P3 operator is obligated to fully implement the measures applicable to the developer. In the Review Board’s view, the developer is bound to carry out EA decisions (that is, implement measures and developer’s commitments) “to the extent of their authority” under subsection 130(5) of the *Act* irrespective of any P3 arrangements. The developer has the authority to set out these requirements in contract and must do so.

The P3 operator will construct, maintain and operate the Project for approximately 29 years. It seems likely to the Review Board that transferring the responsibility for construction and maintenance of the project to a private sector company will result in the delegation of much of the accountability for the project to the private sector. The P3 operator will not, however, share in the GNWT’s responsibility or mandate to have regard for the well-being of residents of the Mackenzie Valley. As a public project and with the GNWT as the developer, the Review Board believes the company that builds and operates the Project must have special regard to the long-term well-being of affected residents and the environment.

The developer has stated that it has the responsibility to ensure that all its commitments (Appendix D) are met in the project agreement with the P3 operator (PR#273 p31). The Review Board observes that the P3 operator will be in the position of fulfilling many of the commitments made by the developer during this EA without the benefit of having participated in the project planning discussions and negotiations with the EA parties that led to those commitments. It is unclear how the developer will ensure the P3 partner will be made aware of the commitments, requirements and measures of the EA and how adaptable and flexible the project agreement will be if unforeseen problems arise, for example, between the Community of Whatì and the P3 operator.

The developer has said that a dispute resolution process (which includes direct negotiation, refereed negotiation, arbitration and possibly litigation) will be part of the

project agreement (PR#273 p33). These are contractual remedies the scope of which are not clear to the Review Board at this time. It does seem, however, that this process could take time, during which potentially harmful impacts could be occurring.

Even if the project agreement is drafted in a manner which requires the operator to implement all applicable measures and commitments, differences of interpretation with the developer may occur. This introduces an element of uncertainty about the effectiveness of mitigation that does not exist where the developer is also the Project operator. In the end, the Review Board relies on the assertions of the developer that its legal obligations will be met through this P3 arrangement.

All measures and commitments are important to avoid or reduce impacts on the environment. Responsibility for all that are applicable to the P3 operator must be required contractually by the developer. Chapters 9 and 14 of this report further discuss the P3 arrangement and include measures with specific requirements directed to the P3 operator. Measure 14-4 in Chapter 14 ensures the developer's commitments and the Board's measures are carried through from the EA into action during construction and operation of the Project by the P3 operator.

4.3. Whole of Government approach

Throughout most of this EA, the developer told the Review Board that it was taking a "whole of government" approach. At the beginning of the assessment, the GNWT Department of Transportation, which was restructured into the GNWT Department of Infrastructure during the EA, told the Review Board that the developer of the Project was the GNWT as a whole. In a letter of April 10, 2016, it stated that GNWT departments will "work directly with the Department of Transportation" and that "GNWT departments will not put forward information requests or provide a final technical report/intervention to the MVEIRB [the Review Board], other than the work put forward by the developer" (PR#9 p2).

The developer adhered to this approach through the analysis stages of the EA. In the hearing the developer stated that "the Department of Infrastructure is leading the GNWT developer team" that is proposing the road (PR#272 p17). Representatives of the Department of Environment and Natural Resources and the Department of Health and Social Services sat with the Department of Infrastructure, conferring before responding to questions and, in some cases, answering questions directed to the developer.

In response to questions that followed from the Review Board, the developer clarified its approach, saying (PR#272 pp91-92):

[D]espite the fact that GNWT is the Developer for the project, it does not take away any authorities, responsibilities from any other department that -- regulatory authorities that might be vested in any other department. We still need to go and get permits, authorizations required just as a developer would from other parts of the GNWT... So, yes, we're a happy developer family... (T)he Department of Infrastructure is actually at the end of the day going to be constructing the road.

The developer clarified that the arrangement of GNWT as developer was only for the EA process, after which Department of Infrastructure will independently pursue authorizations, and that the Department of Infrastructure would be the permittee or licensee for the development (PR#272 p67, p94).

For the purpose of the EA, the Review Board is considering the GNWT as a whole to be the developer but recognizes that the GNWT-INF will be the applicant for the required authorizations for the development of the Project. In any measures recommended by the Review Board that are directed at the developer, the GNWT will be considered the developer. Where a measure is directed at a specific department of the GNWT with a specific mandate or jurisdiction regarding the implementation of the measure, the specific department will be referenced.

4.3.1. Implications of the Whole of Government Approach on the EA

As part of the whole of government approach taken by the developer, the GNWT Department of Infrastructure made it clear early on that departments with expertise in subjects relevant to the EA, such as the GNWT Department of Environment and Natural Resources or the GNWT Department of Health and Social Services, would provide internal advice as part of the developer team (PR#9). As part of the developer, those departments would not be performing the functions that are typical of such departments during an EA, such as submitting information requests to the developer, providing independent technical reports to the Review Board, or questioning the developer during technical sessions or hearings.

The approach has limited the availability of evidence and expertise from GNWT departments about potential impacts, concerns and mitigations on issues within their respective mandates and jurisdictions. In addition, it is not apparent to the Review Board how these departments may have influenced the developer's position in this EA.

For example, in most EAs which include wildlife as a key line of inquiry, the Department of Environment and Natural Resources (GNWT-ENR) would provide substantive and valuable input to the Review Board, in terms of wildlife expertise within its mandate of preventing and reducing the impact of human activities on the environment, and being responsible for wildlife management by assessing and monitoring wildlife populations, habitat, species at risk, wildlife health and biodiversity. In most EAs, this is informative for everyone, allows parties and the Review Board to better consider the potential impacts on wildlife and improves the quality of EA decisions.

This was especially a concern of the Review Board regarding the lack of input from GNWT-ENR regarding species at risk that are the responsibility of the GNWT, such as boreal caribou. The Review Board is legally required by s. 79 of the *Species at Risk Act* to address impacts on species at risk. Additionally, s. 76 of the *Species at Risk (NWT) Act* requires the Minister of GNWT-ENR to make a submission to the Review Board if “... the Minister considers that a proposed development may affect a pre-listed species or a listed species or its habitat or the area in which the habitat is located or the surrounding area”. Boreal caribou and other species affected by the Project are listed under the GNWT legislation; but, in this EA, the Review Board did not receive a submission from GNWT-ENR regarding impacts on species at risk under s. 76 of the *Species at Risk (NWT) Act*.

No intervenor funding was provided in this EA for Aboriginal groups to secure their own consultants. The Review Board observes that the expertise of ENR was missed in the conversation about wildlife, which is central to the concerns of Aboriginal groups and the public in relation to this Project.

In this EA, the Review Board has had to rely on other organizations outside of the GNWT which tried to step up and provide information on subjects within the mandate of expert GNWT departments. For example, the Wek'èezhì Renewable Resources Board and North Slave Métis Alliance provided particularly useful evidence on wildlife that, in effect, helped to partially address the void left by the lack of direct participation of the Department of Environment and Natural Resources as a party to the EA.

This “whole of government” approach has not always been applied where the developer is a department of government and the project under goes an environmental assessment. In the EA of the Giant Mine Remediation Project, the federal and territorial governments were the joint developers, led by the federal government. They internally separated (or “firewalled”) government interests as a developer from potentially conflicting

departmental public responsibilities in that EA. This enabled the governments' expert departments to better participate in the EA and meeting the legal responsibilities of their mandates, and their responsibilities to represent the general public interest.

This approach was preferable to the one taken by the GNWT in this EA, in terms of transparency, robust project design, the provision of useful information to parties and the Review Board and serving the public interest. In future EAs where it is the developer, this would be a preferable approach for the GNWT (or GNWT-INF) to take.

4.4. Precautionary approach

In previous EAs¹, the Review Board has applied a precautionary approach² where warranted. The Review Board may apply the precautionary approach when there is:

1. a lack of full scientific certainty; and,
2. a risk of serious or irreversible harm.

When the Review Board finds that both of these conditions exist, the Review Board will act to prevent serious harm by applying an appropriate level of precaution in its decision-making. Given concerns expressed by the parties over uncertainty in the developer's impact predictions and the effectiveness of mitigation measures, combined with the potential for serious harm, the Review Board has decided to apply the precautionary approach where appropriate based on the facts of each issue before the Board. In this report, the Review Board will state when it has applied a precautionary approach to its decision making.

Lack of certainty

The EA process relies on predictions that help the Review Board understand how a proposed development will affect the environment and that inform the Board's determination of whether significant adverse impacts are likely. In the Review Board's

¹ See EA1011-001, EA0809-001, EA0607-003 and EA1415-01.

² based on the Supreme Court of Canada decision *114957 Spraytech v. Hudson (2001)*, numerous international agreements (such as Principle 15 of the United Nations *Rio Declaration on Environment and Development [1992]*) and widely accepted best practices in environmental management (such as described in the *Wingspread Statement on the Precautionary Principle [1998]*)

opinion, the level of uncertainty regarding predicted impacts is particularly high in this EA with respect to:

- baseline information on the number, distribution, movements, existing disturbances and mortality rate of boreal caribou in the general vicinity of the highway;
- baseline information on the presence, critical habitat and nesting sites of bird species at risk in the highway right of way;
- the likelihood that the predicted “spike” in harmful behaviours will subside after one year of Project operation;
- baseline information on the amount and distribution of permafrost beneath the highway and the likely effectiveness of the developer’s mitigation of impacts on permafrost; and,
- baseline information on fish numbers, distribution, movements, mortality and population dynamics in fisheries in the vicinity of the highway, and the likely effectiveness of monitoring, compliance and enforcement by DFO of increased recreational fishing by non-Aboriginal peoples accessing the Project area.

4.4.1. Potential for serious or irreversible harm

The Review Board notes that the impacts of the proposed Project carry the potential for serious or irreversible harm, particularly with respect to species at risk, social impacts in Whatı and traditionally harvested fisheries.

Species at risk

Potential impacts on boreal caribou have been a central issue in this EA. Boreal caribou are a federally listed species at risk. Potential impacts on bird species at risk have also arisen in this EA. The Review Board is legally required by section 79 of the *Species at Risk Act* to address impacts on species at risk in a way that goes beyond the standard best practices in environmental assessment, which seek to mitigate significant impacts on wildlife populations and habitats. For species at risk, the existence of entire species could be adversely affected by the survival of a small number of individuals or an area of critical habitat. These are among Canada’s most vulnerable species. In such cases, a cautious approach is essential. The Review Board also notes that the preamble to the *Species at Risk Act* states that “if there are threats of serious or irreversible damage to a wildlife species, cost- effective measures to prevent the reduction or loss of the species should not be

postponed for a lack of full scientific certainty”. This precautionary approach with species at risk has been applied in other recent environment impact reviews.¹

Impacts to Whatì

Although the Project is proposed partly for socio-economic benefits to Whatì, the evidence indicates that it is also likely to cause certain adverse impacts that have the potential to cause serious harm, such as impacts related to harmful behaviours such as addictions and crime that will increase, at least temporarily, with new access from the Project. Permanent road access to places outside of Whatì, including Yellowknife, may be one of the biggest changes to the community in its history. The Board believes that an additional degree of caution is reasonable when considering a project that can make profound permanent changes to a community’s well-being.

Traditionally harvested fisheries

With respect to fish, Elders have emphasized to the Review Board that traditional harvesting of fish is a mainstay of Whatì and is very important (PR#272 p54; PR#274 p114). Because the Project would provide many recreational fishing enthusiasts in Yellowknife with greatly improved access to rivers that support important Aboriginal harvests, this project has the potential to cause serious harm if not carefully mitigated. The act specifies that the Review Board must “... have regard for the importance of conservation to the well-being and way of life of Aboriginal people”. In this case, a cautious approach is appropriate.

Burden of proof

As stated in the Review Board’s *Rules of Procedure*, “... any party seeking to convince the Review Board of any point or position in a proceeding bears the burden of proof in so doing and has the responsibility to introduce information or evidence to support their position”. While the actual burden of proof can shift during an EA, issue by issue, depending on whether the developer or a party is attempting to convince the Review Board of a position,

¹ In *Shell Canada Energy, Re*, 2013 ABAER 11 at para 819, the Panel reviewed the impacts on federally listed species from the proposed Jackpine Mine expansion. The Panel found that the obligation to avoid or lessen effects, and to monitor, applies as long as there is any net harm to species at risk arising from the project as proposed. In the words of the Panel, “the obligation to identify and mitigate adverse effects on listed wildlife species is independent of the likely significance of the adverse effects.” Thus even if residual effects on such species are not significant after mitigation, further mitigation and monitoring may be required.

to a large extent the obligation to identify and evaluate the environmental impacts of a proposed development rests with the developer. The developer that proposes activities that have the potential to cause impacts on the environment must meet the burden of proof to persuade the Review Board that either: significant impacts can be avoided; or, that they can be satisfactorily mitigated.

A developer's efforts to collect baseline data, predict impacts, and propose mitigations related to matters set out in the *Terms of Reference* should be undertaken with this in mind, and in particular when considering the key lines of inquiry and subjects of note as determined by the Review Board. A developer's analyses and conclusions about predicted impacts, proposed mitigations, and the significance of impacts, as well as plans for monitoring and adaptive management, all contribute to satisfying its burden of proof.

If the Review Board, under s.128 of the Act, is of the opinion that the work done by the developer has not met its burden of proof to show that an impact can be mitigated or avoided, the Review Board may, after considering all the evidence available, conclude that a significant adverse impact is likely to occur. In such instances the Review Board must, under paragraph 128(1)(b), decide that either measures are required to prevent such impacts, or that an environmental impact review is required. Other parties in an environmental impact assessment attempting to prove that significant adverse impacts are likely or that additional mitigation is required bear their own burden of proof when trying to convince the Review Board of their positions.

The Review Board's precautionary approach in this EA

In light of the lack of certainty and potential for serious harm outlined above, including the evidence from parties referenced above, the Review Board has applied a precautionary approach in its reasoned consideration of the evidence. The Review Board observes that a precautionary approach aligns closely with Aboriginal values in such circumstances.

Notwithstanding the overarching concerns related to lack of certainty and potential for serious harm set out above, the specific evidence, analysis, and conclusions related to each subject of note are set out in the subsequent chapters of this Report of EA. As explained above, however, where appropriate, the Review Board has applied a precautionary approach to its decision making.

Where the risk of serious or irreversible harm to the environment is clear from the evidence, the Review Board in spite of the uncertainty, that, in its opinion in accordance

with subsection 128(b)(ii), significant adverse impacts are likely. When considering the likelihood of an impact occurring, the Board will also consider the probability and consequence of the impact when making its determination of significance. In instances where there is a low-probability and high-consequence of an impact occurring, the Review Board may identify the impact as likely to be a cause of a significant adverse effects.

For subjects such as species at risk, the Board concluded that it is appropriate to apply a lower threshold of significance when making its significance determinations. In the Review Board's opinion, the seriousness of potential harm for these impacts is greater than it would be for species that are not at risk.

5. Community well-being

5.1. Summary of findings

The Review Board agrees with the Government of the Northwest Territories (GNWT or the developer), the Tłıchǵ Government and the Community Government of Whatì that the Tłıchǵ All-Season Road (the Project) would likely have important and beneficial impacts on the community well-being of Whatì.¹ This is likely to include benefits such as:

- increased access to medical and social services;
- increased access to other communities, including cultural and sporting events as well as family;
- reduced cost of living (for example, by reducing the costs of goods and the cost of transportation); and,
- employment opportunities (for the Project or in industries like tourism).

Overall, the Review Board agrees that the Project will have a positive economic effect in terms of jobs and new opportunities.

The Review Board also expects that the Project would likely cause certain significant adverse impacts, for the following reasons:

- The Community of Whatì initially, and for an unknown duration, would likely experience throughout the year a significant increase in health and social problems like those currently experienced during the winter road season.
- Mitigation of significant adverse socio-economic impacts from the Project depends on commitments and mitigations that are untested.
- The Project is likely to permanently and adversely affect the success rate of harvesters hunting or trapping in the Project area. Reduced harvest would increase dependence on the wage economy and store-bought foods.
- The four-year construction period of the Project would see construction camps close to Whatì and Behchokǵ and a surge of employment income into the communities, with related drug and alcohol use and additional burden on local health and social services.

¹ Cultural impacts, including impacts on harvesting, are examined in Chapter 9.

- Adverse impacts to the personal health and security of young women would be more likely during the construction period of the road considering the proximity of the work camps to the Community of Whatì. These impacts would also be more likely during the initial operating period of the road when social conditions would be similar to those experienced during the operating period of the current winter road.

The Review Board accepts and agrees with the evidence pointing to the beneficial community well-being impacts to the Community of Whatì but has prescribed measures to mitigate certain potentially significant impacts that would likely occur to vulnerable groups such as youth, women and Elders. The measures include tracking and managing Project-related changes and additional strategic programming by the developer and Tłıchǵ Government. The measures also clarify and strengthen existing commitments and mitigations. The Review Board expects that the proposed measures will reduce the Project's impacts to levels that could be managed through the Tłıchǵ Government's and the Community Government of Whatì's existing and proposed socio-economic management programs and services.

5.2. Introduction

On August 18, 2016, the Review Board found that the proposed Project might have a significant adverse impact on the social environment or be a cause of public concern due to new access to Whatì, and related potential stresses on existing social services. Early in this environmental assessment (EA), several socio-economic concerns were identified during the Community of Whatì scoping session. In order of concern, from highest to lowest, they were (PR#19 p4):

- access to the lake and fishing;
- jobs and economic opportunities;
- uncertainty over the road and access, as well as effects on culture and the character of the community;
- safety along the road; and,
- controlling access to the road.

In the *Terms of Reference*, the Review Board identified potentially affected valued components, which were identified based on importance to the general well-being of Whatì residents and to the overall stability and health of communities affected by the Project

(PR#69 p12). The *Terms of Reference* identified three social valued components with eight subtopics (Table 5-1), which required further assessment to determine the Project's potential to significantly and adversely affect the valued component.

Table 5-1. Socio-economic valued components and associated topics for assessment.

Valued component	Topic
Stable and healthy communities	Community cohesion Use and maintenance of infrastructure Public safety Population sustainability
Economic well-being	Equity and vulnerability Traditional and non-wage economy
Traditional use, cultural and heritage resources	Traditional Use and Way of Life Harvesting Heritage and cultural resources

Two chapters in this Report of EA are focused on socio-economic topics of concern that the Review Board identified in its *Reasons for Decision for Referral to Environmental Assessment* (PR#2 p1). These chapters examine how the construction and operation of a permanent all-season road would affect these topics in Table 5-1. The first and second valued components – stable and healthy communities and economic well-being – are discussed in the remainder of this chapter. Traditional use, culture and heritage resources are covered in Chapter 9.

5.2.1. History of the Project

The construction of an all-season road to Whatì has been discussed by community Elders since the 1970s. The current winter road presents socio-economic risks for Whatì, which relies on the winter road for access to distant family, medical and social services, and resupply of materials, fuel and food. The current alternative to access and resupply by winter road is by air, which is cost prohibitive.

More recent interest in mineral development and community sustainability resulted in the proposal of the Project. The developer has worked closely with the Tłıchǫ Government and

Community Government of Whatı in developing and designing the proposed Tłıchǵ All-Season Road Project.¹

5.2.2. Socio-economic benefits of the Project

The Tłıchǵ Government identified the proposed Project as being an important development for Whatı that would bring many socio-economic opportunities. Its socio-economic impact predictions specifically consider potential benefits when assessing the significance of Project impacts to Whatı (PR#96 p5).

Both the developer and Tłıchǵ Government stated that beneficial socio-economic impacts are the purpose of the Project. The proposed Project is a public infrastructure project intended to improve access, reduce cost of living, and ultimately benefit the Community of Whatı (PR#272 p76). Additional beneficial socio-economic impacts that are intended to promote community well-being in Whatı include (PDR#7 Appendix B p44; PR#96; PR#126; PR#273):

- reduced freight costs resulting in lower cost of living;
- increased frequency of resupply increasing the quality and variety of goods available in the community;
- reduced cost of transporting people into and out of the community;
- potential for increased tourism, increasing economic activity, business opportunities and jobs in the community;
- increased access for residents of previously remote communities to business services available in Yellowknife and other larger centres in the south;
- increased mobility and reduction of isolation (and sense of isolation) among Tłıchǵ “remote” community residents;
- reduced downtime from weather delays affecting air travel;
- more engagement in regional events, including cultural gatherings;
- better access to training and education opportunities;
- reduced time and costs to construct new houses;
- reduced medical travel costs;
- improved access to specialist social and health services in Yellowknife;

¹ See Chapter 4 for a description of the roles of the Tłıchǵ Government in this EA.

- improved family connections for those with family living in Yellowknife or Behchokǵ; and,
- increased capacity for climate change adaptations.

The Tłıchǵ Government has taken the lead in preparing for an all-season road to Whatı with respect to promoting economic development and preparing to mitigate social and cultural impacts. In addition to supporting the Community Government of Whatı with its efforts, the Tłıchǵ Government has additionally created inter-agency working groups for all Tłıchǵ communities, formed a Working Group on housing with the GNWT, created the Tłıchǵ Region Economic Development Working Group and initiated a comprehensive tourism strategy for the Tłıchǵ region.

These benefits of the Project are considered throughout this chapter.

5.2.3. Collaborative approach to addressing socio-economic issues

During this EA, the developer deferred most socio-economic issues to the Community Government of Whatı and Tłıchǵ Government, in part because of Tłıchǵ Government's role and its responsibility to Tłıchǵ citizens, and because the Tłıchǵ Government and Community Government of Whatı were willing to contribute their expertise to the assessment of Project effects. Both governments have remained supportive of the Project throughout the EA and have continued to provide critical and meaningful responses to the Review Board's information requests. The information requests sought to clarify the nature of the potential impacts caused by the Project and to better understand how the proposed commitments and mitigations would serve to mitigate those impacts.

Based on the collaboration between the developer and the respective governments, the developer endorsed, submitted and referenced the materials produced by both Tłıchǵ Government and Community Government of Whatı. Much of the evidence presented below is therefore submitted jointly from the Tłıchǵ Government and Community Government of Whatı. Similarly, some mitigations for Project impacts were proposed by the Tłıchǵ Government and Community Government of Whatı.¹ As Whatı Administrative Officer Lisa Nitsiza told the Review Board (PR#273 pp254-255):

¹ See Chapter 4 for further discussion of the roles of the Tłıchǵ Government.

This is a community-led Project, the community and the Tłıchǵ government care about the land and the people who will be impacted. We are working together to prepare strategies that will minimize the impacts and [maximize] the benefits for the community of Whatı, its future leaders and people.

The impact conclusions of the developer, Tłıchǵ Government and Community Government of Whatı depended to a large extent on their predictions of beneficial socio-economic impacts, against which they evaluate the predicted adverse socio-economic impacts.

5.3. Evidence from developer and parties

The developer identified in the *Project Description Report* that public safety, increased illegal substances, changes in the amount of time spent in the community and population increases are issues of concern related to the Project (PR#7 p8-33). Potential impacts to community infrastructure from project-related effects were also identified as a cause for public concern (PR#7 Appendix B p4-43). The Review Board sought greater characterization of these issues in the *Adequacy Statement* to assess how the Project might affect stable and healthy communities (PR#70 pp22-25).

The Project is expected to lead to net benefits to the economy in Whatı and the broader Tłıchǵ region (PR#96 p5). In the community, people look forward to the road because of its potential to bring new jobs and opportunities and lower the cost of living (PR#273 p250). This section explores the evidence on potential impacts of the Project on the overall well-being of Whatı residents and the Tłıchǵ region.

5.3.1. Vulnerable groups

The *Socio-economic Issues Scoping Study* conducted for the Tłıchǵ Government and submitted by the developer states that some residents of Whatı are more likely to be affected than others by the construction and operation of the Project (PR#7 Appendix B). This was reinforced by participants at EA scoping sessions. The *Socio-economic Issues Scoping Study* identified the most vulnerable populations in Whatı as youth, young women and Elders. Other vulnerable groups include the chronically unemployed, substance abusers and mothers of school age children (PR#7 Appendix B p54).

The *Socio-economic Issues Scoping Study* also examined case studies of other new roads to isolated communities and concluded that that an all-weather road “... represents a threat to vulnerable groups or people” (PR#7 Appendix B p62). The case study in the *Socio-economic Issues Scoping Study* noted that “... road development fundamentally transforms isolated

communities into accessible ones and brings to them the advantages and disadvantages of closer contact with and influence from outside communities” (PR#7 Appendix B p19). Vulnerable groups are expected to have difficulty adjusting to changes in community access, to changes in social behaviours and to increased access to drugs and alcohol. By contrast, groups that are not considered as vulnerable are more likely to benefit from the changes that an all-season road might bring. Benefits include improved mobility, increased reduction in living expenses (as compared to those groups that are vulnerable) and increased employment or other economic opportunities.

The developer identified the potential social impact of creating or increasing internal divisions in the community. If some residents benefit from the Project while others experience more impacts (PR#7 Appendix B p62), this can add stress to relationships and, at a community level, cause a direct adverse impact on community well-being.

The Tłıchǫ Government addressed the issue of vulnerable groups in an information request response. The Tłıchǫ Government observed that a broad definition of vulnerable groups would capture most of Whatì’s population, and that these are the “... vibrant majority of our community members, offering much to the community” (PR#96 p57).

The Community Government of Whatì recognized that vulnerable groups “... merit special protections and focus in social services” (PR#96 p57). However, from the perspective of the Tłıchǫ Government, this was true regardless of changes anticipated from the Project. The Tłıchǫ Government asserted that each group would experience both adverse effects and potential benefits from the Project that could disproportionately affect them and outlined these in detail (PR#96 pp57-61). The Tłıchǫ Government acknowledged the “potential for these vulnerable groups to experience harm, particularly young women” (p61). Impacts to young women are described in more detail in Section 5.3.6 below. Impacts to Elders are described in more detail in Section 5.3.10.

5.3.2. A one-year spike in harmful behaviours

Evidence from the Tłıchǫ Government about challenges associated with the proposed all-season road was submitted by the developer. These challenges are anticipated to be particularly hard on the Community of Whatì (PR#7 Appendix B; PR#31). As such, the Project is expected to result in a number of potential adverse effects (PR#7 pp7-8,8-32,8-33).

The developer acknowledged that the impacts of the current winter road, which is open for approximately 11 weeks each year¹, on the mental health and well-being of the community are very serious, resulting in significant impacts to community cohesion (PR#7 Appendix B p37). A main concern of community members is that an all-season road could prolong the same kinds of harmful impacts experienced during those 11 weeks and extend them year-round (PR#19 p5; PR#7 Appendix B piii).

The *Socio-economic Issues Scoping Study for Potential All-Weather Road to Whatı, Tłıchǵ Region, Northwest Territories* identified 12 adverse ways the winter road currently affects the community (PR#7 Appendix B p45). These issues included absentee parenting, drug and alcohol abuse, and occasional community depopulation to access goods and services elsewhere. The *Socio-economic Issues Scoping Study* also outlined that these existing issues affecting vulnerable groups could be “magnified” because of the all-weather road (PR#7, Appendix B piii, p66). These concerns were expressed by Whatı residents during the scoping session and at the public hearing held in Whatı (PR#19 p5).

In its response to Board information requests, the Tłıchǵ Government and Community Government of Whatı anticipated these issues would manifest as increased social pressures resulting in increased pressures on policing (PR#96 p7). The RCMP detachments in the communities of Behchokǵ and Whatı were described already having to address a “... very high level of social distress associated with addictions and crime to manage, especially during the current winter road season” (PR#96 p7). Service providers expected the Project to reduce this pressure on policing and social services, by spreading out the effects over the course of the year. The Tłıchǵ Government and Community Government of Whatı stated (PR#96 p34, emphasis added):

*...many service providers and leaders are strongly in favour of the all-season road exactly because they **believe [the road] will act to reduce the seasonal “pulse” of dysfunctional behaviours** that the current winter road season brings to the community of Whatı, by allowing for access to the outside world on a more regular basis. Many of the service providers spoken to, including educators and the police, indicated **that “it cannot happen fast enough”, given strong heightened dysfunction during the short winter road season.** While these same individuals are aware of the challenges that will come with an all-season road, they **see a future with an all-season road as more beneficial than***

¹ See GNWT-DOT’s historical open/close dates for Northwest Territories winter roads:
<http://www.dot.gov.nt.ca/Highways/Winter-Roads>.

adverse in social outcomes and are working with us to plan to maximize benefits and reduce adverse effects outcomes.

The Tłıchǵ Government and Community Government of Whatı expect the Project would reduce the familiar “spike” in harmful social behaviors that occur each winter road season and identified the inability for residents to leave the community at other times of the year as a factor for this spike in harmful behaviours (PR#96 p34-35). By increasing year-round access, the Tłıchǵ Government and Community Government of Whatı predicted that “... spikes in adverse community cohesion and well-being effects will flatten out” (PR#95 p35). The Tłıchǵ Government and Community Government of Whatı predicted that the Project would spread out the comings and goings of residents and outsiders, “... reducing seasonal out-migration and the intensity of other effects associated with it” (PR#95 p35).

The Tłıchǵ Government and Community Government of Whatı acknowledged the likelihood that social pressures would increase when the road initially opens, referring to it as a “novelty year” (PR#96 p7). Similar to the winter road season, this novelty year would be expected to result in a “... spike in the incidence of crime, social issues generally, and therefore an increase in pressures on policing” (PR#96 p7).

The Tłıchǵ Government and Community Government of Whatı considered how the Project would be expected to affect these negative changes (see PR#96 pp37-41). Twelve “bad changes” described as dysfunctional or harmful behaviors are likely to be affected by the Project (PR#96 pp35-36) (Table 5-2). The Tłıchǵ Government and Community Government of Whatı predicted that five of the 12 harmful behaviours associated with the winter road would worsen with the Project. Three behaviours associated with drug and alcohol abuse would be expected to increase social and policing pressures in the short-term. Once life with an all-season road becomes normalized, these harmful behaviours would be expected to drop to pre-existing levels or improve relative to current conditions. Associated management actions and mitigations accompanied the Tłıchǵ Government’s review of these effects, and Table 5-2 summarizes this information.

The Tłıchǵ Government and Community Government of Whatı made additional commitments during the first year of the road’s operation to address the anticipated short-term “spike” in harmful behavior. Based on the Tłıchǵ Government and Community Government of Whatı’s analysis in Table 5-2, the Project would serve to permanently improve ten of the harmful behaviours affecting the Community of Whatı in the long-term.

Table 5-2. Summary of Tłıchǫ Government/Community Government of Whatì-identified social issues affected by the Project, with accompanying mitigations.

Social Issue	Effect of Project on social issue	Existing mitigations
increased access to drugs and alcohol	<ul style="list-style-type: none"> increase during first few months will moderate and reduce with time 	<ul style="list-style-type: none"> public meetings meetings between Community Government of Whatì and Community Government of Behchokò (Mitigation 13) examining removal of prohibition to decriminalize alcohol use Education (Mitigations 3 and 12) improved access to treatment centres
increased public drunkenness, fights and abuse	<ul style="list-style-type: none"> increase during first few months will moderate and reduce with time 	<ul style="list-style-type: none"> GNWT and RCMP programming increased security at public events
children left at home alone or without proper parental supervision	<ul style="list-style-type: none"> reduction in occurrence; families under less pressure with improved access and cheaper cost of living 	<ul style="list-style-type: none"> TCSA has a social worker and mental health worker
decline in school attendance	<ul style="list-style-type: none"> school attendance will improve – no spike during winter season as families can better plan travel around 	<ul style="list-style-type: none"> public meetings encouraging parents to take kids to school school had rewards and incentives for attending
radically increased pressures on policing	<ul style="list-style-type: none"> increase during first few months will moderate and reduce with time 	<ul style="list-style-type: none"> Community Government of Whatì works closely with RCMP and nursing station and has established strategies for Project construction and early operation.
Elders may not have day-to-day supports	<ul style="list-style-type: none"> Project provides better family planning for outside trips, reducing pressure to leave on short notice with no supports in place for Elders. 	<ul style="list-style-type: none"> Elders have weekly visits from health care worker and government services officer, as well as weekly Community Government of Whatì tea sessions.

mothers and grandmothers (especially) have trouble sleeping, due to safety concerns	<ul style="list-style-type: none"> • moderate increase during Project 	<ul style="list-style-type: none"> • anticipate safety concerns on weekends • regular communication possible with RCMP
weekend “ghost town”; rapid depopulation	<ul style="list-style-type: none"> • Project decreases stress and strain on families and children by allowing year-round access to Yellowknife. Movement out of town will be spread out over the year. Improved access also means relatives can come and visit family in Whatì. 	<ul style="list-style-type: none"> • no mitigation required; positive benefit
increased vehicle accidents, injuries, higher potential for fatal accidents	<ul style="list-style-type: none"> • Increased travel makes for increased likelihood and severity of accidents. 	<ul style="list-style-type: none"> • RCMP and emergency planning services are preparing for these scenarios. • An Emergency Response Plan will be produced and provided by the successful contractor. It will include details of how to deal with various emergency situations such as a fire, vehicle or mobile equipment incident, serious medical incidents, camp evacuation and wildlife encounters (PR#285 p43).
reduced sense of community safety and cohesion overall	<ul style="list-style-type: none"> • Project will allow for family and community bonds to strengthen outside of Whatì. 	<ul style="list-style-type: none"> • Good communication with RCMP, health services and the senior administrative officer of the Community of Whatì.
community store revenues go down	<ul style="list-style-type: none"> • Economic diversification anticipated to take advantage of an all-season road, which could add more revenue streams to the store. 	<ul style="list-style-type: none"> • Requires strong planning and dialogue with regional partners. Tłıchǫ Region Economic Development Working Group is preparing community economic development plans and regional plans.
reduced amount of traditional harvesting practices near community	<ul style="list-style-type: none"> • Road would increase access to larger area of traditional territory. 	<ul style="list-style-type: none"> • See PR#96 pp68-69.

(Source: Modified from PR#96 p37)

According to the Tłıchǫ Government and Community Government of Whatì, concerns about roadside accidents and increased anxiety would be the only residual adverse impacts likely to carry over from the winter road season to the operation of an all-season road (PR#96 p43).¹

5.3.3. Views heard from the public in Whatì

Many community members spoke in favour of the Project during the Review Board's scoping meetings and public hearing in Whatì, and community surveys indicate broad support of the community of Whatì (PR#19; PR#268; PR#272; PR#273; PR#274):

- Elders spoke in the public hearing about the need for a road so that future generations can have better opportunities and job prospects.
- Parents spoke of the benefits a road can bring via reduced cost of living, increased family connections, dental and specialized health appointments, and resupplying.
- Community leaders spoke of more school trips and sporting opportunities for youth.
- Governments spoke of reduced costs for public housing and local infrastructure, and for more employment and business opportunities.

The Review Board also heard different opinions at the public hearing about the Project's potential impacts on harmful behaviors. These concerns were acknowledged and identified by the Tłıchǫ Government in its closing arguments (PR#284 pp7-8). Community members were concerned about the impacts of increased harmful behaviours and drugs and alcohol. A large delegation of youth attended the final day of public hearings. The majority of the youth that spoke expressed their fear of the social problems an all-season road would bring, and did not want the Project to go ahead. **Error! Reference source not found.** shows Whatì youth speaking to the Review Board at the public hearings.

This concern was summarized by one Whatì youth, who described the implication of an approved project (PR#273 p130):

We are basically giving our consent to those who are big drug mules and criminals to come forward and continue the drug trafficking that already being done right now with even much worse narcotics along with the drug abuse that is already going on around the community... We will be consenting and agreeing with the fact that this road could increase these young youth addictions that are starting. Who knows how far the narcotics will grow

¹ Please see Section 5.4.6 for discussion of increased anxiety, and Sections 5.3.6 and 5.3.7 for discussion of road safety.

in ten years from now. Eight out of ten of these minors turn [to] drugs and alcohol and our culture dies down each year these young teens grow.

Following the presentation of the youth, the Review Board heard from long-time Whatı resident and Justice of the Peace Caroline Coey. Justice of the Peace Coey spoke of the seriousness of the comments expressed by the youth, describing them as unprecedented in her experience in many public meetings since 1990. Justice of the Peace Coey described her concern particularly about youth indicating they were being used as drug mules (carriers). She told the Review Board “... it is often the young and women and mentally compromised or more... volatile segments of a population who are sought out after for drug and alcohol illegal transporting”. In reference to the public hearing comments by youth, Justice of the Peace Coey said (PR#273 pp212-213):

The youth expressed thoughtful mature concerns about their culture, language, social well-being. They are living these impacts now and its importance cannot be understated nor undervalued.



Figure 5-1. Whatı youth speaking to the Review Board at the public hearing.
(Review Board photo)

General concerns over increasing drug and alcohol abuse was also expressed in relation to Whatı “becoming like Behchokǝ” (PR#96 p13). This was a strong stigma expressed during

the scoping sessions and echoed again in the public hearing. Elder Peter Beaverho contrasted life in Behchokǵ before and after Highway 3 was built: “how was it in Behchokǵ? Nobody was drinking before... They used to have a good drum dance... And now it’s different and there’s ... lots of alcohol involved” (PR#273 p85). Mr. Beaverho expressed uncertainty and some anxiety over what this would look like in Whatı, particularly with respect to drugs and alcohol.

This concern was unfounded for some, who pointed out to the Review Board that Whatı is not a pristine isolated community. The Tłıchǵ Government response to information requests quoted one social service provider who described drinking in the community to be already “... incredibly high and bad. It can’t get any worse. The road won’t change it” (PR#96 p37). In the same document, the Tłıchǵ Government noted that access to drugs and alcohol is not confined to the winter road season but exists year-round through boat and snow machine bootlegging.

Some community members, such as Jimmy Rabesca and Richard Williah, acknowledged the potential for increased drug and alcohol problems, but emphasized the roles of personal responsibility and community support in dealing with these problems (PR#272 p162; PR#273 pp219-220). Several Elders spoke to the Review Board about potential effects of the Project on community well-being at the public hearing (Figure 5-2).

Concern over the impacts of drug and alcohol abuse was still strong among those who supported the Project. A 2011 survey of Whatı residents showed approximately 80% support for the road (PR#268). But of the 103 respondents, 26% expressed concerns over changes to bad behavior. Of those supporting the road, approximately 15% cited concerns over changes in social behavior.

5.3.4. Tłıchǵ Government and Community Government of Whatı commitments

Collectively, the Community Government of Whatı and Tłıchǵ Government put forward numerous commitments to address anticipated impacts that could result from the Project. The Tłıchǵ Government’s final commitments are in Appendix E. The Tłıchǵ Government believes it has the necessary tools at its disposal to manage any Project-related adverse impacts. Considering the mitigations, along with the potential benefits of the Project, the GNWT, Community Government of Whatı and Tłıchǵ Government predict that the Project is not likely to cause significant adverse socio-economic impacts.



Figure 5-2. Whatı Elder Sophie Williah speaking to the Review Board at the public hearing.
(Review Board photo)

The Tłıchǫ Roads Steering Committee was formed in 2010 and the Whatı Inter-Agency Working Group in 2013. This long-term planning has allowed for the meaningful consideration of how a permanent highway would change the isolated nature and dynamic of the community.

Drugs and alcohol

The commitments made by the Tłıchǫ Government and Community Government of Whatı to address additional Project-related impacts associated with increased drug and alcohol use or availability are outlined below (PR#216 Appendix C pp 29-31).

Commitment 1: The Community Government of Whatı is investigating two options to strengthen community security: Community Bylaw Officer and the Aboriginal Policing Program. This is an issue that needs to be addressed jointly by the Tłıchǫ Government and the Community Government of Whatı, as well as other supportive agencies.

Commitment 2: There is a need to provide on-the-land treatment for substance abusers, using the healing-power of the elders and the land. This is a social issue that needs to be

addressed collectively, and one recommendation is to introduce the Nishi Program by accessing a variety of funding sources. In most cases, social issues are “community issues” that at the very least require community input into the solution. The Tłıchǵ Community Services Agency (TCSA) should be viewed for a tool or an organization that has resources to help communities.

Commitment 3: There is currently an alcohol prohibition in place in Whatı. Annually, TCSA, the RCMP and the GNWT allocates a large sum to prohibition enforcement and responding to the negative impacts which are most often ineffective. The Community Government of Whatı would like to review the possibility of revisiting the prohibition ban, in favour of more proactive resilience strategies for managing alcohol and drug consumption in the community.

In response to a Review Board information request, the Tłıchǵ Government and Community Government of Whatı clarified how the proposed mitigations would reduce the likely impacts of the Project (PR#126): Commitments 1 to 3 are reactive ways to manage any increases in drug and alcohol abuse or increases in harmful behaviour. Part of their intent is to address key issues surrounding addictions and community security (PR#126 p12). Commitment 3 (lifting prohibition) addresses the question of criminalizing young people for possessing or drinking alcohol, which can force them out of the job market (PR#126 p13). The Community Government of Behchokǵ has recently lifted its prohibition on alcohol, in part for this reason. The Community Government of Whatı and the Tłıchǵ Government are learning from Behchokǵ’s experience to see how this mitigation might work in Whatı.

Commitment 6: The Community Government of Whatı is an active supporter of a local Inter-Agency Committee which includes the RCMP, Health, various TCSA agencies, and the Tłıchǵ Government. Whatı Inter-Agency responds to issues related to community preparedness. Issues such as emergency response, social programs, and the community & lands concerns are all brought to this monthly forum. Reasonable discussions about costs, liabilities and insurance will need to be addressed at this forum. Both parties commit to continuing this community forum in order to coordinate among agencies.

In response to an information request, the Tłıchǵ Government and Community Government of Whatı clarified that Commitment 6 provides a venue for relevant leaders, specialists and authorities to identify, discuss and track issues as they develop (PR#126 p13).

Commitment 12: The Tłıchǵ Community Services Agency commits to providing more information for local health nurses on a range of health issues, such as sexually transmitted infections, among other issues.

Commitment 13: There will be annual coordination between the Councils of Whatı and Behchokı to ensure that any changes and impacts are being collectively considered, addressed and managed.

The Tłıchq Government and Community Government of Whatı noted that Commitments 12 and 13 are about education, "...which is one of the vital and most relied upon methods for reducing addiction rates" (PR#126 p13).

Funding and implementation of commitments

According to the Tłıchq Government, responsibility for implementing the above measures in a timely manner will be shared by the Tłıchq Community Services Association (PR#126 p12). The Review Board questioned the Tłıchq Government and Community Government of Whatı on the stability of the funding mechanisms to support these commitments and whether the GNWT, as the developer, would be providing financial support to offset its project-related impacts. The Tłıchq Government replied in the public hearing that "[w]e invest heavily in our programs and we're committed to continue to do so... The Tłıchq Government is committed to making sure that we, in partnership with the GNWT, will be financing those arrangements accordingly with both our governments working in lockstep" (PR#273 p147).

5.3.5. GNWT mitigations

Drugs and alcohol

The risk of increased drug and alcohol abuse associated with the road was considered in the developer's PDR¹ and *Adequacy Statement Response*. The developer identified several mitigation measures to reduce the impact of drug and alcohol abuse. Additional commitments were added by the Tłıchq Government and Community Government of Whatı to help address gaps in the developer's response. The following programming and existing initiatives aimed at reducing drug and alcohol related impacts are described in PR#162, Appendix B pp34-35 and PR#7 p194.

The developer and Tłıchq Government identified four programs under the authority of GNWT Community Services to address drug and alcohol impacts, as follows:

¹ See PR#7 pp193-194 (pp8-33 to 8-34)

1. The Community Action Research Team provides community-based research programs that provide TCSA with evidence and priorities for action.
2. Community Justice is intended to reduce rates of crime, victimization and incarceration for Tłıchǵ citizens.
3. Victim Services provides support to crime victims by means of assistance, information, referrals and other support service.
4. The Mind and Spirit Framework sets the foundation for the GNWT's improvements to mental health and addictions programs and services.

The developer and Tłıchǵ Government identified the following six programs under the authority of the TCSA to address drug and alcohol impacts:

1. The Memorandum of Understanding between TCSA and RCMP promotes addictions recovery, parenting courses and sexual health.
2. The Nishi Program is a substance abuse treatment program rooted in Aboriginal knowledge.
3. Communicable diseases statistics program collects statistics on sexual health, which is shared with the TCSA on a quarterly basis.
4. For social support services the TCSA has a Social Worker and Mental Health Worker. Neither would actually monitor or keep track of people but are used more as a means of responding to issues. For example, the social worker would not monitor children, but would respond if someone phoned regarding a child protection matter.
5. For community outreach and education, the TCSA will be participating in the Healthy Living Fairs in each community to provide community specific information and education to all community members. These fairs increase awareness of common infections, diseases and illnesses, and promote a healthy lifestyle.
6. Shelters and family violence initiatives: There are no shelters in the Tłıchǵ region, however the TCSA and the GNWT are engaging with the communities to create community specific family violence protocols and response teams. This is done via a contribution agreement between the Department of Health and Social Services and the TCSA to cover the costs associated with community engagement and development of the protocols by a consultant.

The Inter-agency working group responds to issues related to community preparedness, emergency response, social programs and the community and lands concerns.

The GNWT Department of Justice and RCMP deal with illegal substances entering Whatì. If bootlegging and trafficking are identified by a community as a policing priority in its annual policing plan, the Department of Justice's Community Justice Division and the RCMP will assist in providing increased education and awareness around the issues, including the negative impacts of bootlegging and trafficking on the community and the consequences for perpetrators. The RCMP will conduct patrols and check stops and will inspect vehicles for illegal substances if they have reasonable grounds to do so.

Family violence

The GNWT has a number of initiatives in place for the prevention of family violence, including a pilot program called "A New Day" to help adult men reduce their violent behaviour in intimate and family relationships, and another called "What Will It Take?", a social marketing campaign aimed at changing attitudes and beliefs about family violence. It also has services in place to help victims of family violence, such as the ability to apply for an emergency protection order "24/7", community-based Victim Services, and funding to support the five Northwest Territories family violence shelters and victims living in regions without shelters. RCMP "G" Division has a Family Violence Coordinator position that monitors high risk files, provides training and support to Members responding to family violence situations, and represents the RCMP on family violence committees.

Mind and spirit strategic framework

During the EA, the Review Board asked the developer and Tłıchǫ Government to expand on the commitments and explain how they would specifically reduce identified impacts. With respect to the GNWT's existing programs, the Review Board heard from the GNWT Department of Health and Social Services about a new strategic framework that would help guide GNWT programming (PR#162 p59):

[T]he GNWT has developed a strategic framework, the Mind and Spirit, that was released in November 2016. The framework sets the stage for development of our three specific action plans to address key areas, such as child and youth mental wellness, addictions recovery, and mental health services, and these action plans and framework extend to 2021. ...we are confident that our current programs and the services that are being developed through these action plans... will provide the necessary support and programming that will assist [Tłıchǫ Government] and TCSA in dealing with these issues.

The GNWT submitted the *Mind and Spirit 2016-2021 Strategic Framework* to the public record following the technical session (PR#170). The GNWT noted that it is "a plan that

builds on existing strengths of connectedness to culture and community, which are some of the strongest preventive foundations against mental health crisis and substance abuse in our territory” (PR#170 p6). The Framework has four main objectives:

1. a focus on prevention and early intervention
2. a recovery-oriented system
3. personal experience and outcomes
4. a whole of Government approach

Three action plans are intended to accompany the Strategic Framework. The *Child and Youth Mental Wellness Action Plan* was released in September 2017. The *Mental Health Action Plan* and the *Addictions Recovery Action Plan* will launch in 2018-2019 (PR#285 p21). Health and social programs and services provided by the GNWT will be developed or modified according to these action plans (PR#162 p59).

The Mind and Spirit Strategic Framework includes a focus on culturally appropriate approaches to healing (PR#285 p21). The developer is confident that would provide the support required by residents to address health and wellness impacts from the Project (PR#285 p21).

Funding stability and on-going responsibility

The Review Board questioned the GNWT on the stability of the funding mechanisms to support the numerous commitments and programs described to mitigate project-related impacts. The GNWT responded in the public hearing that “[w]e have not allocated any additional funding. We are confident that our monitoring programs are sufficient” (PR#273 p46).

The developer further clarified how its roles and responsibilities would change following completion of the EA (PR#272 p94). If the Project proceeds, responsibility for overseeing Project-related socio-economic impacts would be managed by the GNWT Department of Health and Social Services (GNWT-HSS), the RCMP and Tłıchǵ Government (PR#272 p110). The GNWT-HSS plans to identify and mitigate potential future negative impacts through its existing monitoring programs and mechanisms (PR#273 p31).

5.3.6. Safety of young women

The safety of young women was a recurring theme in this EA. Young women were identified as a vulnerable group by the Tłıchǵ Government in its *Socio-Economic Scoping Study* (PR#7 Appendix B p54). As previously expanded on in Section 5.3.1 of this EA, vulnerable groups are expected to have a harder time adjusting to changes in community access, to increased access to drugs and alcohols and to changes in social behaviours. The Tłıchǵ Government has stated that young women are particularly likely to experience harm because of the Project (PR#96 p61).

Women's safety at construction camps

As a public highway, neither the Tłıchǵ Government nor Community Government of Whatı will be able to control public access to the Project. Whatı residents expressed concern over the potential increase in outsiders because of the Project. The construction phase of the Project could see an influx of outside workers into the region for two to four years. The GNWT has anticipated two main work camps, one at either end of the highway, with the possibility of smaller camps at the gravel pits. The main camps could have as many as 150 people (PR#273 p56).

The GNWT described the work it has done with the Tłıchǵ Government and the Tłıchǵ Investment Corporation to maximize the number of Tłıchǵ people employed and Tłıchǵ businesses subcontracted for the Project (PR#273 p58). The Review Board understands the final selection of camps and camp sizes will be left up to the private contractor.

The risk associated with this influx of workers to local residents, in particular to women, was raised at the public hearing (PR#273 p59):

Given that you're going to be having quite a number of the local people working within these camps, there's going to be, without doubt, it's inevitable that you are going to have bullying, sexual harassment and all of those types of negativities happening.

The GNWT acknowledged the importance of workplace safety and provided assurances that “there are a number of policies and work-safe policies that are in place” to ensure the private contractor can and will deal with harassment issues (PR#273 p59). The camps will be drug and alcohol free, and the GNWT has talked with the Tłıchǵ Government about a community liaison officer. With respect to having an ombudsman-like position that people could voice their concerns to, the GNWT stated (PR#273 p59-60):

... it would be possible to look at that position and see if it could also act as an ombudsman... for Tłıchǫ people if they have any challenges in working with the camp so that those type of issues could be brought to the attention of the GNWT or the Tłıchǫ Government in order to, you know, to have addressed or have a voice, at least to be heard.

The Tłıchǫ Government acknowledged the conversations they have been having with the developer to “ensure that the work sites themselves are well protected through thoughtful and careful consideration towards the safety of women” (PR#273 p125). The Community Government of Whatı has made recent efforts to promote women’s safety at the job. One of their policies is to work in “gender-balanced teams (for example, two women and two men), women-only teams, and not working alone (for example, with or without a male team member” (PR#146 p4). The developer stated that many of the methods that have been successful in Whatı will be applied to hiring for the Project (PR#146 p4).

The Tłıchǫ Government also provided a reference document at the public hearing on gender and construction camps for the developer’s consideration (PR#269). The intent was to collectively “make sure... that these work camps are absolutely safe for women and that women are protected from sexual assault and sexual harassment, as well as men” (PR#273 p125). The report focuses on how women, and Aboriginal women in particular, “can experience negative impacts of resource development at every phase of development” (PR#269 p5). The report had two key findings relevant to the Project and its industrial work camps (PR#273 p6):

- Social and cultural impacts of camps are not sufficiently considered during planning.
- Temporary camps require a mobile, outside workforce that can repeat “...historical patterns of violence against Indigenous women”.

The *Indigenous Communities and Industrial Camps*¹ report describes the risks to Aboriginal women from temporary and permanent industrial camps as a “risk pile up” (PR#269 p7). The “risk pile up” described in the report is a result of work-camp related impacts adding to existing impacts experienced by Aboriginal women (PR#269 p18).² Some of the risks to women that are described in the report include:

- discrimination that makes women feel unsafe and place women at risk, “for example, when they clean rooms on their own” (PR#269 p20);

¹ Aboriginal is used in place of Indigenous in this Report of EA except when Indigenous appears in the title of a document

² Additional conditions that make young women in Whatı more vulnerable are discussed in Sections 5.3.1 and 5.3.2.

- an increase of drugs and alcohols into communities as a result of higher disposable incomes from workers at work camps (PR#269 p21);
- “...men using their influence or position to leverage sexual favours from women, promising better shifts [or] avoidance of particular jobs” (PR#269 p22);
- low reporting of sexual assaults in industrial camps, and very low reporting of sexual assault in the areas surrounding industrial camps (PR#269 p22); and,
- community service providers who are unprepared to deal with sexual assaults and harassment of community members by people from work camps (PR#269 p23).

The report calls for the humanization of Aboriginal women and their communities in work camps (PR#269 p26):

There is a need to provide education in industrial camps, counteracting the values that lead to assaults, harassment, and racism, aimed at all industrial camp personnel. Awareness of structural racism, colonization, and other context are vital to understanding surrounding communities.

Safety risks to women from hitchhiking

Concerns over hitchhiking were raised in the community scoping session in Whatı and referenced in the *Socio-Economic Scoping Study* (PR#19 p5; PR#7 Appendix B p62). The scoping study spoke of the concern from youth and parents “about the ease with which they could hitchhike away from the community, and end up lost in Yellowknife” (PR#7 Appendix B p62). Other concerns voiced by community members included (PR#7 Appendix B p62):

We worry about our young people, even with the winter road young people leave without notice in random trucks. (Female elder, December 2013)

Lots of aboriginal women go missing on the roads, especially our families, young girls, women, they may be hitchhiking, next thing you know they are gone (Whatı councillor, November, 2013).

The *Indigenous Communities and Industrial Camps* report discusses hitchhiking in relation to public transportation and vulnerability. The risks associated with hitchhiking increase when work camps are located near remote communities (PR#269 p32):

When women don't have access to transportation, they may hitchhike or be offered rides by men commuting to and from the industrial camp. Furthermore, men that are seeking sex or alcohol and drugs may use their personal vehicle after work to seek these ends in nearby communities.

The GNWT acknowledged in its *Adequacy Statement Response* that the risk of hitchhiking could lead to “abduction and, potentially, sexual assault of young women hitchhiking along the Project route during operations. It is considered likely that hitchhiking would increase with the installation of a year-round road” (PR#110 p5-40).

Continued education on the dangers associated with hitchhiking was a suggested option to reduce the risk. The Community Government of Whatı has committed to continuing local public education that encourages people to report when they leave and arrive when travelling (PR#96 p44; PR#216 p30).

The GNWT suggested developing a “safety plan” for those women “potentially fleeing abusive situations ... so that they are not forced to hitchhike or accept rides from strangers” (PR#110 p5-40). During the technical session, cameras on the road were also discussed as a possible security measure and deterrent to harmful behaviour (PR#162 p110). The developer mentioned that cameras were currently in use at along Highway 3 to observe road conditions prior to committing a road crew or snow removal, and acknowledged that camera footage could be accessed by the RCMP should they request it (PR#162 p119). At the technical session, the GNWT committed to explore the possibility of cameras as a tool for improving women’s safety with the Tłıchǵ Government (PR#162 p119).

Mitigation measures proposed

The mitigation measures described in 5.3.4 and 5.3.5 to address drug and alcohol use also serve to reduce some of the contributing factors to sexual harassment and assault. Additional mitigations described to improve the safety of young women include education and awareness for sexually transmitted diseases, support personnel for victims of abuse, and confronting social norms around sexual abuse.

The developer said it would “...review work safe policies for [the Project] with a gender lens(e)” and engage with potential P3 operators on their policies to consider safety of women (PR#285 p22). The developer also agreed to consider having a community liaison officer who employees can approach with workplace safety concerns and pointed to several territorial and Tłıchǵ Government programs that will support young women (such as the well-women clinic and the school programming on sexually transmitted infections) (PR#285 p23).

The *Indigenous Communities and Industrial Camps* report suggests the use of adding visible decals to easily identify company and personal vehicles, to “mitigate impacts of speeding, negative camp-community interactions, or pickups of community members by workers” (PR#269 p33). In the event that workers commute to and from communities for work, public transportation is mentioned as a method of reducing risks associated with hitchhiking and road safety. The report also suggests using shuttle vehicles or buses to “transport workers to and from camp to prevent personal vehicle use in camp that would increase access to nearby communities, and to decrease congestion on...transportation corridors” (PR#269 p33).

5.3.7. Road safety

At the 2017 technical session, the developer stated it had designed the all-season road to handle up to 200 vehicles a day (PR#159 p46). The estimated daily traffic volume is 20-40 vehicles per day. Traffic volume was calculated based on road crew requirements, anticipated local and non-local traffic, increased access and diversion from air traffic, and future NICO mine traffic scenarios (PR#159 pp46-47). Road counters from the Whatì winter road were used to understand likely local daily traffic patterns. The developer predicts that Project traffic levels would be like those on Highway 6 to Fort Resolution or Highway 7 to Fort Liard (PR#159 p46).

Wildlife collisions

During the EA, many questions arose related to the developer’s road traffic estimates and the associated risk to wildlife encounters and potential fatalities¹. Estimates on the impacts of more traffic than the developer predicts were discussed at length in relation to wildlife disturbance and the number of collisions. Vehicle collisions with wildlife, and particularly large animals, are a safety risk to road users.

Highway 3 between Fort Providence and Behchokǵ provides the best comparison for the Project for wildlife collisions. The GNWT reported 113 wildlife collisions with vehicles on Highway 3 between 2010 and 2014 (PR#110 p4-121). Most of these collisions were with wood bison. This worked out to approximately 74 bison killed, or roughly 15 per year. Since 2005, an average of 22 wood bison have been killed each year (PR#110 p4-64). Most

¹ See Section 10.2.2

of these fatalities occur during the late summer and fall, attributed to the return of the dark and poor visibility (PR#162 p94).

Wildlife-vehicle collision mitigations for road safety

During the technical sessions the developer also provided specific mitigations to reduce bison-vehicle collisions. This included speed limits appropriate to the driving conditions (PR#162 p92). The GNWT has a “Drive Alive” program to increase driver awareness of bison and the dangers of bison-collisions (PR#162 p94). Public messaging is targeted in the fall, when most incidents occur. Variable message signs are also used, which are portable and can be placed at trouble spots or to address any safety issue. The GNWT Departments of ENR and INF collaborate. The departments have a special committee that looks at “bison interactions with traffic and what we can do to improve the safety on the road and improve the outcome for bisons (*sic*) as well” (PR#162 pp94-95).

Parties to the EA sought greater clarification on the issue of bison vehicle collisions. The NSMA called for clear guidance from the GNWT to drivers, citing the vulnerability of wood bison and the frequency of collisions (PR#214 p36). In its technical report, the NSMA also recommended deliberate effort be taken by the GNWT to study the relationship between bison collisions and the application of road salts, which are thought to attract the animals to the road (PR#214 p52). See Section 10.2.2 for further discussion on this topic.

Emergency response

The developer recognizes that an all-season road will result in vehicle accidents. Since 1991, the GNWT has reported 30 accidents on the winter road, mostly between Highway 3 and Gamètì (PR#96 p84). The Tłchq Government reported seven highway accidents along the Whatì winter road between 1989 and 2016. That stretch of road is 30 km long and operates for an average of 77 days a year (PR#7 p23), which works out to roughly 5.7 years of operations and roughly one accident (0.81) per year.

In considering the risk of the Project to motorists, the developer asserts that a year-round ground-based transportation option is a safer alternative to the winter road or air travel (PR#110 p5-36). Year-round access would also reduce the intensity of winter driving, or what the developer refers to as “seasonally-driven emergency resupply trip” (PR#110 p5-6).

Whatì residents such as Elder Louis Wederin told the Review Board that they believe that an all-season road is a safer form of transport than air travel (PR#273 p199; PR#268). The Tłıchǫ Government agrees, saying that the “... lack of light, weather and road conditions, also make winter road accidents more likely to be severe” (PR#96 p44). By contrast, an all-season road will reduce the need and intensity of travel in the winter months and spread traffic out.

Despite this prediction, the Tłıchǫ Government anticipates that “... there may well be high impact, with traffic accidents (with fatalities and injuries) and we expect that existing services will be used to respond to traffic accidents” (PR#96 p8).

The developer provided an emergency response plan as part of its PDR (PR#7 Appendix Z). This plan focused only on the developer and its road-building contractors during Project construction. The Tłıchǫ Government stated that Whatì has a Community Emergency Management Plan, and that Community Government of Whatì staff, council and various community members undergo regular training (PR#126 p29). In its response to a Review Board information request, the Tłıchǫ Government wrote “[c]ommunity governments are not mandated to provide ground ambulance or highway rescue services to residents” (PR#96 p81). That responsibility lies with the GNWT Department of Municipal and Community Services (MACA).

The developer told the Review Board that MACA facilitates the GNWT response to emergencies. MACA also helps communities develop and maintain *municipal* emergency plans and programs. Municipal legislation allows community governments to establish ground ambulances and emergency services beyond community boundaries (PR#141 p6).

The Community Government of Whatì does not have ambulance or emergency response services. It has a vehicle, but no ambulance certification. Behchokǫ is the nearest ambulance service, where TCSA maintains three ambulances. Certifying the Whatì ambulance would involve insurance, liability and training, with at least two emergency medical technicians and support from a fire department (PR#96 p82). The Community Government of Whatì anticipates that “[s]ignificant costs would be required to establish [an emergency response] service related to equipment, training and maintenance” (PR#96 p81).

In 2016, MACA worked with the Community Government of Whatì to develop an updated emergency response plan (PR#96). No details of this plan were provided to the Review

Board. The Community Government of Whatì is currently responsible for fire protection and emergency response planning within the community boundary (PR#96 p81).¹ The Community Government of Whatì expressed its desire to be a “full-partner” in discussions on road-side accident response, which would require the Community Government of Whatì to “maintain specialized crews to respond on a wider range of responses on the Tłıchǵ All-Season Road” (PR#96 p81). This would require the approval of MACA and the Community Government of Whatì insurance provider.

The Community of Behchokò lies approximately 40km southwest from the Highway 3 junction with the Project. Behchokò is larger than Whatì², and has two fire halls with two pump vehicles and three ambulances (PR#7 p151; PR#96 p84). Behchokò firefighters are volunteers who lack Emergency Medical Technician (EMT) training and emergency response equipment appropriate for road accidents. Behchokò does not respond to emergency calls on the winter road, which are forwarded to the GNWT and other emergency service departments and organizations.³

The Community Government of Behchokò expressed a desire to be part of the discussion on emergency response for the Project. It anticipates becoming a “full partner in the discussions and would maintain specialized crews to respond on the Tłıchǵ All-Season Road” (PR#96 p84).⁴

Regarding cell phone coverage, the Tłıchǵ Government made the following commitments regarding safety along the road (PR#96 p44):

[The Community Government of Whatì] will work with Northwest Tel to understand where there is no cell service, and the intent will be to understand and map areas where there is no coverage, and investigate whether it is feasible to increase cell coverage to the full [Project] route.

¹ With respect to dealing with roadside accidents, Whatì’s emergency response capability consists of six volunteer firefighters and an active volunteer search and rescue group (which is not trained for vehicle extraction or advanced medical response). The firefighters can only operate within the community boundary, and there are no formal rescue vehicles in the community (PR#96 p81).

² Behchokò’s recent (in 2012) population was 2174 (PR#7 p151).

³ As with Whatì, emergency response services are limited to the municipal boundary. Informally, the fire trucks will respond to accidents on Highway 3, at the request of the RCMP. However, they do so reluctantly as responding to calls along the highway places volunteers at risk (PR#96 p84).

⁴ The ambulance service in Behchokò is managed by the TCSA. The TCSA maintains contracts with Stanton Territorial Hospital, which are negotiated independently from the Community Government of Behchokò (CGB). In 2016, MACA worked with Community Governments of Whatì and Behchokò to develop an updated emergency response plan (PR#96 p85; PR#162 p101). This plan is the same as the one developed for Whatì (PR#96 p85), and the details are also unknown.

And,

The [Community Government of Whatì] will continue public education locally so that people report in when they leave and when they arrive... the community is very strict about reporting in to family on leaving and arriving and traveling in groups.

Project emergency response mitigation

The subject of ambulance and emergency response service was discussed at length during the EA technical session. The developer and Tłıchq Government acknowledged the need to address this issue. Two additional commitments were created at the technical session and were listed in the Tłıchq Government's technical report as (PR#216 pp33-34):

Commitment 17 – Highway Rescue Coordination: GNWT commits to update the Multi-Agency Rescue Coordination System (MARCS) in collaboration with the community government of Whatì and the community government of Behchokò.

Commitment 18 – Emergency response plan: The parties commit that the 2017/2018 operational assessment will include analysis for the [Project] and will jointly coordinate a community government of Whatì and the community government of Behchokò and GNWT session, yielding an examination of the current operating environment for the purpose of determining an acceptable standard of service and the necessary resources to maintain the desired service level.

An additional commitment was added at the public hearing (PR#273 p36):

Commitment 1: Government of the Northwest Territories is committed to meeting with and working with key stakeholders, including the Community Government Whatì, the Tłıchq Community Services Agency and the Tłıchq Government to work toward the development of an effective ground ambulance and the highway rescue.

The developer updated the Review Board on these efforts in its closing arguments. The GNWT began an inter-departmental committee to examine current ground ambulance and highway rescue services systems in the Northwest Territories in August 2017 (PR#285 p24). Interviews have been completed for Behchokò and Whatì "... to ensure a clear understanding of their current capacity" (PR#285 p24). A report will be completed in 2018, which will be followed by a progress review by senior GNWT officials, and a strategy "supporting and improving ground ambulance and highway rescue response capacity" (PR#285 p25).

The *Ground Ambulance and Highway Rescue Action Plan* is expected to be completed early 2018 and will be shared with the Tłıchq Government, the TCSA and the Community

Government of Whatì (PR#282 p24). The developer “expects that a continuing dialogue over the next couple years with these partners will be necessary to achieve the desired outcomes” (PR#282 p24). The Community Government of Behchokò is not mentioned as a specific partner in these ongoing discussions.

5.3.8. Population sustainability

In its PDR, the developer predicted that an all-season road would cause population growth and economic development, and that community planning for growth was necessary in advance to prepare for pressure on physical and social infrastructure (PR#7 p8-32).

The *Socio-economic Issues Scoping Study* identified the Whatì population as remaining roughly the same since 2001¹ despite having a young population and high birth rates, likely because of “brain-drain”: out-migration, as people leave the community for school or work opportunities (PR#7 Appendix B p30,51). The developer predicts that the road is likely to bring in jobs and opportunities and reverse this brain drain, to the benefit of residents of Whatì and the Community Government of Whatì.

The Tłchq Government and Community Government of Whatì do not anticipate that the Project itself will result in significant population growth (PR#96 p92). The Tłchq Government and Community Government of Whatì do not expect in-migration during the road operation but believe construction will attract local labour to the construction camps. (PR#96 88).

Evidence from the community input sessions (Table 1.4 in PR#96 p22) indicates that some community members expect an all-season road and anticipated future developments to result in community growth.

The *Socio-economic Issues Scoping Study* (PR#7 Appendix B) highlighted that outsiders are thought to become attracted to Whatì through the increased tourism and job opportunities the road would bring. Whatì residents expressed some public concern about the effect of an influx of newcomers to the feeling of the community and to safety.

The Review Board received other evidence regarding potential population growth in a future mine scenario. The *Socio-economic Issues Scoping Study* anticipates a “high-potential

¹ Whatì's yearly growth rate since 2001 is about 0.4% according to the Northwest Territories Bureau of Statistics (PR#7 Appendix B p30).

for in-migration” if a mine is built (PR#7 Appendix B p62), while the developer stated during the public hearing, they did not “see an incremental residual impact in terms of population change...beyond [what’s in] the community’s ability to respond” and therefore did not conduct a future scenario analysis regarding population increase (PR#273 p50).

The *Socio-economic Issues Scoping Study* highlighted that in-migration modeling for Whatì in “road alone” and “road and mine” scenarios is critical moving forward. The Tłchq Government asked Fortune Minerals, the developer of the proposed NICO Mine, for an in-migration study for Whatì in a “road and mine” future scenario exercise, to understand infrastructure, housing and social service needs (PR#7 Appendix B p68, p76).

The Review Board asked the Community Government of Whatì and the Tłchq Government to expand on the available mechanisms for handling forced population growth¹ and whether those mechanisms could handle the potential in-migration associated with the project. This included whether resources would need to be reallocated from other regions if the Project resulted in people moving to Whatì from surrounding Tłchq communities (PR#73 p8).

The Tłchq Government replied that “the budgets for housing and social services is under the control of the GNWT, so forced growth should be understood to be the responsibility of the GNWT” (PR#96 p91). If the Community of Whatì experienced population growth as a result of the Project, a forced growth scenario would likely be triggered and, the GNWT “is able to source additional finances to cover the unanticipated costs” (PR#96 p8).

The developer’s ASR did not identify what potential impacts there could be on the population and infrastructure of Whatì in a future mine scenario (PR #110). The developer confirmed during the public hearing that it had not considered the effect on population change of a future scenario with the NICO mine (PR#273 p50). The *Socio-economic Issues Scoping Study* stated that if the NICO mine is built, “there is a high potential for in-migration, which would put pressures on the schools, as more children would be in the community. The need for more teachers and improved infrastructure and facilities would be high” (PR#7 Appendix B p54).

¹ The GNWT defines forced growth as the increased costs for the delivery of existing services, resulting from the uncontrollable impacts of realized population growth, demonstrable unit or service cost increases, rate increases or other realized demographic changes to client base (PR#73 p8).

Highlighting an excerpt from the Whatı Interagency Committee (2013), the report goes on to state (PR#7 Appendix B p56):

In-migration would also lead to a strain on services and pressure on housing that is already overcrowded and unhealthy. Population increases could overwhelm certain aspects of infrastructure, according to community officials and service providers, including housing, sewage and water mains, the health centre, school, daycare, and recreational facilities.

Community cohesion

Concern regarding community cohesion was voiced in scoping sessions (PR#19 p5) and is additionally reflected in case studies of previously isolated communities with new road access, submitted by the developer. The case studies observed that (PR#7 Appendix B p12):

...increased public access from new roads has reduced sense of community cohesion: break-ins, loss of social relationships because of out-migration, loss of satisfaction with life in the community for those who remain, and reduced participation in community activities have all been noted.

Regarding in-migration as a result of the Project, the Tłıchǫ Government and Community Government of Whatı state there is the possibility of more people in Whatı during road operations due to in-migration, tourists and itinerant workers. It notes the possibility that “[t]his may lead to reduced community cohesion in a small community where virtually ‘everybody knows everybody else’”, an issue raised by community members during the developer’s scoping meetings (PR#96 p62).

In response to an information request, the developer stated that it expects the number of in-migrants to be manageable (PR#96 p62). The Tłıchǫ Government and Community Government of Whatı conclude that during construction, “community continuity will be negligibly adversely impacted”, and “during operations there will be, prior to the development of mitigation, a low-level reduction in community cohesion overall” (PR#96 p63). The Tłıchǫ Government and Community Government of Whatı predict that the anticipated reduction in harmful behaviours associated with a permanent road (versus a winter road) will result in a “net benefit” to community cohesion.

Housing

In the PDR, the availability of housing was identified as a concern for the community of Whatı under population growth scenarios (PDR#7 Appendix B p 13,28). Community

Government of Whatì representatives in 2014 said there was no extra stock of housing to accommodate in-migration; 47% of households are in core need of repairs and 61% had housing problems. The potential for increased rent and housing costs resulting from a new road or in-migration was also identified as a possible adverse outcome of population growth (PR#7 Appendix B p13). The summary meeting notes for the last Inter-Agency meeting mentioned that a three-year planning period is needed for new homes (PR#31 p2).

The Review Board asked the Community Government of Whatì and the Tłıchǵ Government to expand on whether the housing conditions in the community had changed, as well as the rate of growth that the community could accommodate to allow for suitable housing and avoid undue pressure on community services.

In response, to a Review Board question on housing pressures (PR#73 p8), the Community Government of Whatì and Tłıchǵ Government stated they “recognize housing as an ongoing barrier for community well-being and preparedness, including the insufficient information available to adequately assess housing adequacies in the community”, and “in-migration may lead to more expensive housing through inflationary pressures on limited housing stock” (PR#96 p69, p87).

House crowding is still considered high in Whatì compared to the rest of the Northwest Territories, and houses still have high rates of repairs, which indicates that the housing stock has not been updated. It currently takes three to four years to build a house in Whatì (PR#96).

In terms of the rate of population growth the community could sustain, the Community Government of Whatì identified that with solid planning, 50 new families could be gradually incorporated into the community, as “there are 20-25 lots in Whatì that are zoned and subdivided for development,” but that “current Whatì housing stock cannot support more than an extremely minor increase in population” (PR#96 p 89). The Community Government of Whatì and Tłıchǵ Government indicated the need for government-subsidized and social housing. The school can absorb some growth, “but additional teachers and portables would be required at the Mezi Community School if there was a population increase” (PR#96 p89).

To address these issues, the Tłıchǵ Government has signed a *Memorandum of Understanding* with the GNWT on housing, forming the Working Group on Housing. This Working Group will identify actions, set targets, and report on results to the joint

leadership forum between the Tłıchǵ Government and the GNWT (PR#96 p88). This is identified in Tłıchǵ Government commitment 8.

In addition to the shortage on housing, the meeting minutes from the May 18, 2017 Whatı Interagency Group Committee Meeting Minutes highlight the need for more housing and the lack of money budgeted for this (PR#126 p52). The Tłıchǵ Government and Community Government of Whatı have committed to investigate the housing situation in more detail in light of Project-anticipated growth scenarios¹. The Tłıchǵ Government and Community Government of Whatı highlight that the Project will reduce the time and cost of new housing, as it will increase access to material at lower costs year-round, and the challenge will be to ensure that the availability of building materials can keep up with in-migration (PR#96, p89).

Infrastructure capacity

The PDR described the developer's intent to use the solid waste facilities of Behchokǵ and Whatı as well as Behchokǵ's sewage treatment facilities during Project construction (PR#7 pp4-42 to 4-43). While letters of support were provided by the respective communities (PR#7 Appendix O), there was no description of the capacity of the community infrastructure to meet project demands. Additional infrastructure concerns for Whatı included capacity issues for housing, sewage lagoon, water treatment plant, and the ability to adjust to future growth scenarios predicted by the project (PR#7 Appendix B pp 28). The Review Board asked for this information in the *Adequacy Statement*, including for comment from the Tłıchǵ Government and Community Government of Whatı (in PR#96).

The developer confirmed that upgrades to utility infrastructure have been planned for the Community of Whatı (PR#110). The Community Government of Whatı will be updating its sewage lagoon to accommodate a population of 800 (current population is 500). The water treatment plant in Whatı has capacity to increase its production, and additional storage tanks for treated water could be constructed by the Community Government of Whatı with support from the GNWT Department of Municipal and Community Affairs, alongside additional cells for solid waste, if needed. The current water treatment plant has the capacity to serve a population of 800 (PR#110 pp5-9 to 5-10; PR#96 p89).

¹ See TG commitment number 8 (PR#216 p37)

The developer originally anticipated that it would have a single 150-person camp in operation at any given time. However, the developer later stated that depending on the P3 operator, the preference may be to have multiple, smaller camps. It is not expected that these camps will be on Community Government of Whatì lands (PR#110 p1-10). The developer also said that depending on the status of the sewage updates in Whatì, as well as the P3 operator's chosen location and configuration of camps during the construction phase, sewage from larger camps may be diverted to the sewage treatment facility in Whatì. Greywater and sewage from smaller camps may be deposited into sumps or onto the land (pending on Inspector approval), and greywater from larger camps may use sumps (pending on Inspector approval) (PR# 110 pp34-35).

5.3.9. Project's contribution to economic well-being

The Project is estimated to cost roughly \$150 million (PR#110 p5-25) with the majority of that money flowing through northern businesses (depending partly on the selection of P3 operator). Of that the \$150 million, nearly \$122 million, or 80% of the total capital construction cost would be sourced in the Northwest Territories. The developer's preliminary estimates indicate that "96% would be sourced locally from the Tłıchǵ region, with the remaining 4% being sourced from other parts of the Northwest Territories, most likely Yellowknife" (PR#110 p5-25). The developer anticipates that project construction would generate 266 person-years of direct and indirect employment in each of the first two years. The developer anticipates six to eight full time positions for local residents during the operational period of the road (PR#110 p5-23, p5-24).

Data provided by the Tłıchǵ Government suggests that approximately 568 people¹ are available for employment in the Tłıchǵ region (PR#96 p49). The developer has worked closely with the Tłıchǵ Government and Community Government of Whatì to strategize how Project benefits can be maximized for Tłıchǵ people and businesses. The developer outlined its efforts to date at the public hearing (PR#273 p58):

We are working closely with the Tłıchǵ government as we work on... what we're going to ask the project companies to provide in terms of Tłıchǵ involvement, Tłıchǵ employment, Tłıchǵ businesses and training.

¹ Based on Northwest Territories Bureau of Statistics: 2014 Community Profile Data (see Table 3A-1 from PR#96 p49). Calculated by adding up the total amount of people looking for work in each Tłıchǵ community ('participation rate %' x 'unemployment rate' x 'community population')

Toward this end, the developer is also working closely with the Tłıchǵ Investment Corporation (PR#273 p58). The Tłıchǵ Investment Corporation is providing the developer with figures on the available workforce and Tłıchǵ-owned businesses.

In discussing how the P3 operator for the Project would be selected, the developer stated in the public hearing that it will include conditions in its Request for Proposal to outline requirements for Tłıchǵ and northern hires (PR#273 p29). To maximize the number of local workers during Project construction, the developer will require potential P3 operators to (PR#110 p5-24):

...demonstrate how local labour and businesses will be sourced and used as part of construction activities. Contractors will also be required to identify their approach for communicating to and collaborating with local governments, including Aboriginal governments, on employment and subcontracting opportunities.

Economic well-being is facilitated in the Tłıchǵ region by the Tłıchǵ Region Economic Development Working Group. This working group is made up of all Tłıchǵ senior administrative officers (SAOs) from Gamètì, Wekweètì, Behchokò, and Whatì, the community economic development officers, and the directors of each community (PR#273 pp61-62). The developer's ASR described the initiatives of the Tłıchǵ Region Economic Development Working Group in preparing for the Project (PR#110 p5-24) including:

- developing a training catchment plan with Aurora College and Mine Training Society;
- offering courses at Community Learning Centres in Whatì, Behchokò, Gamètì and Wekweètì for Project construction; and,
- requiring contractors to have plans for on-the-job training.

The developer predicts that training and skills acquired from work on the Project will provide lasting benefit by improving employability and experience for future jobs (PR#110 p5-24). Former Chief Jimmy Nitsiza spoke at the public hearing on how the Project was affecting the mood of the community: "So now that people are kind of excited because a new road is coming in and...the hope we have, you know, (to) change the life for the better" (PR#273 p78). The Tłıchǵ Government representative Tammy Steinwand-Deschambeault likened the road to "...investing in our people, our culture and our way of life" (PR#273 p251). Steinwand-Deschambeault elaborated on the impact of the Project extending beyond economics (PR#272 pp190-192):

Opportunities for more employment. For a community of 500 there's limited jobs here. The road will help to create additional jobs for the people. Even when we look at training, building skills in our people-- that alone helps with people's mental health and well-being, knowing that they can do something; that they can contribute to the community; that their children can see them making a positive impact in their community. There's a lot of positive spinoffs.

The pursuit of direct and indirect economic opportunities arising from an all-season road was behind the Tłıchǵ Government's Commitment #4 (PR#216 p36):

The need has been shown for increased business acumen for local entrepreneurs, in order to maximize local procurement opportunities from the road and mine. The Tłıchǵ Government currently maintains Economic Development Officers (EDO) in the communities who assist Tłıchǵ residents in establishing their own businesses. It may create a larger benefit for the Tłıchǵ Government to redirect each local EDO to focus on local economic development issues.

The Tłıchǵ Government anticipates that increased income tax revenues from people and businesses employed on the Project will serve to offset any mitigation costs associated with reducing adverse Project effects (PR#96 p77).

Financial estimates of the Tłıchǵ Government's proposed mitigation measures indicate that four of the 13 measures listed require additional funding. The remaining nine measures are covered through existing budgets or by the developer (PR#96 pp78-79).

The Tłıchǵ Government anticipates additional revenues from an expanded tourism sector and new business opportunities that develop from having an all-season road (PR#96 p77). These are discussed in more detail in the following sections. Tourism has been identified as a secondary industry that could result from the Project. The creation of an all-season road would also improve the likelihood that the NICO Cobalt-Gold-Bismuth-Copper mine, the NICO Project, would get developed. Similarly, the Project is partly intended to open the region up to future resource development projects.

Tourism opportunities because of the Project

The GNWT Department of Industry, Tourism and Investment (GNWT-ITI) does not expect the Project to attract more tourists to the Northwest Territories but anticipates it will open the region to local recreational users (PR#7 p154). The developer's PDR highlighted the interest of the Tłıchǵ Government in expanding ecotourism in the region.

The Review Board asked the Tłıchǵ Government to characterize changes in visitor numbers and length of stay because of the all-season road, as well as any potential adverse effects (PR#73). The Tłıchǵ Government does not anticipate any negative impacts associated with tourism as a result of the Project, rather, it is expected that road will bring added benefit to the region with a proper tourism strategy in place (PR#96).

The Tłıchǵ Government pointed to a number of additional existing and future plans for ensuring the growth of tourism in the Tłıchǵ region (PR#126 pp41, 42), stating “[t]ourism is a core industry for fostering healthy economic development in Whatì” and tourism plays a central role in the Tłıchǵ Region *Training and Economic Development Strategy* (PR#126 p41; PR#96 p72). The Tłıchǵ Government also identified a number of economic development support programs available from GNWT-ITI, which could be relied on to promote tourism in Whatì (PR#96 p74). The Tłıchǵ Regional Economic Development Working Group (TREDWG) has been working with the GNWT-ITI since 2015 to develop tourism strategies in four communities within the region (PR#96 p74).

The Tłıchǵ Government also identified several economic benefits related to tourism opportunities that could be happen in combination with a tourism strategy and the Project being in place (PR#126). The Tłıchǵ *Land Use Plan* identifies eco-cultural tourism as a way to generate economic opportunities for Tłıchǵ citizens while also protecting Tłıchǵ lands (PR#126). The Tłıchǵ Government is preparing a Tłıchǵ Region Tourism Strategy, which includes “guided fishing tours on Lac La Martre as a potential opportunity for future community tourism – an opportunity that has considerable potential for growth with easier access as a result of the [Project]” (PR#126 p42).

The Tłıchǵ Government’s position that tourism could be promoted through the implementation of a tourism strategy for the region (PR#96 p71) was supported by the developer in the Public Hearings (PR#272; PR#273).

Project economics and the NICO Project

The Project was initiated to improve access to the Community of Whatì, and to ensure stable delivery of materials via land transport in an era of warming climate – specifically for the communities of Whatì, Wekweètì and Gamètì. The Project became a financially attractive opportunity following the approval of Fortune Minerals Limited to open a Cobalt-Gold-Bismuth-Copper mine, the NICO Project, a mine that would be located 50 km northwest of Whatì.

Though the NICO project is approved for development by the Review Board (see EA0809-004), Fortune Minerals clearly indicated it does not plan to build a road to connect the mine to the southern transport system. The mine will only go ahead if an all-season road is constructed.

During EA0809-004, the Review Board heard that the NICO project was anticipated to generate 600 jobs during construction, and 225 jobs during the 15-year operational life. It would have a total contribution to the Canadian GDP of about \$1.8 billion over its lifetime. Based on the NICO EA, the developer stands to receive \$156 million in tax revenues from the mine if the NICO Mine goes ahead. The developer and Tłı̨chǫ Government began talks around the time of the NICO Mine environmental assessment to explore improved access options to Whatì and Gamètì via an overland route.

In its valuation of whether the Project would be of net benefit to tax payers as a public infrastructure project, the developer relied on a future scenario that assumed the NICO project will proceed. The developer stated that each year of construction phase of the Project would generate around \$35 million to the Northwest Territories' gross domestic product (PR#110 p5-26). The operational period is anticipated to lower gross domestic product by \$174,000/year, because less money will be spent to maintain the Project compared to building an annual winter road (PR#110 p5-26).

This valuation is in the 2015 report titled *Economic Evaluation of the Tłı̨chǫ Road* by Nichols Applied Management (PR#7 Appendix C) based on a 2006 report by the same company, commissioned by the developer. The 2006 study is described as a quantitative economic evaluation of the costs and benefits of an all-season road, but with a limited scope (PR#7 Appendix B p5).

The 2006 study confirmed the results of earlier studies, concluding that "...community benefits tend to be too small to warrant all weather road construction on strictly economic grounds" (PR#7 Appendix B pp 42-43). The economic valuation calculated a benefit/cost ratio of 0.20 – "well below 1, the point at which it makes economic sense to pursue an action" (PR#7 Appendix B pp 42-43). The study's main findings are listed as (PR#7 Appendix B p44):

- an all-weather road to Whatì would reduce transportation costs, approximately in half;

- Whatı residents would save approximately \$925 each on transportation (\$525) and in cost of living adjustments (\$400);
- building an all-weather road only made sense if it increased the likelihood of NICO Mine and increased future resource development opportunities; and,
- mineral development is “...critical to the economic rationale for the road, with the NICO Mine being the economic lynchpin”.

The 2015 Nichols study built on the 2006 study by adding in the costs and benefits of the NICO mine into the economic analysis scenario (PR#7 Appendix C). The result was “sensitive to product prices”.

The base case scenario had a benefit/cost ratio of 1.01 – just enough to make the road a positive investment. The report found that “[i]f both the community and NICO project benefits are taken into account, the net economic benefit of building the Tłıchǵ Road is \$12 million” under the assumptions used (PR#7 Appendix C p5). One of the assumptions behind this conclusion is that building the Project would increase the likelihood of the NICO project proceeding (PR#7 Appendix C). Should the Project not increase the likelihood of the NICO mine going ahead, or product prices not perform well on the market, the economic rationale for the Project would suffer.

The developer was asked to comment on the assumptions of the economic analysis during the Behchokǵ technical session, but did not want to publicly comment on the topic, citing concerns related to the procurement process of the P3 operator (PR#162 p161). The developer said it was hesitant to interfere with the cost estimation or competition that bidders would supply (PR#162 p161).

5.3.10. Impacts to the non-wage economy

The Review Board identified the lack of information on the non-wage economy in its *Adequacy Statement* (PR#70 p24). The developer was required to describe the non-wage economy and conduct a pathway analysis on potential Project effects, providing mitigation measures as appropriate. Given the developer’s deference to the Tłıchǵ Government on socio-economic matters, the Review Board also issued information requests to the Tłıchǵ Government and Community Government of Whatı (PR#73). The Tłıchǵ Government and Community Government of Whatı were asked to identify the value of the traditional economy, estimate the potential value in lost opportunity, and describe any mitigation

measures to reduce the impact on harvesters or to offset costs related to an increased reliance on store-bought foods.

The Tłıchǫ Government described the importance of the traditional economy as extending beyond harvesting, trapping and gathering (PR#96 p67). It includes intrinsic Tłıchǫ subsistence values such as sharing country foods communally, spending time on the land, intergenerational knowledge transfer and continuation of the Tłıchǫ way of life. The Tłıchǫ traditional economy also includes household work done by women, men and children to prepare, cook and distribute country foods. This information is “crucial for understanding the work and reality of Tłıchǫ life that sustains our traditional economy” (PR#96 p67). The value of harvesting was clearly articulated in the Tłıchǫ Government’s Socio-Economic Issues Scoping study, and in their October 28, 2016 response to Information Requests (PR#96 p66).

When assessing the potential Project impacts on harvesting and the non-wage economy, the Tłıchǫ Government anticipated that the Project could improve harvesting for residents of Whatì and other Tłıchǫ citizens (PR#96 p12). Ease of access was cited as the main factor improving access for more community members to larger parts of their traditional territory. The Tłıchǫ Government believes that improved access will promote harvesting opportunities and success. In turn, this would promote important Tłıchǫ way of life practices and skills as people spend more time on the land (PR#96 p41).

Concerns were identified related to increased access to the region by non-Tłıchǫ citizens and a corresponding increase in competition for country foods. The Tłıchǫ Government has the managerial authority to impose hunting restrictions or regulations to limit hunting or fishing activities (PR#96 p69).

Harvesting is covered in more detail in Chapter 9. The following sections discuss evidence related to access to traditional foods.

Access to traditional foods

The developer recognized harvesting as an important part of offsetting the cost of store bought foods (PR#110 pp5-27, 5-28). High transportation costs make getting fresh affordable food in Whatì difficult year-round (PR#7 Appendix B p14). The subsistence economy provides steady access to healthy food amid fluctuations in wage economy and expensive food costs (PR#110 p5-11). The Northwest Territories Bureau of Statistics reported that in 2013, over 90% of Tłıchǫ households were eating country foods (PR#96

p66). In Whatı, it was estimated that 78% of residents relied on country foods in 2009 for half or more of their diet (PR#7 Appendix B p32). The consumption of country foods helps provide food security (PR#110 p5-11). Those with less money rely on country foods to supplement their diet.

The developer anticipates that year-round access will improve Whatı's food security by providing access to lower-cost goods in Yellowknife and reducing the costs of transporting fresh goods into the community (PR#110 p5-42). The reduction in food costs was considered a likely benefit to residents with lower incomes, such as Elders, youth and the unemployed (PR#110 p5-38).

However, the developer identified that Elders could be "particularly vulnerable" if the Project decreases the availability of country foods (PR#110 p5-41). Elders are already recognized as being economically marginalized (PR#7 Appendix B p62). According to Elders, the largest Project risks come from "the potential for lack of support from younger generations, and decreased food security" (PR#110 p5-41). Elders feel they will be unlikely to benefit from any Project benefits as economic and employment opportunities will go to others (PR#7 Appendix B p62). Because Elders tend not to participate in the wage economy, they will remain reliant on the subsistence economy. Young families, single mothers, people with disabilities, and community members living a traditional subsistence lifestyle are also considered vulnerable to changes in availability of country foods (PR#7 Appendix B p62).¹

The developer suggests in its ASR that construction activities could reduce the time available for traditional activities. The construction workforce might expect to harvest and eat less country foods during this time (PR#110 p5-27). Less time spent on traditional activities would also reduce the amount of time youth spend with adults on the land, reducing the transmission of Traditional Knowledge and the development of future hunting skills. Elders often rely on the sharing of harvested foods from harvesters for sustenance. If fewer people are harvesting, the developer states it could "...increase the reliance on store-bought foods and could potentially impact food security for those more reliant on country foods such as Elders" (PR#110 p5-27).

At the public hearing, the Review Board heard that trappers were concerned about the Project's impact to their livelihood (PR#272 p56). Still, some Elders and harvesters

¹ See Section 5.3.1 for further discussion of these vulnerable subgroups.

commented on the declining contribution of trapping to people's economy. Elder Louis Wederin described how the fur economy used to be strong and provided for an easy living, but now fewer people trap and more rely on the wage economy (PR#272 p203).

The Tłıchǵ Government point out that local programs exist in Whatì, like the 'Traditional Meals on Wheels' program that sets nets and gives fish to Elders, young families and those in need (PR#96 p25, 59). The Tłıchǵ Government has consistently predicted an increase in harvesting success because of an all-season road. The Tłıchǵ Government therefore considers it more likely that the Project will result in an increase in country foods, as a socio-economic benefit (PR#96 p12). The Tłıchǵ Government concluded that the Project will not adversely affect harvesting and will improve food security (PR#216 p5; PR#96 p12). If the Tłıchǵ Government detects any adverse impacts to harvesting or animals, it indicated it has the authority to control harvesting by non-Tłıchǵ citizens.

Nonetheless, Tłıchǵ Government has brought forward mitigations to monitor conditions, listen to Whatì residents on their observations, and impose management solutions as needed. The Tłıchǵ Government lists the following commitments as ways to "...mitigate the potential loss of animals, reduced harvesting success, increased costs of food or change in diet" (PR#96 p68):

- Commitment 9: The Community Government of Whatì commits to forming a small set of community goals during the 2015 Strategic Planning process, and then monitoring progress towards goals over-time.
- Commitment 10: To minimize impacts on animals, the Tłıchǵ Government and developer will work together to investigate regulations and policies to manage cabin building and use of the area for hunting, trapping or fishing.
- Commitment 11: The Tłıchǵ Government will develop a mineral policy for Tłıchǵ Lands to guide future development in the region.

5.4. Review Board analysis and conclusions

5.4.1. Beneficial and adverse effects

Although the Review Board is required to make determinations about potential significant adverse impacts, it has also noted the potential beneficial impacts emphasized by the developer and the Tłıchǵ Government. It is clear from the evidence on the public record that the Community Government of Whatì and Tłıchǵ Government have put in considerable effort since the Project's inception to reduce the likelihood of future adverse impacts, and

have laid the foundation for Whatì to maximize the potential benefits from the Project. As the Review Board heard several times during the public hearing, the road represents a form of ‘hope’ for many residents of Whatì that will bring in a new era of productivity, opportunity and improved well-being. As stated by the Whatì SAO, Lisa Nitsiza, “An all-season road is a solution that will help advance our people and the journey to self-reliance and independence” (PR#273 p250).

Through their meaningful participation and engagement, the Tłıchǫ Government and Community Government of Whatì have provided an exemplary and thorough socio-economic assessment that involved the participation of a cross section of community members and reflected Traditional Knowledge and values. The developer has also engaged and participated with the Tłıchǫ Government and Community Government of Whatì in planning and preparing for this Project from an appropriately early point in project planning. This has resulted in a superior assessment of impacts to socio-economic well-being.

Having an all-season road permanently connect Whatì with the southern highway system will permanently change the community. It is likely to affect everything from whether people choose to stay or go, the types and quality of health care they receive, to how people practice their traditional way of life.

The Project provides opportunities and risks. On the one hand, the Project is likely to result in an overall benefit to the social and economic well-being of Whatì residents. On the other, it also has the potential for significant long-term impacts. It is for this reason that the EA was initiated. The Review Board is required to consider the potential of the Project to cause significant adverse impacts to the environment, which, under section 115 of the Act, includes the social, economic and cultural well-being of affected communities. The Review Board’s analysis of these potential adverse Project impacts is described below. Where the Review Board identifies likely adverse significant impacts, it has prescribed additional mitigation measures and suggestions that will serve to reduce the issues to manageable levels.

5.4.2. Permanent nature of road makes long-term adverse impacts more likely

Through the course of the EA, the Review Board has learned of the existing challenges in the community of Whatì, and the outstanding concerns of its residents regarding the

changes that an all-season road would bring. Unlike the anticipated benefits of the Project, the Review Board accepts that identified concerns are more likely to affect people who are already vulnerable in the community, who have less resilience, or ability to adapt to the changes an all-season road would bring. The Review Board finds this particularly true in the case of young women and for those dependent on the non-wage economy for food.

The construction and operation of an all-season road to a small and remote Aboriginal community represents an irreversible commitment to change. The Review Board notes that an all-season road to Whatì has been a topic of debate in the community for over 40 years. Past initiatives to build a road were twice turned down by local leaders, despite funding availability (PR#28 p40). This was partly due to Elders' concerns about wildlife, culture and safety (PR#7 Appendix B p44). The road is now considered more of a necessity by leadership, and support has shifted in its favor.

The gravity of this decision is captured in the following quotes from a concerned Whatì resident: "[w]hen you're asking for all-season roads, it's going to be there for as long as the lands will last" (PR#272 p140). As former Chief Isadore Zoe told the Review Board, "...this is biggest history's decision that we're going to be making today, not only for us, but our future generations to protect our lake, our land, our animals, our health, our community" (PR#272 p145).

The highway will permanently change the Community of Whatì. Residents generally support the idea of an all-season road but are concerned about the nature of this change. Many commitments and mitigations have been put forward to reduce Project-related adverse impacts. However, most of these come from using current programs and initiatives designed to deal with pre-existing problems. How effectively they will handle additional Project-related stress is unknown. Should some of the predicted adverse socio-economic impacts occur and the proposed mitigations do not work, additional adverse significant issues are likely.

The developer and parties have tried, through the course of this EA, to anticipate how change will appear. Despite best efforts, should the road be built, it will have consequences far into the future. The Review Board is tasked with anticipating this future and ensuring the health and well-being of the environment and those living in it are maintained.

The Review Board thinks it appropriate to adopt a long-term perspective when considering the nature and likelihood of impacts for the Project. As an irreversible project with

potential impacts on the long-term health and well-being of Whatì residents, the Project's exact adverse impacts are uncertain and have the potential to cause serious harm unless mitigated adequately. Where uncertainties have resulted in the Review Board having less confidence in the implementation and effectiveness of proposed mitigation measures, and the potential for serious harm exists, the Review Board has adopted the precautionary approach to its assessment of impact significance and mitigation below.

5.4.3. Adverse impacts anticipated to young women

The Review Board determines that adverse impacts are likely to occur to the health and well-being of young women because of additive impacts from the existing winter road season, increased vulnerability during the initial 'spike' years, and from adverse impacts associated with construction camps.

Additional adverse impacts are associated with the operations of the all-season road, from hitchhiking and risks associated with an increased number of outsiders travelling to and from the community. However, the evidence suggests that the anticipated benefits of the road combined with the mitigations and commitments made by the Tłıchǵ Government, Community Government of Whatì and developer to reduce adverse impacts will make young women less vulnerable and more resilient once the road is open for public use. The Review Board finds that adverse operational impacts to young women will be offset by overall improvements to the social health and well-being of young women in a community with an all-season road.

The Review Board finds it likely that adverse impacts to community well-being will occur during the construction phase of the Project. Impacts related to construction camps and an influx of money into the communities during the construction period did not receive much attention by the developer or the Tłıchǵ Government in this EA. The Review Board heard from the Tłıchǵ Government and Community Government of Whatì that existing conditions during the winter road period in the community of Whatì are at a critical level. The Review Board was convinced that any worsening of those conditions would result in reduced ability of health and social service providers (such as health nurses or the RCMP) to provide vital support for the community.

The Project is anticipated to bring many jobs into the region though, and to provide substantial employment opportunities for two to four years. During the construction phase, the health and social services in the Tłıchǵ communities is likely to have to contend with

the existing pressures experienced during the winter road period and the impacts that will be felt year-round from a well-paid temporary workforce with the substance abuse risks typical of an influx of money into a small community, and with additional social risks from construction camps near Whatì.¹ This additional pressure on local health and social service providers during the construction phase of the Project was not given sufficient consideration by the developer or the Tłıchq Government.

In the case of the Community of Whatì, the additional risks represented by an influx of money into the community represent an adverse impact to the health and safety of young women and to community cohesion. An additional adverse impact is predicted for young women from the proximity to construction camps. When combined with the existing pressures of the winter road season, the Review Board determines there is a likelihood for significant adverse impact to young women and community cohesion.

The Review Board is confident that many of the additional risks to community cohesion represented by the construction phase can be adequately managed by the developer, Tłıchq Government and Community Government of Whatì if they apply their respective commitments and mitigation measures to address the anticipated ‘novelty year’ spike in harmful behaviour in time for Project construction. However, the Review Board expects impacts related to the safety risks for young women to extend beyond the construction period. Measures below reduce these impacts.

5.4.4. Adaptive management to mitigate uncertain Project effects

The Tłıchq Government and Community Government of Whatì expressed several times to the Review Board their confidence that an all-season road would serve to reduce the seasonal harmful behaviours that adversely affect Whatì residents during the winter. The prediction that the opening of the road would result in a “novelty year” of increased harmful behavior (described as the “spike” in social issues) was the focus of much discussion at the technical session and public hearing. This includes serious problems like increased drug and alcohol abuse, absentee parenting, increased family violence and crime.

The Review Board appreciates the challenge of making reliable predictions to community health and well-being and commends the Community Government of Whatì and Tłıchq

¹ The risks associated with construction camps and the health and safety of young women are well documented in Section 5.3.6.

Government for engaging the bulk of its health and social professionals and leadership with its assessment. The Tłıchǵ Government also acknowledged the challenge of dealing with future uncertainties and realities. In addition to the commitments that the Tłıchǵ Government and Community Government of Whatì have made to address Project-related adverse impacts, the Tłıchǵ Government and Community Government of Whatì have also presented a robust adaptive management process. The Tłıchǵ Government described the adaptive management process of Tłıchǵ Government and Community Government of Whatì in its technical report, closing argument and information request response (PR#216 pp21-22; PR#284 p15; PR#96 pp52-55; PR#126 pp14-15). The Review Board agrees that this process will serve to identify undesirable change in a timely fashion and provide governments with sufficient information to act on. Absent in the Tłıchǵ Government's adaptive management process is a description of how the Tłıchǵ Government will communicate its efforts and their successes and challenges to the public. The Review Board finds the lack of a clear public reporting mechanism a gap in the adaptive management process.

The Review Board accepts that the programming and initiatives in place by the GNWT will complement the efforts being taken by the Tłıchǵ Government and Community Government of Whatì to manage potential impacts to community well-being. The Review Board is encouraged by the GNWT's *Mind and Spirit 2016-2021 Strategic Framework*. The Review Board understands that the GNWT will use this framework as a filter for all government health and wellness initiatives and programs to ensure they are synchronized and sensitive to the cultural and mental health needs of northern residents.

In recent EAs, the Review Board has outlined a comprehensive adaptive management process that developers must follow as part of their mitigation measures. This includes reporting on the challenges that have been experienced, on the accuracy of the impact predictions, and on the success of mitigation measures to adequately manage adverse Project-impacts. Where surprises have occurred, or mitigation measures have not functioned as intended, the developer must also describe their efforts to understand and address the challenge. Appendix B of this report describes adaptive management requirements referenced in the measures.

The Review Board determines public reporting of the success of the commitments and mitigations made by the GNWT and Tłıchǵ Government is necessary to ensure public accountability for promises made during this EA. This is consistent with the Review Board's measures to developers and governments in previous EAs.

5.4.5. Wording of Tłıchq Government commitments

While the Review Board believes that the Tłıchq Government and Community Government of Whatı have put forward meaningful commitments to address Project-related impacts, it has concerns about certain aspects of the wording of some of the Tłıchq Government and Community Government of Whatı's commitments.

Nine of the 13 commitments provided by Tłıchq Government, as listed in its Technical Report (PR#216 pp29-31) have non-binding, indefinite or unclear wording. For example:

- Commitment 1 is intended to provide necessary additional support to enforcement agencies in Whatı during the novelty year period, but the commitment stops at promising the funding and position to do so.
- Commitment 2 identifies a need for on-the-land addictions treatment, but does not commit to providing it.
- Commitment 3 discusses the possibility of lifting the alcohol prohibition in the community of Whatı because it has not succeeded in reducing alcohol-related challenges. However, the commitment uses subjective language "would like to review the possibility of revisiting the prohibition ban", which provides no certainty of resulting actions.
- Commitment 4 describes a future ideal of more business opportunity. The commitment provides that the Tłıchq Government 'might' put additional emphasis on economic development issues.
- Commitment 5 describes regular training that the Community Government of Whatı and residents have, but provides no indication of specific training it will provide to help reduce adverse impacts.
- Commitments 6 and 7 describe initiatives and partnerships that the Community Government of Whatı will continue to participate in, but provides no corresponding promise to act on the findings from those partnerships.
- Commitment 9 discusses the establishment of community goals to promote community well-being. No goals are referenced in the commitment that relate to reducing project-identified adverse issues.
- Commitment 10 relates to the development of regulations and policies to manage land use and renewable resources, but commits only to investigate the need for regulations and policies, and not to specifically develop and implement them.

The listed commitments have few details about how they will work, when they will start, or how long they will continue. Financial estimates of the Tłıchǫ Government's proposed mitigation measures indicate that four of the 13 measures listed require additional funding. The remaining nine measures are covered through existing budgets or by the GNWT, suggesting they are pre-existing initiatives (PR#96 pp78-79). In some cases, the commitments or mitigations were not connected to an obvious impact or pathway of effect. For some commitments this has been cleared up during the EA. For others, the reader must interpret their understanding based on their knowledge of the Project and the goal the commitment is listed under. The lack of detail makes it difficult for the Review Board to have confidence in the effectiveness of the proposed efforts.

The Tłıchǫ Government clarified during the technical sessions and public hearing that its commitments would apply as long as the issues remained. The Tłıchǫ Government also clarified the stability of the programming and resources required for implementing the commitments, confirming that the commitments were not contingent on future financial benefits anticipated by NICO mine, and that the Tłıchǫ Government had sufficient core funding to cover the expenses (PR#273 pp146-148).

The Review Board recognizes the efforts done by the Tłıchǫ Government and Community Government of Whatì to proactively manage community well-being and resilience. The Review Board is convinced that these efforts will serve to reduce any unexpected changes in the health and well-being of vulnerable groups that might come about through the construction and early operation of an all-season road. The Review Board recognizes the various programming initiatives of the GNWT and Tłıchǫ Government, as well as the commitments made by Tłıchǫ Government and Community Government of Whatì.

The Review Board is confident that the Tłıchǫ Government will prove successful in reducing identified project-related adverse impacts, but lacks confidence in the mitigative effectiveness of Tłıchǫ Government's commitments with non-binding, indefinite or unclear wording. The Review Board determines that fulfilling the intention behind these mitigations is necessary to prevent any unanticipated adverse impacts to vulnerable groups or impacts that might arise through an increase in harmful social behaviour. The Review Board is also convinced that, if these mitigation measures not be in place and acted upon, there is a likelihood for a significant adverse impacts to community well-being.

5.4.6. Continued engagement to reduce public concern

In considering the development of the all-season road, the Review Board is faced with the permanent nature of the Project and future uncertainties regarding interactions between the Project and Whatì residents. The Review Board reflects on the base condition of the Community of Whatì and notes the regrettable trend of social challenges that already occurs on a seasonal basis. While the Review Board can appreciate the logic that an all-season road should, with time, “flatten out the peaks” of these harmful behaviours, it remains concerned about the result if the assumptions do not hold true – what if the “novelty year” becomes normal life, or what if funding to support Project-related commitments is no longer available?

The Review Board notes that increased anxiety of mothers and grandmothers was described by the Tłıchǵ Government as a residual impact that was largely unavoidable and natural. The Review Board is concerned that issues of anxiety were not considered in a larger context, beyond simply parents worrying over their children. The Review Board notes the high degree of interest and concern expressed by members of the public in Whatì at the scoping session and during the public hearing. Those expressions of concern about what the road might bring are a source of stress for individuals, families and, by extension, the community. This stress results in anxiety and directly affects the sense of community cohesion and the bonds that exist amongst residents of Whatì. The Review Board notes that community cohesion was one of the community-identified strengths that contribute to its resilience (PR#29 p4). Stressors that affect the sense of community cohesion make Whatì more vulnerable to change.

The Review Board found a high degree of concern from the perspective of youth, who clearly articulated a general fear of what a permanent road would do to their social and cultural well-being.

The Review Board also notes the frequent messaging of Elders and residents at the public hearing calling for continued talks and discussions. There is a parallel between those shared comments and the Tłıchǵ Government’s vision of “In Tłıchǵ Unity”. The Tłıchǵ Government’s 2013-2017 Strategic Framework and Intentions document is entitled In Tłıchǵ Unity (PR#271). The importance of unity is described in several ways in the document (PR#271 p3):

Our elders have always spoken of the importance of unity. Unity speaks to the nature of our relationships, of seeing ourselves as connected and interdependent with our land and the

animals, our family and friends, our communities, and with those who live around us. Unity also speaks to our relationship with our elders who have come before us.... Unity also speaks to working together as a way of living and working together as one for our common good...

The Review Board received frequent messaging from Elders and members of the public during the public hearing on the importance of understanding what is happening with the Project. The Review Board also heard many satisfied comments from the public on hearing the efforts and works that the Tłchq Government, Community Government of Whatì and developer have put forward in considering this Project. The Review Board is confident that public concern could be reduced and community cohesion improved by frequent public dialogue and in-person information sharing sessions.

5.4.7. Project emergency response capacity

An all-season highway to Whatì will allow permanent travel between Whatì and southern entry points. Whatì residents will travel the road year-round, and outsiders are also expected to visit the community; initially for work, and as the resource develops, for tourism opportunities. Future resource development projects are anticipated with the construction of the Project, which would further increase the amount and size of traffic on the road. Accidents are unavoidable over the long-term, and the Tłchq Government and developer acknowledge the dangerous driving conditions anticipated during the darker fall and winter period. The Review Board has heard of the risk of accidents on the existing winter road, and of the dangers of wildlife collisions, particularly from bison. Whatì is close-knit small community, and the impact of a serious accident could be severe.

Despite the risk for greater and more serious accidents with a permanent road, no consideration has been given to traffic accident emergency response in the original Project description. Over the course of the EA, the Review Board heard from both the Community Government of Whatì and the Community Government of Behchokò on their capacity to address road side accidents. Neither the community of Whatì or Behchokò currently have the trained personnel or equipment required to respond to road side emergencies, but both have expressed an interest in having the capacity to respond.

The Review Board understands that emergency response capability is the responsibility of the GNWT's department of Municipal and Community Affairs (GNWT-MACA). Through the course of the EA, the developer has made commitments with the Tłchq Government and Community Government of Whatì to advance the issue of road safety and emergency response. The developer described their progress in their closing arguments. Notably, the

GNWT will complete a *Ground Ambulance and Highway Rescue Action Plan* in 2018 and develop it with the Community Government of Whatì and Tłıchǵ Government.

The Review Board believes that the GNWT is on the right path to managing emergency response capabilities along the Project. The Review Board is concerned that the Community Government of Behchokò has seemingly been omitted as a key stakeholder in the discussion. The Tłıchǵ Government and Community Government of Whatì have expressed increased mobility between Whatì and Behchokò as a benefit of the Project. More family visits, sporting trips and cultural events have been cited and are anticipated between the communities. The Tłıchǵ Government's commitment number 13 specifically targets increased cooperation and collaboration between the Community Government of Whatì and Community Government of Behchokò to "ensure that any changes and impacts are being collectively considered, addressed and managed" (PR#216 p31). An increased risk to the number and severity of roadside accidents represents a serious impact of the Project. The Review Board concludes the Community Government of Behchokò's participation in discussions on roadside safety is necessary to ensure that emergency response actions are "collectively considered, addressed and managed" responsibly.

5.4.8. Population sustainability

The Review Board notes the poor state of housing in the Community of Whatì with respect to housing shortages and core need of repairs. The Review Board heard there is an existing two to four-year timeframe for the construction of a new home. Such a timeframe would not allow for housing needs to be met for a growing population. The Review Board accepts that the initiatives undertaken by the Community Government of Whatì and Tłıchǵ Government to develop a Local Housing Organization and a joint Working Group on Housing with the GNWT will serve to improve the prospects of developing practical solutions to improve the housing situation in Whatì. The Review Board agrees that an all-season road would also serve to reduce cost of freight and increase access to labour and materials. The Review Board agrees with the Tłıchǵ Government that this would result in faster and cheaper housing solutions for the community. Coupled with the Local Housing Organization and Working Group, the Review Board finds the Project will have no adverse impact on community housing in the short-term and will serve to improve housing conditions in the long-term.

On the issue of population change, the Review Board finds there is little evidence to support a substantial change in population because of an all-season road. The Review

Board accepts that a permanent road is likely to have a positive impact on population growth by offsetting elements of “brain drain” currently affecting the Community of Whatì. The Review Board notes though, that this growth or change in population is only likely to occur when future mining projects open in the region. Until that time, the existing trend of out-migration by job-seekers and parents of young children is likely to continue and may increase.

The Review Board does not believe such a scenario has been given adequate consideration by the Community Government of Whatì or Tłıchǵ Government. The Review Board notes that increased out-migration in conjunction with increased visits from outsiders could have a significant impact on community cohesion. It will be important for the Community Government of Whatì and Tłıchǵ Government to anticipate a future scenario where a road exists without a mine.

With regards to a scenario where limited population growth does occur because of Project operation and construction, the Review Board finds the Project will not affect the capacity of local infrastructure. The Community of Whatì has confirmed its sewage lagoon and water treatment plant can accommodate construction activities and a population growth. The GNWT indicated that additional solid-waste facilities could be built, if needed.

The developer has further indicated that unanticipated growth scenarios stemming from Project-related effects will result in a forced growth scenario. In such a case the GNWT will supply necessary funding to the Tłıchǵ Government, Community Government of Whatì and TCSA to accommodate an increased demand. The Review Board is also confident that these issues and challenges will be identified and addressed in the Whatì Inter-Agency meetings and through the various partnership agreements the Community Government of Whatì and Tłıchǵ Government have entered into.

While the construction and operation of the road itself may not be cause for concern for significant in-migration, it is opening the region for further potential development both in terms of future growth scenarios and tourism (discussed in Sections 5.4.8 and 5.3.9). The extent of population growth in response to future development scenarios, as well as the subsequent strain this growth stands to place on existing services and infrastructure in Whatì is unknown. The Tłıchǵ Government and Community Government of Whatì would benefit from undertaking in-migration modelling based on future “road alone” and “road and mine” development scenarios.

To consider how the road will influence future population levels in the Community of Whatì, the Review Board concludes that the Tłıchǫ Government and Community Government of Whatì should undertake in-migration modelling based on future development scenarios with and without the NICO mine, in partnership with the developer and other relevant organizations. This would help to prepare for future changes in population in both “road alone” and “road and mine” scenarios, and improve ongoing community resiliency and planning work by the Tłıchǫ Government and Community Government of Whatì.

5.4.9. Economic modelling

The Project represents a significant investment into the Tłıchǫ region. The Review Board accepts that the Project is likely to cause beneficial impacts on the short- and long-term economic well-being of the Tłıchǫ region and to the community of Whatì in particular.

The developer and Tłıchǫ Government identified economic opportunities associated with the Project. The Project is estimated to cost approximately \$150 million dollars, with the majority of that money flowing through northern businesses (depending partly on the selection of P3 operator). A portion of the employment and business opportunities would remain in the Tłıchǫ region and serve to boost employment rates and overall salaries. The Tłıchǫ Government and Community Government of Whatì are preparing a tourism development strategy to create a secondary industry for travellers to the region.

The 2015 Nichols report is outdated in that it assesses an earlier version of the project, allows for a higher level of GNWT equity, and incorporates inaccurate cost of living factors. The report also assumes that the developer will construct and maintain the road, which is no longer the case. In the case of the earlier project design and cost of living assumptions, the report’s calculations are more conservative. However, the lower level of financing and the switch to a private sector builder and operator would likely result in a reduced benefit/cost outcome.

The Review Board is concerned that some of the economic modelling for the Project was not updated for the EA. Economic risks were identified with the construction and maintenance of the Project. The economic valuation of the Project, at a 1.01 cost/benefit ration, only just rationalizes the developer’s decision that the Project is in the net benefit for the Northwest Territories. The developer has made it clear that economics are not a primary motivation for this project.

The Review Board is concerned that having the Project built and maintained by the private sector will reduce the economic valuation, making the financial success of the Project increasingly dependent on the NICO mine and future resource development projects developing. Should the NICO mine not move forward or low product prices result in lower than expected returns on the NICO mine, the Review Board notes that the costs for the Project may be shouldered by residents outside of the Tłıchǵ region. Conversely, the Tłıchǵ region stands to receive most of the northern financial benefits associated with the Project.

The Review Board agrees with the Tłıchǵ Government that the Project stands to leave a positive economic legacy to the Community of Whatì and to the Tłıchǵ region. This legacy will come in the form of reduced costs of living for Whatì residents, reduced freight costs, the growth of secondary industries like tourism, increased potential for future mining and exploration work, and the development of valuable job skills and work experience for those employed by the Project.

The Review Board also believes these benefits will serve to strengthen the community's resilience by promoting the community's independence and providing new opportunities and hopeful prospects for the community's future. The Review Board expects this to contribute positively to the socio-economic well-being of the community.

5.4.10. Non-wage economy

Section 115 of the *Act* requires the Review Board's to consider the importance of conservation to the well-being and way of life of Aboriginal peoples of the Mackenzie Valley. The traditional, or non-wage, economy is strongly linked to well-being.

The Review Board has heard from the Tłıchǵ Government that the Project is likely to have a positive impact on harvesting by improving access to areas that are otherwise harder to get to. In turn, the Tłıchǵ Government expects this to result in greater harvesting success and more time on the land for Whatì and Behchokò residents. The two benefits that the Tłıchǵ Government predicts will offset any loss to the traditional economy – improved access and improved food security – will not apply until the road is operational. Adverse impacts to harvesting and food security will likely begin before that.

The developer acknowledged that during construction, many people may be employed by the Project and would spend less time out on the land harvesting. This would reduce the amount of country foods coming into the community as soon as construction starts, and

therefore reduce the amount available for Elders and people unable to harvest for themselves. Many of these individuals depend on country foods for their subsistence. The anticipated improvement in food security from store-bought foods that are healthier and cheaper (than store-bought foods are now) will be less beneficial for these individuals.

Elders and individuals who do not stand to benefit from Project-related jobs or work opportunities need country foods to offset the costs of store-bought foods. The anticipated cost savings and reduction in cost of living will not occur to Whatı residents until after the road is open for traffic. Improved access to harvesting will also not occur until the road is complete. Those dependent on the shared country foods would be vulnerable during the construction period. The Review Board concludes that during the construction period the Project is likely to have an adverse impact on Elders and those dependent on country foods for their subsistence.

Once the road is operational, the Tłıchǫ Government's predictions on project benefits and improved access will apply. However, the Review Board disagrees with the Tłıchǫ Government's conclusion that improved access will result in better harvesting success. The Traditional Knowledge received for this EA and comments from Elders predict that the road will have the long-term effect of reducing overall animal populations in the Project area (see Chapter 9 for a detailed analysis of this argument). The Review Board has heard how animals are likely to be scared away from the disturbance of the road, from increased use of the area by people travelling the road, and from increased competition from bison. Animals are also likely to have higher mortality around the road because of increased opportunistic hunting and predation.

The Review Board finds it likely that the number of available animals to harvest, and the success rate of harvesting, might improve initially. But the evidence on the record, including Traditional Knowledge from Whatı (PR#28 p37; PR#215 p35), scientific evidence (PR#282 p5; PR#281 p2; PR#218 p25) and comparisons of road impacts in other areas (PR#28 p33), indicates that a road is likely to reduce the number of animals available to be harvested in the area over the long-term. The Review Board therefore finds that the Project is likely to permanently and adversely affect the success rate of harvesters to harvest key mammal species in the Project area.

Less country foods will create greater dependency on store bought foods. For those that cannot afford it, this inability to rely on the traditional economy represents a significant

long-term adverse impact. Those most dependent on harvesting for their subsistence and to offset store-bought foods are likely to be adversely affected by an all-season road.

The Review Board believes that trapping will also be adversely affected by an all-season road. The developer's conclusion that trappers have already been compensated following the fires and no longer trap in the area failed to consider what would happen when the burnt area regenerates, animals return, and trappers would otherwise return to their traditional trails. The Traditional Knowledge received for this EA indicates that furbearers are likely to move away from the Project area or have reduced numbers once the road opens up to traffic. The Review Board agrees that improved access could result in more Tłıchǵ people trapping in their spare time along the road. However, the Review Board believes that the success rate of those that depend on trapping for their income and subsistence will be reduced over time.

The Tłıchǵ Government has mentioned the existence of a *Traditional Meals on Wheels* program and other efforts to support Elders and those dependent on country foods for subsistence. The demand for and resourcing of such programs would need to be monitored and scaled appropriately during all phases of the Project.

Over time, the Review Board anticipates a reduction in harvesting and trapping success will contribute to greater dependence on the wage-economy and store-bought foods. Because the road is permanent, it is likely that the road will alter the reliability and role of the traditional economy for the community of Whatì over the long term. The Review Board finds that the additive impacts of the Project will result in a permanent decrease in productivity to the traditional non-wage economy.

5.4.11. Review Board conclusions

Considering the combined impacts of all of the above collectively, the Review Board concludes that the Project will have a short-term significant adverse impact on community well-being during the construction and initial operation period of the road unless additional mitigation occurs. Over the long-term, the Review Board concludes that the Project will improve the overall well-being of the community and its residents.

In the short-term, the Project is likely to increase harmful behaviours, which are already at critical levels during the winter ice-road period. This will likely strain health and social services beyond their capacity to address local needs. The harmful behaviours will

disproportionately affect the health and safety of young women and are likely to pose a risk to the population for an unknown period of time following the opening of the road.

In the short-term, construction may result in less country foods and more dependence on store-bought foods. Once the road is operational, reductions in cost of living and food cost will begin to offset any reduction in availability of country foods.

Once life with an all-season becomes normal, the Review Board agrees that the road will bring substantial benefits to residents and the Community Government of Whatì in the form of reduced freight, improved mobility and access to specialized services, improved sporting and educational opportunities for youth, and an overall reduction in harmful behaviours in the community. Adverse impacts to community well-being are expected from the risk of increased outsiders travelling to and from the community, and from young women hitchhiking along the road.

The Review Board concludes that the significant adverse short-term impacts from the project can be mitigated through the addition of the measures below. The Review Board has provided additional suggestions that to further reduce the potential adverse impacts of the Project and maximize its benefits.

In the Review Board's opinion, the Tłıchǫ Government and Community Government of Whatì are the most appropriate groups to carry out many of the requirements below. They have the capacity and interest to effectively monitor and mitigate the impacts of the development. The Review Board recognizes that the impacts result from the developer's proposed actions, which the follow measures are intended to mitigate. The developer will be required to provide support for the monitoring and management that is best carried out by the Tłıchǫ Government and Community Government of Whatì. Any measures to the Tłıchǫ Government and the Community Government of Whatì are intended to ensure that significant impacts of the Project are mitigated.

5.5. Measures and suggestions

5.5.1. Monitoring and managing adverse health and well-being impacts

The Review Board heard from the Tłıchǫ Government on how it, along with the Community Government of Whatì and the Whatì Interagency Committee, intends to respond to impacts to community well-being. The Review Board appreciates the information the Tłıchǫ Government has provided on the topic and considered it in the drafting of this measure.

The Review Board found that the Project is likely to adversely affect community well-being by adding stress to the local health and social services of the Community of Whatì during the construction phase of the Project and during the initial operation period of the road. The following two measures are intended to address the inherent uncertainties in the assumptions in the developer's and Tłıchǫ Government's predictions on how the Project will affect Tłıchǫ citizens. A timely understanding of how the road influences daily life and well-being in the communities is critical for developing an effective governance response to undesirable impacts. Developing this understanding requires deliberate focus on connections between the project and the people affected by it, as well as tracking these relationships over time. The following two related measures are intended to strengthen the adaptive management system described by the Tłıchǫ Government and provide more confidence that the road will not result in significant adverse long-term impacts to the Community of Whatì. Understanding how the road is influencing daily life and well-being in the communities in a timely fashion is critical for developing an effective governance response for any undesirable impact. Where the Project is likely to cause significant adverse impacts to community well-being, the Tłıchǫ Government and the Community Government of Whatì will be responsible for actions to reduce or avoid the impacts, and the developer will provide them with support and funding to do so.

The measures below are also intended to address concerns in the Community of Whatì about the nature of change the Project will have and increase confidence that sound management and governance actions are being taken. Parts of the measures are intended to address the Project's effects on harvesting success in the Project area and potential impacts for those dependent on a traditional diet for their health and way of life. They are intended to help ensure that people dependent on country foods for their subsistence, and who rely on it to offset the costs of store-bought foods, are not adversely affected by the Project.

Measure 5-1: Developer's support of monitoring and adaptive management of adverse health and well-being impacts
5-1, Part 1: Monitoring adverse health and well-being impacts to the Community of Whatì
To inform mitigation of significant cumulative and project-specific adverse impacts on the health and well-being of the Community of Whatì, the developer will support the Tłıchǫ Government and Community Government of Whatì in the monitoring and

evaluation of direct and indirect impacts of the Project on the health and well-being of the Community of Whatì. These will include:

- the anticipated initial spike in harmful behaviours associated with increased access to drugs and alcohol;
- traffic accidents on the road;
- change in safety of young women and other vulnerable groups; and,
- change in harvest success rates and availability of country foods in Whatì.

Monitoring will meet the requirement of Appendix C.

5-1, Part 2: Reporting

The developer will support the Tłıchǫ Government and Community Government of Whatì in preparing an annual progress report on their efforts to mitigate impacts on health and well-being to the Community of Whatì.

5-1 Part 3: Adaptive management and re-evaluation

The developer, in collaboration with the Tłıchǫ Government and Community Government of Whatì, will support the adaptive management of health and well-being impacts, following guidance in Appendix B.

The developer will support the Tłıchǫ Government and Community Government of Whatì, in the monitoring, engagement, reporting and adaptive management described in this measure for each year of construction and for a minimum of ten years of Project operations.

Measure 5-2: Tłıchǫ monitoring, engagement and reporting of adverse health and well-being impacts

5-2, Part 1: Tłıchǫ monitoring of adverse health and well-being impacts

The Tłıchǫ Government and Community Government of Whatì, with the support of the developer, and in collaboration with the Tłıchǫ Community Services Agency, will establish and implement a framework to monitor and evaluate health and well-being impacts associated with the road, and will adaptively manage health and well-being

impacts as described in Measure 5-1 and following guidance in Appendices B and C, for each year of construction and for a minimum of ten years of operations.

Following ten years of Project operations, the Community Government of Whatì and Tłchq Government in collaboration with the developer, will re-evaluate the need for, and frequency of, monitoring, engagement, reporting and adaptive management.

If the monitoring of harvest success rates and availability of country foods in Whatì (in Measure 5-1, Part 1, above) indicates a declining trend in harvest success and the consumption of country foods, the Tłchq Government and the Community Government of Whatì will develop and implement a strategy to improve availability of country foods for those most affected.

5-2, Part 2: Public engagement

The Tłchq Government and Community Government of Whatì, with the participation of the developer, the P3 operator and the Tłchq Community Services Agency, will meet with the residents of Whatì at least once per year to discuss:

- a) priority health and well-being impacts at the individual, family and community level related to the Project;
- b) the effectiveness of programs or mitigations used to address these impacts; and,
- c) the need to adjust programs or implement additional mitigations.

5-2, Part 3: Reporting

The Tłchq Government and Community Government of Whatì, with the support of the developer, will prepare and make publicly available an annual progress report on their efforts to mitigate impacts on health and well-being to the Community of Whatì. The report will describe engagement, current management and plans for future adaptive management.

The findings of the report will be presented to the residents of Whatì, provided to the Whatì Inter-Agency Committee and provided to the Tłchq All-Season Road Corridor Working Group (see Measure 14-3).

The Review Board provides the following suggestion of appropriate socio-economic indicators to track.

Suggestion 5-1: Socio-economic monitoring indicators

The socio-economic indicators monitored by the developer and Tłıchǫ Government should include:

- population changes and composition
- population mobility (especially youth mobility)
- perceived influence of outsiders on community well-being
- changes in substance dependency rates
- changes in employment, unemployment and participation rates
- changes in industry sectors (especially tourism)
- changes to the cost of living (such as food, housing, travel and recreation) including comparisons to Behchokǝ, Yellowknife and Edmonton
- change in physical safety of young women
- changes in role of traditional or non-wage economy
- changes in language use
- changes to the perception of the land
- changes in time spent pursuing traditional activities

When monitoring changes to the safety of young women (as required in Measure 5-1) monitoring should include impacts from construction camps and from the new road, and evaluate changes in rates of sexual harassment or abuse, STIs and teen pregnancy.

When monitoring changes in harvest success rates and availability of country foods in Whatı (as required by Measure 5-1) the Tłıchǫ Government should collaborate with harvesters and those in the community most dependent on harvested foods (such as Elders who no longer hunt but depend on the food shared by others) about topics such as:

- How much of the harvester's diet came from harvesting prior to road?
- How much of the harvesters' diet came from Project-affected area prior to the road?
- How much of their current diet comes from harvesting?
- How much of their current harvest diet comes from Project-affected area?
- Individual observations on how road has changed harvesting

The Review Board suggests the developer, Tłıchǵ Government and Community Government of Whatı should look at the monitoring for the Inuvik to Tuk highway and the Inuvialuit regional monitoring indicators network as a possible source of relevant additional socio-economic indicators to monitor.

5.5.2. Work camps and safety of young women

This measure is intended to reduce likely significant cumulative impacts to the health and safety of young women by creating a safer workplace and culture for women. Drug and alcohol use and work culture are two leading factors responsible for sexual assaults and harassment. The measure aims to contribute to an overall reduction in drug and alcohol use, simultaneously making the work environment safer for women while promoting women's health and safety issues at work and in communities near work camps (Whatı and Behchokǵ).

This measure builds on the commitment from the developer and the Tłıchǵ Government to discuss work safe policies for women, and ensure that the successful P3 operator will have health and safety policies that match those of the Tłıchǵ Government, GNWT and industry best practices. The following measure is based on industry best-practices. The Review Board notes that the commitments by Fortune Minerals described on page 161 in the Report of EA for the NICO Mine, specifically with respect to women's safety, gender sensitivity and gender equity, are an example of good practice from the same region.¹

Measure 5-3: Safety of young women in relation to work camps

To mitigate the Project's impact on the physical and mental health and safety of women, the developer will require that the successful P3 operator has gender appropriate and gender-specific policies in place that promote a safe, respectful and inclusive environment for women at work and in communities near work camps. The developer will consult with the Tłıchǵ Government and Community Government of Whatı in establishing core elements of these policies.

The developer and the Tłıchǵ Government have committed to work together to develop work safe policies for women. The Review Board found the report *Indigenous Communities and Industrial Camps: Promoting Healthy Communities in Settings of Industrial Change*

¹ Pages 142 and 143 of the same Report of EA includes good examples of developer's commitments regarding community cohesion and promoting language use.

(PR#269) submitted by the Tłıchǫ Government to be very informative on the dangers and risks posed by industrial work camps. The report had many practical and valuable suggestions and recommendations on preventative actions to reduce impacts from work camps near communities. The Review Board is of the view that a consideration and implementation of the report's applicable recommendations would reduce risks to women from the construction phase of the Project.

Suggestion 5-2: Work safe policies for women

The Tłıchǫ Government and the developer should include, to the extent feasible, the suggestions and recommendations put forward in the report <i>Indigenous Communities and Industrial Camps: promoting healthy communities in settings of industrial change</i> (PR#269) when developing work safe policies for women.

5.5.3. Safety and awareness training

The following measure requires the P3 operator to have employee awareness training and policies in place to reduce impacts from workcamps and impacts to the safety of young women.

Measure 5-4: Employee awareness training and policies

To promote a positive, safe and inclusive work environment, the developer will ensure that the P3 operator:

- | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">• establishes a workplace environment that prevents assault, harassment and racism;• has a zero-tolerance harassment policy for racial or sexual discrimination; and,• requires employees to take a training course designed to promote cultural and gender awareness. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The developer will develop appropriate training materials, in consultation with the Tłıchǫ Government and the Tłıchǫ Community Services Agency, that reflect the factors that increase risks of sexual assaults on Aboriginal women. The developer, the Tłıchǫ Government and the Tłıchǫ Community Services Agency will coordinate course delivery. The developer will fund the training course.

The following measure requires a grievance mechanism to improve the company's awareness and relationship with affected communities. This is to ensure the P3 operator is

ready to be held accountable for grievances and to confront, acknowledge, solve and learn from problems. Timing and frequency of the public engagement sessions described in the measure below should be determined in consultation with the communities.

Measure 5-5: Community engagement and grievance mechanisms

The developer will hold public engagement sessions with the Communities of Whatì and Behchokò to discuss project-related community concerns.

The developer will have a camp grievance mechanism and a community grievance mechanism that allow individuals and communities to raise concerns in a timely and open manner. These will be in place before the start of Project construction.

The Review Board finds that the recommendations in *Indigenous Communities and Industrial Camps: promoting healthy communities in settings of industrial change* for reducing hitchhiking to minimize impacts to the safety of young women are useful and applicable to the Project (PR#269 p33).

Suggestion 5-4: Shuttle service for employees

To reduce the number of personal vehicles using the road and improve safety by deterring hitch-hiking between communities, the Tłchq Government and developer should explore options for shuttle service between communities and the worksite for employees and ensure that the P3 operator implement any chosen option.

The Review Board suggests that improved cellular coverage would increase safety of road users on the Project.

Suggestion 5-5: Cellphone coverage for increased safety

To improve safety of road users, the developer and the Tłchq Government should collaborate in efforts to extend cell coverage to include the length of the road prior to its operation.

5.5.4. Changes in Wekweètì and Gamètì

The Project will extend the winter ice road season to the communities of Wekweètì and Gamètì. The Review Board heard how the Community of Whatì suffers from significant increases in harmful behaviour during its winter ice road season, and that its health and social service agencies are stressed during that period beyond capacity. The Review Board has expressed concern that the extension of time for the ice road season to Wekweètì and

Gamètì might result in an additional level of strain on the health and well-being of residents and service providers in those communities.

The Tłıchǵ Government has expressed confidence that the Inter-Agency Committees in Wekweètì and Gamètì are well equipped to detect and respond to any such change. The Review Board recommends that those Inter-Agency Committees explicitly monitor for adverse changes associated with an extended ice road season, and proactively prepare for such an eventuality. Timing and frequency of the public engagement sessions described in the suggestion below should be determined in consultation with the communities.

Suggestion 5-6: Evaluate changes to Wekweètì and Gamètì social service demands

The developer should work with the Tłıchǵ Government and the Inter-Agency Committees of Wekweètì and Gamètì to evaluate whether the extension of the ice road season to the communities of Gamètì and Wekweètì results in additional resource capacity issues for the health and social services supporting those communities. The developer should hold public engagement sessions in Wekweètì and Gamètì to discuss project-related community concerns.

5.5.5. Preparation of health authorities and offices

The recommendations of the report *Indigenous Communities and Industrial Camps: promoting healthy communities in settings of industrial change* regarding adequate resourcing of health and social service providers are applicable to the Project (PR#269 p42). The Review Board believes the following suggestion will complement the ongoing efforts of the Tłıchǵ Government, the Community Government of Whatì, TCSA and the RCMP to promote community health and safety.

Suggestion 5-7: Preparation of local health authorities

The Tłıchǵ Community Services Agency will make sure that its staff in the communities of Whatì and Behchokǵ have nursing policies in place to respond to sexual assault and harassment cases, mental health issues, increases in drugs and alcohol abuse and other impacts that may come from or be worsened by industrial camps. Nursing staff should be equipped with adequate equipment and materials to provide timely care, treatment, and investigation for assault cases. This includes rape kits or other tools necessary to address and treat cases of rape or sexual assault.

5.5.6. Emergency response services

The Project is likely to increase the frequency and severity of road-side accidents¹. The Review Board believes that emergency response capability in the communities of Whatì and Behchokò is necessary to reduce the response time of emergency vehicles to accidents along the road and to improve public safety along the road. The Government of the Northwest Territories is working towards the development of an effective ground ambulance and highway rescue with the Tłıchǫ Government, the Tłıchǫ Community Services Agency and the Community Government of Whatì. The Review Board concludes that the Community Government of Behchokò is a necessary partner in these initiatives to reduce the severity of roadside accidents on the southern portion of the all-season road.

Measure 5-6 Include Behchokò in accident response planning
The Government of the Northwest Territories will develop and implement an effective ground ambulance and highway rescue action plan along the road that will be designed in collaboration with the Tłıchǫ Government, Community Government of Whatì, and Community Government of Behchokò.

5.5.7. Public transportation to reduce vulnerability barriers

Allowing affordable and convenient access to Behchokò and Yellowknife would remove some of the impulse for hitchhiking by youth and reduce mobility barriers for those who have no access to a personal vehicle or money to afford a flight. To ensure all residents of Whatì can benefit from improved access to health and social services, family and less expensive goods in Behchokò or Yellowknife, the Community Government of Whatì should explore periodic public transportation or supply runs. This is one way the Community Government of Whatì should look into reducing disparities created by the road that make it difficult for vulnerable people to benefit from the Project.

Suggestion 5-8: Exploration of public transportation to improve mobility to vulnerable groups
The Community Government of Whatì should explore public transportation or supply runs to allow affordable and convenient access to Behchokò and Yellowknife, to reduce hitchhiking and mobility barriers for those without access to a personal vehicle.

¹ See section 5.4.7 for details.

5.5.8. Prioritizing Northern hiring

Section 115 (1)(b) of the *Act* requires the Review Board to “have regard to... the protection of the social, cultural and economic well-being of residents and communities in the Mackenzie Valley”. Economics will likely be a primary factor in the developer’s selection of the P3 contractor for the Project, but the Review Board notes that the developer will also consider how local labour and businesses will be sourced in the developer’s selection. There is considerable uncertainty over the local economic opportunities that will result.

The measure below requires the developer to include Northern hiring requirements within its contract with the P3 operator. It is intended to mitigate the potential loss of employment opportunities of Northerners, and of Tłıchǵ citizens in particular, who currently maintain the winter road. This measure will contribute to overall community well-being and is a part of mitigating the combined significant impacts of the Project.

Measure 5-7: Prioritize Northern hiring

The developer will prioritize Northern hiring, and Tłıchǵ citizen hiring in particular, in its contract with the P3 operator.

Suggestion 5-9: Prioritize using local contracting, materials and equipment

The developer and P3 operator should prioritize the use of available local contracting, materials and equipment for the Project.

5.5.9. Training and education for the Project

The Review Board notes the developer’s work to develop training opportunities. The suggestion below encourages ongoing efforts in this area.

Suggestion 5-10: Project training and education initiatives for Tłıchǵ citizens

The developer should build on and support training and education initiatives related to the Project for Tłıchǵ citizens.

6. Boreal caribou (tǫdzı)

This section describes how the developer conducted its assessment of boreal caribou (tǫdzı), parties' positions and concerns with the developer's assessment methods, and parties' concerns with predicted effects. An overview of how the developer conducted its assessment is provided first, followed by a detailed examination of the key issues, the Review Board analysis and conclusions, and proposed measures and suggestions.

6.1. Summary of Board findings

The Review Board finds that the proposed Tłıchǫ All-Season Road Project (TASR, the Project or the road) is likely to be a cause of significant adverse impacts to boreal caribou (tǫdzı). This species has been listed as threatened under the National and Territorial *Species at Risk Act* (SARA). Considering the lack of baseline information and the risk of serious harm, the Review Board concludes that a precautionary approach is appropriate.¹ This is consistent with advice from the *Recovery Strategy for the Boreal Caribou in the Northwest Territories*, SARA and from Environment and Climate Change Canada (ECCC).

The Review Board identifies many problems with the developer's arguments about the significance of the Project's impacts:

- The broad scale of the NT1 range masks and dilutes relevant impacts in the vicinity of the Project.
- At that scale, the developer's conclusions that boreal caribou (tǫdzı) are currently self-sustaining were based primarily on habitat. Due to information gaps, it neglected necessary considerations of population size and trends.
- The 65% threshold the developer applied to habitat disturbance at the NT1 range is an ecological threshold that does not represent an acceptable level of risk for environmental impact assessment purposes.

¹ The preamble to the federal Species at Risk Act states "if there are threats of serious or irreversible damage to a wildlife species, cost-effective measures to prevent the reduction or loss of the species should not be postponed for a lack of full scientific certainty". See Chapter 4 for detail on the Review Board's application of the precautionary approach.

- This habitat disturbance threshold is barely even met at present. It is within less than within 1% of being exceeded in the Northwest Territories(NWT). It is likely exceeded in the North Slave region, where the Project is.

The Review Board's primary reasons for its determination of significant adverse effects to boreal caribou (tòdzı) are as follows:

- Boreal caribou (tòdzı) are at risk and listed as threatened under both the national and territorial *Species at Risk Acts*.
- Boreal caribou (tòdzı) populations are declining in the south of the NWT, and the Project will likely lead to increased mortality through non-Aboriginal hunting and Aboriginal harvest pressures in the area affected by the Project, contributing to the likely existing decline.
- The amount of existing habitat disturbance in the area of the road suggests that boreal caribou (tòdzı) are likely not self-sustaining in this area. The Project will lead to increased habitat disturbance.
- The developer did not assess whether boreal caribou (tòdzı) are currently self-sustaining at a scale relevant to Project specific effects assessment, or at scales that matter to parties to this environmental assessment, such as the traditional territories of Aboriginal groups, the Wek'èezhì Resource Management Area, or the North Slave Region.
- The developer acknowledged there is a lack of baseline data to support its predictions. This shortcoming challenges the accuracy of the developer's predictions.
- The developer did not provide the Review Board with a sufficiently detailed adaptive management strategy, including mitigative actions, thresholds and monitoring to give the Board confidence that effects will be identified and mitigated in a timely fashion.
- The Tłchq Government, Wek'èezhì Resources Renewable Resources Board (WRRB), Yellowknives Dene First Nation (YKDFN), and the North Slave Metis Alliance (NSMA) have expressed concerns over effects on Aboriginal harvesting of boreal caribou (tòdzı) that will result from the road. The developer did not assess the significance of potential changes to boreal caribou (tòdzı) populations in relation to the success of the Aboriginal harvest, nor propose mitigations for the predicted increase in hunting pressure.

The Project will be a permanent source of impacts and will likely lead to induced developments and other future activities that will cause further impacts on boreal caribou (tǫdzı).

Based on the evidence provided by the developer and from parties, the Review Board agrees that there are multiple potentially adverse impacts of the Project on boreal caribou (tǫdzı). These include impacts from:

- direct habitat loss;
- sensory disturbance and related behavioural impacts;
- barriers to movement and fragmentation;
- increased predation success; and,
- increased hunting pressures resulting from increased access.

Of these, the primary effects of the Project on boreal caribou (tǫdzı) are likely to habitat, through direct destruction, decreased effectiveness of habitat¹ and effects of predators that may cause boreal caribou to avoid the area. The Review Board also accepts that effects from increased hunting and harvesting are also likely but observes that their scale and magnitude are uncertain.

Because boreal caribou (tǫdzı) are already at risk, the Review Board finds that any additional adverse impacts on them are likely significant. Even though the developer's baseline information on caribou population and trends in the Project area is insufficient, the Review Board is sufficiently persuaded by evidence from other parties with wildlife expertise to conclude that the above impacts *collectively* are likely to result in significant adverse impacts from the Project on boreal caribou (tǫdzı). It has identified measures to mitigate the predicted impacts.

6.2. Introduction

Boreal caribou (tǫdzı) were a focus of this environmental impact assessment because of their importance to Aboriginal peoples, their role in northern ecosystems and their status as a threatened species under the Territorial SARA. In the Tłıchǫ Government's Traditional Knowledge Study, Elders expressed concern "over a potential decline/disappearance of

¹ In this document, effective habitat loss refers to habitat with a diminished value to boreal caribou. This includes habitat that is not directly under the project footprint. This habitat has a diminished ecological value due to factors including sensory disturbance.

woodland caribou populations” (PR#28 p41). Figure 6-1 (below) shows Elder Joe Champlain speaking to the Review Board on behalf of the Tłıchǫ Government at the public hearing.

In its *Adequacy Statement Response* (ASR), the developer identified the ways that it predicts the Project will affect boreal caribou (tǫdzı). The developer’s assessment focused on the largest and most likely effects, which are:

- increased harvesting;
- changes to habitat;
- direct mortality due to vehicle collision; and,
- changes to predator populations.



Figure 6-1. Elder Joe Champlain with the Tłıchǫ Government speaking to the Review Board at the public hearing.

(Review Board photo)

Boreal caribou (tǫdzı) are listed as threatened under SARA, and the federal government has released an Action Plan (PR#242) and a Recovery Strategy (PR#38). The Review Board notes that SARA “...has requirements for Environmental Assessment in which adverse effects on boreal caribou and their critical habitat must be identified, mitigated and monitored” (PR#106 p20).

There is also a requirement for the GNWT to draft a NWT specific recovery strategy for boreal caribou (tǫdzı). A draft of this document and a final version were submitted to the registry during this environmental assessment (PR#106). It provides useful information about how GNWT will manage boreal caribou (tǫdzı) populations and habitat in the NWT.

In its conclusions, the developer argued that if the population of boreal caribou (tǫdzı) in the NWT is self-sustaining when the road is constructed and operated, then impacts from the Project to this self-sustaining boreal caribou (tǫdzı) population, including cumulative effects from reasonably foreseeable developments, are not likely to have a significant adverse effect on the entire boreal caribou (tǫdzı) population in the NWT. However, parties have raised concerns that the Project may have significant effects to boreal caribou (tǫdzı) in the vicinity of the road.

The following sections summarize the evidence from the developer and parties regarding boreal caribou (tǫdzı). This summary is followed by the Review Board's analysis and conclusions about the significance of predicted adverse residual effects. Unlike most chapters in this report, this chapter is broken into subtopics which describe evidence for that subtopic, followed by the Board's analysis and conclusions for that subtopic, before reaching the Board's broader conclusions. This chapter is organized this way due to the amount and complexity of evidence on the public record regarding boreal caribou (tǫdzı).

6.3. Developer's assessment approach and predicted effects

The key components of the developer's assessment approach are provided below, followed by more detailed discussion. The developer's assessment approach included:

- a prediction of how boreal caribou (tǫdzı) are presently doing in the NWT, using a risk-based habitat disturbance model;
- identifying how the road could affect boreal caribou (tǫdzı) through a pathways analysis; and,
- assessing whether residual adverse effects of the road will cause boreal caribou (tǫdzı) to no longer be considered self-sustaining throughout their range in the Northwest Territories.

The developer stated that this approach for assessing the significance of project effects is appropriate and precautionary.

To understand what effects the road may have on boreal caribou (tǫdzı), an understanding of the current population status of caribou is required. The developer refers to this as the “base case”. To determine the base case conditions, the developer used guidance and information from the *Recovery Strategy for the Boreal Caribou in the NWT* (PR#106) and from an ECCC scientific document¹ that describes how much intact critical habitat is likely required to maintain caribou populations over both the short term, and long term (PR#33). Based on these documents the developer asserted that currently boreal caribou (tǫdzı) are likely self-sustaining at the NT1 range scale (PR#110 p 4-211 and 212). Figure 6-2 shows the developer’s proposed study area for boreal caribou (tǫdzı) which also follows the boundaries for the NT1 range, which extends from the Alberta border north to approximately Inuvik (PR#106).

The developer used the *National Recovery Strategy for Boreal Caribou* to support its position that there is one large and self-sustaining population in the NT1 range, and stated that “[a]ccording to the national Recovery Strategy for boreal caribou, the NT1 boreal caribou population is assumed to be self-sustaining based on the fact that there is >65% undisturbed habitat within the NT1 range” (PR#99 p4). In response to the Wek’èezhì Renewable Resources Board technical report on boreal caribou (tǫdzı), the developer reiterated this position and stated, “[t]he final national recovery strategy for boreal caribou now considers the NT1 range to be one continuous local population, and the 65% undisturbed habitat threshold defining critical habitat applies at that scale” (PR#215 p2-2).

After providing its views on the current status of boreal caribou (tǫdzı), the developer then identified ways the road is likely to affect them. The developer called this a “pathways analysis”. This method identifies and assesses the linkages between project effects (including project components, activities, and secondary or induced effects) and places them into three categories. These are:

- No linkage pathways – For these pathways the developer contends that proposed mitigations or design features result in no measurable change to boreal caribou (tǫdzı) and no residual effect.

¹ Environment Canada, Scientific Assessment to Inform the Identification of Critical Habitat for Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada, 2011 update.

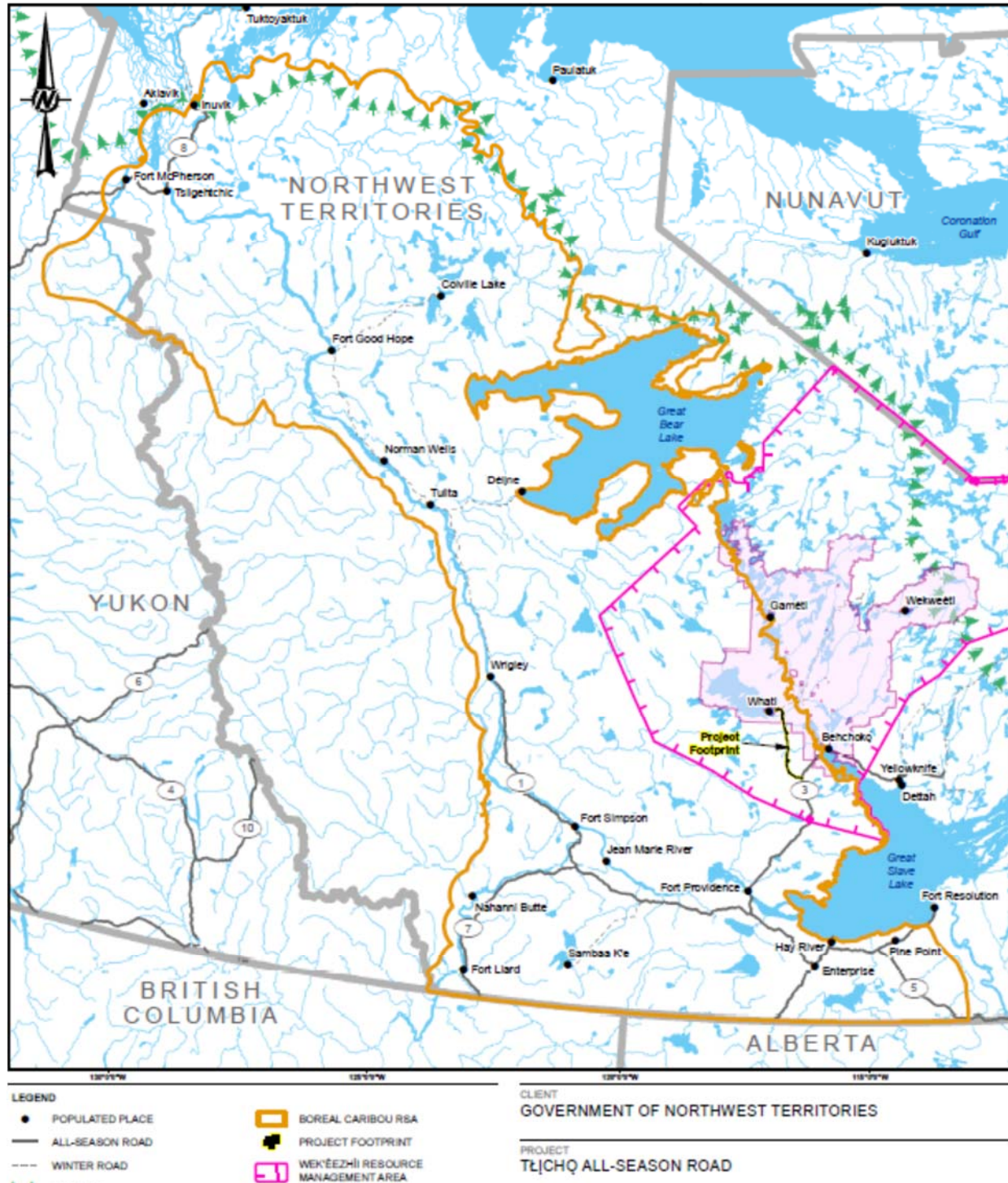


Figure 6-2. The regional study area for boreal caribou (tł̨dzı) used by the developer to assess project effects.

(Source: PR#110 p4-9)

- Secondary pathways –For these pathways an effect may occur and cause a change to boreal caribou (tǫdzı), but the developer predicts the effect to be very small and likely to have a negligible residual effect.
- Primary pathways – For these pathways the developer predicts a measurable change to boreal caribou (tǫdzı) populations.

The developer focused its assessment on the primary pathways because these effects are considered likely, large enough that they have the potential to cause an effect that matters and are measurable. The developer identified the following primary pathways (PR#110 p4-211):

- Site preparation, construction and operations of the road are likely to change the availability, use, and connectivity of existing habitat. This change may affect boreal caribou (tǫdzı) abundance and distribution.
- Sensory disturbance (dust, smell, light, noise, human activity) can change wildlife habitat availability, use and connectivity (movement and behavior), which can lead to changes in wildlife abundance and distribution.
- Increased access by people could lead to increased hunting pressures, and vehicle strikes that may cause affects to survival and reproduction.

The developer used an assessment endpoint to understand the potential significance of predicted residual adverse effects. The developer chose the endpoint of a “self-sustaining and ecologically effective” boreal caribou (tǫdzı) population at the NT1 range scale. The developer argued that “the assessment endpoint of a self-sustaining and ecologically effective boreal caribou (tǫdzı) population is appropriate ... consistent with the current wildlife conservation literature, and has been used in previous environmental assessments” (PR#240 p2-1).¹ In response to information requests, however, the developer concluded that its assessment is not appropriate for assessing certain effects, such as harvesting, and stated that “ (t)his assessment endpoint, which is based on ecological science, is not sufficient for ecosystem services (such as wildlife harvest or viewing opportunities)” (PR#149 p3).

¹ The developer in this EA is using the term “assessment endpoint” to refer to a point at which it will no further explore impacts, implying that they are not significant. In effect, this means the term is being used roughly as a surrogate for the significance threshold. The developer is thus asserting that if the boreal caribou (tǫdzı) population is “self-sustaining and ecologically effective” with the project, then the Project’s impacts on boreal caribou (tǫdzı) are not significant. Impact significance is the legal test applicable to Review Board’s decisions.

The developer noted that determining whether the assessment endpoint is achieved relies primarily on habitat disturbance and is determined by achieving a minimum 65% undisturbed habitat. The developer stated (PR#149 p4):

A measurable target has been set for self-sustaining caribou populations by ECCC (i.e., 65% undisturbed habitat), the approach to determining whether or not a VC population will be self sustaining is simplified. Consequently, evidence supporting the conclusion of the Adequacy Statement Response that boreal caribou in the NT1 range may be approaching the limit for a self-sustaining population is primarily associated with the amount of undisturbed habitat in the NT1 range. At the Base Case, undisturbed habitat in the NT1 range was estimated at 66.8%, which is above but near the critical threshold of 65% needed for boreal caribou populations to be self-sustaining with moderate risk (EC 2012).

Based on the information from the ECCC scientific document, the Recovery Strategy for the Boreal Caribou in the NWT, and evidence submitted during the EA, the developer predicted that with the addition of the proposed road there will be 65.9% undisturbed habitat in the NT1 range. The Strategy states there are likely roughly 6000-7000 boreal caribou (tǫdzı) in the entire NWT.

The developer did not provide any specific mitigations for predicted residual adverse effects during operations of the road. Rather, the developer stated that existing government management, regulations, and programs along with the eventual implementation of the *Recovery Strategy for the Boreal Caribou in the NWT* would suffice to manage effects to boreal caribou (tǫdzı).

Parties raised many concerns with the developer's assessment of impacts on boreal caribou (tǫdzı). These concerns included the developer's position that boreal caribou (tǫdzı) are likely self-sustaining at the base case, the use of the very large NT1 range to assess project affects, concerns with specific Project-related effects and concerns with follow-up and monitoring. The following sections discuss the evidence provided by developer and parties on these topics.

6.4. Cumulative impacts and climate change

With regards to cumulative effects, the developer presented its arguments in section 4.4.3.1 of its *Adequacy Statement Response* (PR#110 p4-193). The developer stated that at the NT1 range scale, existing and likely foreseeable projects will result in a small change in suitable boreal caribou (tǫdzı) habitat and that habitat connectivity would not be significantly affected (PR#110 p4-194).

The developer contends that the NT1 range is intended reflect the current state of cumulative impacts for the NT1 herd, because it is large enough to capture and assess effects from the Project in combination with other past, present and reasonably foreseeable projects that may affect boreal caribou (tǫdzı). It is accepted by the developer and parties that caribou in the NT1 range move into areas of the Yukon and Alberta. However, only cumulative effects in the NWT were considered.

The developer predicted that although there is significant uncertainty regarding reasonable foreseeable developments, cumulative effects are “not expected to exceed the resilience or adaptability limits of boreal caribou” (PR#110 p4-195). With regards to survival and reproduction, including a consideration of hunting, the developer predicted that the effects of the Project would be small if assessed at the NT1 range scale, and would not exceed the resilience or adaptability limits of boreal caribou (tǫdzı) (PR#110 p 4-195).

A potentially large contributor to cumulative effects is climate change. In its ASR, the developer provided its views on how climate change could influence boreal caribou (tǫdzı). The developer concluded that “[o]verall, uncertainty is high regarding the potential effects of climate change on boreal caribou survival and reproduction because the predicted outcomes are variable” (PR#110 p4-195). At the public hearing, the GNWT Department of Environment and Natural Resources reiterated the uncertainties associated with climate change and stated, “... its recognized that climate change is kind of the wildcard and how caribou are going to do in the future” (PR#274 p50).

6.5. Developer’s use of NT1 range and habitat disturbance threshold

This section provides parties’ views and concerns with the developer’s method for determining the significance of project effects to boreal caribou (tǫdzı). As described in Section 6.3 and 6.5, the developer asserted that the NT1 range contains a continuous local population of boreal caribou (tǫdzı) that is currently assumed to be self-sustaining based primarily on the amount of undisturbed habitat available. The developer’s approach to determining the significance of project effects was to assess whether the residual adverse effects of the Project would cause the NT1 population to no longer be considered self-sustaining.

Parties’ concerns with the developer’s approach included:

- the use of the NT1 range as the study area is too large and dilutes effects;

- the use of a risk-based model, the 65% undisturbed habitat threshold, to infer whether boreal caribou (tǫdzı) are self-sustaining has shortcomings, including;
 - the lack of baseline data to support the use of the 65% threshold;
 - the threshold is currently very close to being met;
 - there is an unacceptable level of risk that boreal caribou (tǫdzı) will not be self-sustaining at the 65% threshold;
 - the uneven distribution of boreal caribou (tǫdzı) in the NT1 range casts doubt on the usefulness of assumptions of boreal caribou (tǫdzı) population condition for this project specific EA;
 - the uneven distribution of habitat disturbance in the NT1 range casts doubt on the usefulness of applying assumptions over such a large area diverse area; and,
 - effects to Aboriginal harvest in the area of the road were not adequately considered at this scale.
- The developer's reliance on primarily habitat condition to infer whether the proposed assessment endpoint of self-sustaining boreal caribou (tǫdzı) populations is met.

These concerns and the reasons for them are discussed in greater detail in the following sections.

6.5.1. Evidence: parties' concerns with the developer's approach to determining the significance of effects

As described in Section 6.3, the developer's approach to determining the significance of project effects was to assess whether the predicted residual adverse effects of the project would cause the entire population of boreal caribou (tǫdzı) in the Northwest Territories to no longer be considered self-sustaining. To determine this, the developer used a 65% undisturbed habitat threshold as a proxy for its assessment endpoint of a "self-sustaining and ecologically effective boreal caribou population". With the addition of Project related habitat disturbance, the developer argued that the 65% undisturbed habitat threshold is met at the NT1 scale.

The developer acknowledged that the 65% threshold is very close to being met in the NT1 range, and this puts boreal caribou (tǫdzı) close to their resiliency limits. In its closing arguments, the Yellowknives Dene First Nation (YKDFN) characterized boreal caribou

(tǫdzı) as “sitting on a knife’s edge” due to how close the amount of current habitat disturbance is to the threshold (PR#283 p4).

Throughout this environmental assessment, the WRRB expressed its concerns with the proposed threshold and how close it is to being exceeded at the NT1 range scale and that it is exceeded in the area of the Project.

Figure 6-3 is from the WRRB’s public hearing presentation and is adapted from its source, the ECCC *Scientific Assessment to Inform the Identification of Critical Habitat for Woodland Caribou, Boreal Population, in Canada* (PR# 33). It shows the relation between the amount of disturbance and likelihood that boreal caribou (tǫdzı) populations are self-sustaining, by examining the probability of observing stable or positive growth of caribou populations over a 20-year period at varying levels of total range disturbance and illustrates the probability for the NT1 range, NWT south, and Wek’èezhì area.

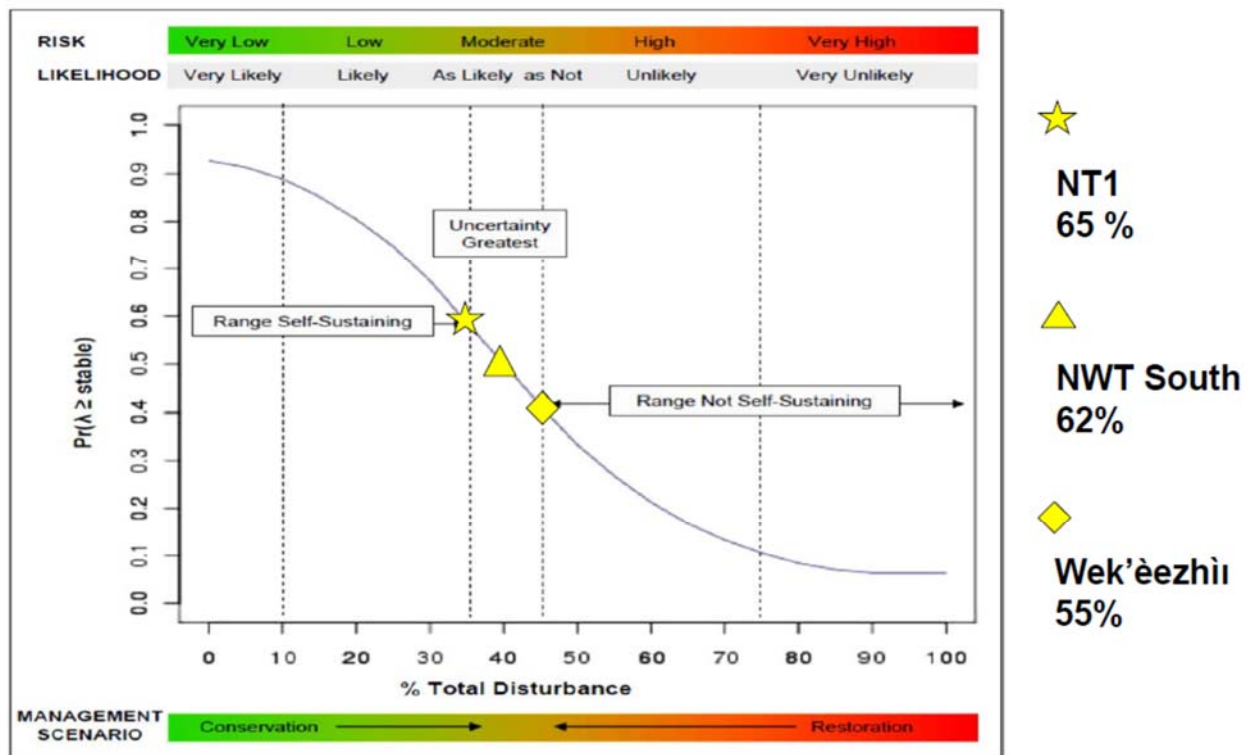


Figure 6-3. Boreal caribou population at varying levels of disturbance.
(Source: PR#256 p6)

The WRRB argued that with the addition of Project, the amount of undisturbed habitat within the NT1 range is at approximately the threshold proposed by the developer for determining if there is a significant adverse effect. If the project was considered in the context of a smaller area, such as the Wek'èezhì area as argued by the WRRB, then the threshold is exceeded. This led the WRRB to have doubts as to whether boreal caribou are self-sustaining the Wek'èezhì region.

The WRRB noted that at the 65% undisturbed habitat threshold there remains a 40% likelihood that boreal caribou (tòdzı) are not self-sustaining (PR#282 p40). In its closing arguments, the WRRB expressed its concern that this threshold represents a risk-based approach to determining whether caribou are likely self-sustaining (PR#282). The WRRB noted that although the Project is predicted to add a very small amount of habitat disturbance at the NT1 range scale, the disturbance threshold (65%) is already very close the current habitat disturbance levels (66%). The WRRB stated that, considering the seriousness of the impact, even at the threshold “there remains a significant risk [40%] that local populations [of boreal caribou] will not be self-sustaining” (PR#282 p1).

Similar concerns were raised by the North Slave Metis Alliance (NSMA) which noted that the 65% threshold at the NT1 range is only marginally met. Should a more focused area for assessing effects of the road to boreal caribou (tòdzı) be used, that the threshold would likely not be met (PR#281 p2).

Parties including the WRRB argued that even at the 65% there remains an unacceptable risk to boreal caribou (tòdzı) populations (PR#282 p5). Parties noted that a threshold is a point that should not be crossed and that the amount of habitat disturbance at the NT1 range is essentially at the threshold.

This evidence led parties to express concerns that boreal caribou (tòdzı) in the area of the road may not be self-sustaining at present, because the road is proposed within an area of high habitat disturbance and a potentially declining population.

The concerns over the how close boreal caribou are to exceeding this threshold are further heightened due to a lack of baseline data on boreal caribou populations. The YKDFN, NSMA, ECCC and WRRB raised concerns with the lack of baseline data to support the developer's position that boreal caribou (tòdzı) are self-sustaining, which was based primarily on the amount of undisturbed habitat. Without this data parties argued that there is significant uncertainty with the developer's predictions.

The YKDFN pointed out that determining whether boreal caribou (tǫdzı) are likely self-sustaining requires not only an assessment of habitat, but also a good understanding of population size and trends (PR#283 p4). This concern by the YKDFN about the need for better baseline information is supported by the ECCC document that provided the basis for the 65% threshold, which states “[t]he 2008 Scientific Review established caribou ranges as the appropriate scale at which to identify critical habitat and applied a probabilistic approach to assessing the adequacy of the current range conditions to support a self-sustaining population based on **three lines of evidence: percent total disturbance, population growth and population size**” (PR#33 piii, emphasis added). The developer provided relied primarily on one of these three requirements, the percent total disturbance.

ECCC raised similar concerns when it stated that when the *National Recovery Strategy for Boreal Caribou* was released in 2012, there was not enough data to establish NT1 range wide population trends (PR#94 p1).

This lack of baseline information is also noted by the GNWT in the *Recovery Strategy for the Boreal Caribou in the NWT*, which states that estimates of boreal populations are a “crude estimate” at present, and that “better population estimates are needed” (PR#106 p v). ECCC concurred that filling knowledge gaps on population dynamics is a high priority for the recovery strategy (PR#94 p1).

During the public hearing, the developer highlighted the uncertainty with current population estimates, stating that its current estimate is a “rough estimate” (PR#274 p45). The developer also indicated that data is not available for all regions of the NWT and stated at the public hearing that “we don't have a program in every region that's ongoing right now that gives us a picture of the entire population. So, there is uncertainty about the status of the population in that regard” (PR#274 p446).

In its closing arguments, the developer reiterated that there is not sufficient information to understand boreal caribou (tǫdzı) population dynamics within the NT1 range and stated that “available information does not yet permit analysis of subpopulation trends within the NT1, but studies currently underway will fill this gap (PR#285 p14).

At a more focused scale, ECCC expressed concern over the lack of baseline information for boreal caribou (tǫdzı) in the Project area. The developer acknowledged this and agreed that there is a lack of data for the North Slave region (PR#128 PDF p8). During the

preliminary screening conducted by the Wek'èezhì Land and Water Board, ECCC requested additional information about boreal caribou (tǫdzı) to complete its assessment of potential effects to a listed species (PR#24 PDF page 180). In response to ECCC's questions, the developer stated that there is no radio collar data for boreal caribou (tǫdzı) in the North Slave region that would aid in describing caribou use in the Project area, and that sensitive areas, such as calving areas, were not identified (PR#24 PDF page 182). Based on the lack of data for boreal caribou, ECCC stated, "[a]vailable baseline data was felt to be insufficient to conduct an impact assessment with any confidence" (PR#107 p2).

As noted, the developer made a broad assumption that boreal caribou (tǫdzı) are considered likely to be self-sustaining in the NT1 range. Parties expressed doubts with this assumption and questioned if there are discreet boreal caribou (tǫdzı) populations in the NT1 range and whether these populations are self-sustaining. This doubt was based primarily on evidence that shows an uneven distribution of habitat disturbances and population distribution.

With regards to the uneven distribution of boreal caribou (tǫdzı) trends within the NT1 range, the developer's draft WMMP states that "[w]hile the population in the continuous range in the NWT (NT1) identified in the federal Boreal Caribou Recovery Strategy is "likely self-sustaining" based on habitat conditions, population trends likely vary among NWT regions. **For example, there is evidence of population declines in the southern NWT**, yet it is unclear to what extent this applies across the range" (PR#192 p7, emphasis added). The *Recovery Strategy for the Boreal Caribou in the NWT* observes the same and states "[t]here is concern that caribou may be declining in Wek'èezhì and the North Slave region overall" (PR#106 p11). The developer's reference to the "the southern NWT" includes the area of the NT1 range that is roughly to the south of the Great Bear Lake and includes the North Slave Region, Dehcho Region, and South Slave Region. Figure 6-4 is a map of the NWT and shows these regions. It shows the range of boreal caribou (tǫdzı) in the NWT and NWT administrative boundaries. These administrative boundaries will form the boundaries for the forthcoming range plans required by the Recovery Strategy for the Boreal Caribou in the NWT.

In response to the WRRB technical report on boreal caribou (tǫdzı), the developer acknowledged that boreal caribou (tǫdzı) habitat disturbance is not evenly distributed and that and that forthcoming range plans will need to address this issue. The developer stated that (PR#240 p2-2):

the GNWT acknowledges that there is currently more habitat disturbance in the southern portion of the NT1 range. One of the goals of range plans for the NT1 range will be to reduce the amount of habitat disturbance in the southern portions of the range to improve the likelihood of long-term self-sustainability of that portion of the NT1 boreal caribou population.

Throughout the EA parties expressed interest in understanding whether boreal caribou (t̨ǫdzı) are self-sustaining in the area of the road. However, the developer specifically stated that it did not assess whether boreal caribou (t̨ǫdzı) in the area of the road are likely self-sustaining. This is discussed in greater detail in Section 6.6.

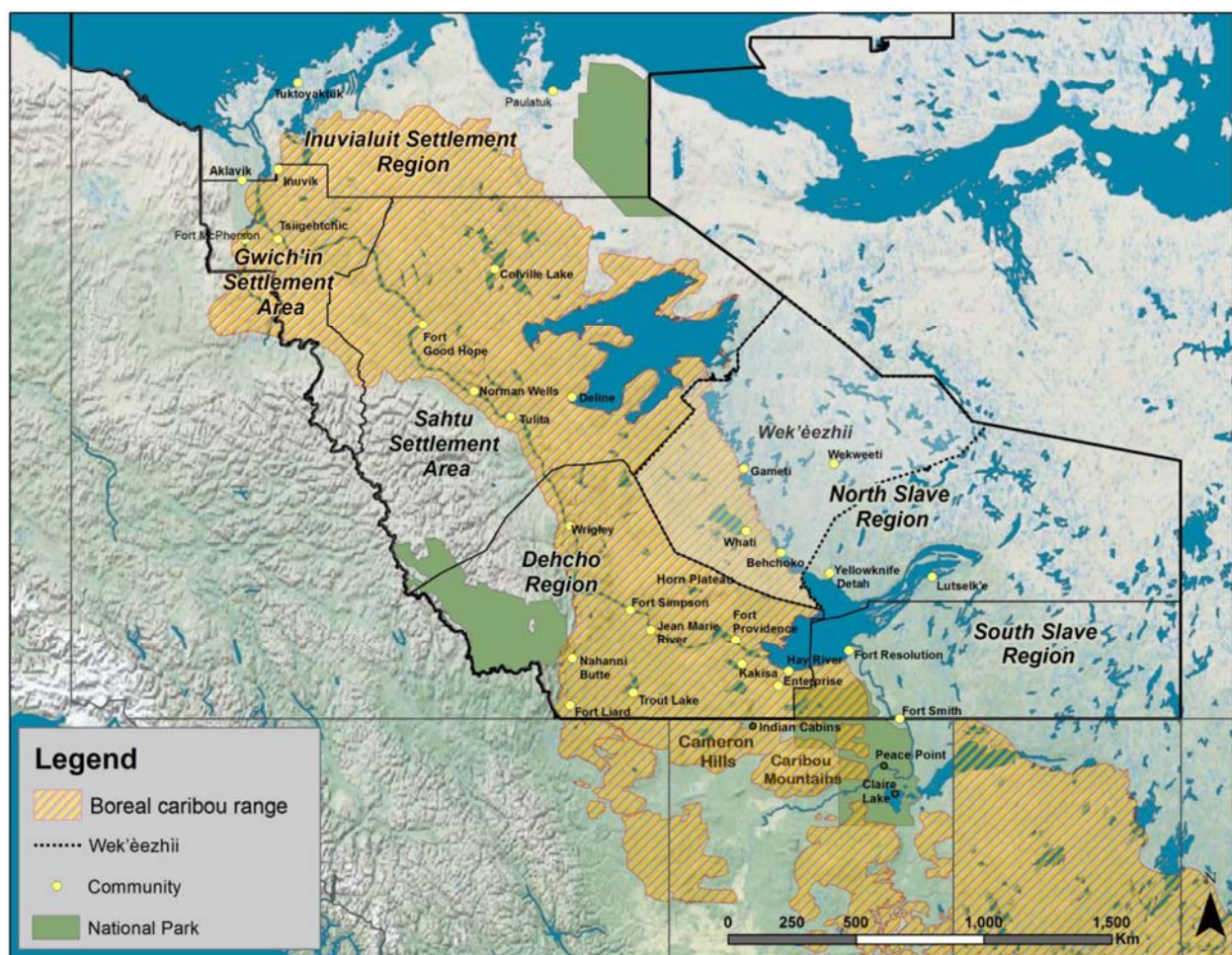


Figure 6-4. Map of boreal caribou range in the north and across regions of the Northwest Territories.

(Source: PR#106 p12)

6.5.2. Evidence: range plans and habitat loss

The developer argued that the NT1 range represents one continuous local population but acknowledged that the *Recovery Strategies for Boreal Caribou in the NWT* requires range plans for each administrative region in the NWT. These administrative regions are shown in Figure 6-4. The recovery strategy will require that caribou and their habitat in these smaller regional ranges are managed to ensure they are self-sustaining.

These regional range plans are not currently in place, but the developer stated that they are forthcoming. These range plans are a potential way of refining the study area for boreal caribou (tǫdzı). This reflects parties' wishes to understand what effect the road would have to the population of boreal caribou (tǫdzı) affected by the road, and not the entire NT1 range.

Concerns over habitat loss were heightened by the *Recovery Strategy for the Boreal Caribou in the NWT*, which states that “[l]arge areas of undisturbed habitat are essential to the survival of boreal caribou” (PR#106 pvii). The developer argued that the proposed road would not cause a large change in the amount of undisturbed habitat, because the right of way will follow an abandoned trail that has been heavily affected by forest fires. The developer noted that habitat fragmentation may occur but wouldn't have a significant effect when compared to the NT1 range scale.

The *National Recovery Strategy for Boreal Caribou* provides specific cautionary points with regards to roads. The document lists activities that are likely to result in destruction of habitat and includes “[a]ny activity resulting in the fragmentation of habitat by human-made linear features. Examples of such activities include: road development” (PR#38 p35).

In response to the WRRB's technical report on boreal caribou (tǫdzı), the developer stated, “one of the goals of range plans for the NT1 range will be to reduce the amount of habitat disturbance in the southern portions of the range to improve the likelihood of long-term self-sustainability of that portion of the NT1 boreal caribou (tǫdzı) population” (PR#240 p2-2). The GNWT plans to begin engagement on a boreal caribou (tǫdzı) range planning framework in winter of 2018. This framework will include setting specific long-term targets for habitat disturbance. It will “propose regional range plans, regional disturbance thresholds, and a tiered approach to implementing actions to manage habitat disturbance based on the relative importance of areas for boreal caribou and other factors” (PR#240 p2-13).

In its closing arguments, the WRRB emphasised “the importance of range planning is that it would establish thresholds for habitat loss, and define the extent of critical habitat, which is a necessary step for protecting [it] (a statutory requirement under the Species at Risk Act)” (PR#282 p 5). Further, that “[t]he WRRB recommends accelerated completion of the Wek’èezhì Boreal Caribou Range Plan” (PR#282 p7). The importance of the range plan was emphasized in the Tłchq Government’s technical report, which stated, “[t]he Tłchq Government considers it vital to understand the role the TASR may play in the [North Slave] range plan” (PR#216 p9).

6.5.3. Evidence: scale of assessment

Throughout the EA, and in its closing arguments, the developer argued that the NT1 range was the most appropriate spatial scale to assess effects to boreal caribou (tqdzì) and stated, “[w]hile it is recognized that different **impacts tend to occur at different spatial scales** and that there is no single study area that will address all concerns, the **NT1 boreal caribou range** is the most reasonable study area to use for the **purpose of assessing the self-sustaining status of boreal caribou in the NWT**, as illustrated by its adoption by ECCC (PR#218), and the federal and NWT boreal caribou recovery strategies (PR#38, PR#106, PR#242)” (PR#285 p14 to 15, emphasis added).

The developer acknowledged that parties wished to understand the effects of the road on boreal caribou at a smaller scale. Although the developer assessed the effects at the NT1 range scale, the developer was of the view that it had provided sufficient information to allow parties to make their own conclusions about impacts at the scale that is relevant to them. The developer stated that “the information provided by the GNWT has provided all Parties with sufficient information from which to reasonably extrapolate to their various areas of interest” (PR#285 p15).

Early in the process, the Review Board provided direction to the developer to assess effects to boreal caribou (tqdzì) habitat at the North Slave region scale (PR#76 p21):

[T]he Review Board believes that anthropogenic disturbances, including fire, and climate change disturbances can be assessed in the North Slave Region and be used to interpret habitat disturbances in threshold determination. When reviewing habitat disturbances in the North Slave region, please note the additional considerations on interactions with fire for both impact - and cumulative effect assessments.

Based on this direction from the Review Board, the developer stated that it would evaluate the effects of the Project at the North Slave region scale considering habitat disturbance (PR#99 p4):

GNWT will nevertheless evaluate the implications of habitat disturbance from the TASR project, in combination with fire and other potential future projects, at the scale of both the North Slave portion of the boreal caribou range and the entire NT1 boreal caribou range. GNWT will use the national recovery strategy model in interpreting the potential impacts of the project on likelihood of population self-sustainability at both scales, but will also acknowledge the uncertainty associated with applying the model to an area of the range with extensive fire disturbance and little human disturbance.

However, the developer did not assess habitat at the North Slave regional scale, nor did it evaluate the implications of habitat disturbance to boreal caribou (t̨dz̨) at this geographic scale. The developer stated that the reason it didn't do an assessment of boreal caribou (t̨dz̨) in the North Slave region is because, "the Wek'èezh̨ Resource Management area boundary does not contain a biologically discrete caribou population, the ASR [Adequacy Statement Response] did not determine whether boreal caribou (t̨dz̨) in the Wek'èezh̨ portion of the NT1 range are self-sustaining and ecologically effective" (PR#142 p15).

The developer acknowledged that the 65% threshold is exceeded in the North Slave region and stated that "the impact of the road on population trends of boreal caribou within the North Slave portion of the range is less certain given that there is currently less than 65% undisturbed habitat in the region" (PR#192 p7).

Parties raised concerns that assessing project specific effects to the entire NT1 range of caribou dilutes the effects of the roads. The NSMA noted that the size of the NT1 range is very large and assessing the effects of the Project at this large area acted to dilute the magnitude of predicted effects (PR#281 p2). The ECCC scientific document that proposed the 65% threshold also provides cautionary statements about using a large range which may dilute effects: "averaging habitat conditions over a large, continuous area will mask spatial variation in disturbances, potentially resulting in range contraction where human development is concentrated" (PR#33 p 15).

Based on these concerns, parties have argued that a smaller study area was needed to understand what effects the road may have, and to gauge the significance of those effects. In its closing arguments, the WRRB argued that the Wek'èezh̨ Resource Management Area is the appropriate scale (PR#282 p4). Figure 6-2 and Figure 6-4 illustrate this area, it is located within the North Slave Region.

In its closing arguments the NSMA argued for a smaller assessment area and argued that there is sufficient evidence of likely significance adverse effects to boreal caribou (tǫdzı) in the North Slave Region (PR#281 p3). At the public hearing, the Tłıchǫ Government expressed its view that a smaller scale of assessment is required, stating “[w]e would like to understand the impacts and mitigation at a smaller scale, during the permitting stage for this project” (PR#274 p23). This idea of a smaller scale of assessment was also raised in its technical report where the Tłıchǫ Government stated the importance of understanding the effects of the road in the context of the forthcoming range plans (PR#216 p9). As noted previously, these forthcoming range plans will follow the existing administrative boundaries shown in Figure 6-4. Figure 6-5 shows the Review Board listening to boreal caribou (tǫdzı) evidence at the public hearings.



Figure 6-5. The Review Board listening to evidence from the Tłıchǫ Government and Tłıchǫ Elders at the public hearing.

(Review Board photo)

The developer acknowledged the concerns over a smaller assessment area and alluded to refining the assessment area during the public hearing. It stated that a refined assessment area could be based on collar data, or on the forthcoming range plans required under the

Recovery Strategy for the Boreal Caribou in the NWT. In response to the NSMA's technical report the developer state that "[t]he GNWT will consider alternative proposals to the boreal caribou study area during the WMMP approval phase, but ultimately the study area will be informed by ecologically relevant population unit boundaries and the area used and movement patterns of caribou on which GPS collars have been deployed in the vicinity of the TASR" (PR#239 PDF page 51). In its closing arguments the developer stated, "the WMMP will need to focus on Project-related effects and to address Parties' concerns, the proposed study area for boreal caribou will be limited to the North Slave portion of the NT1 range" (PR#285 p15).

6.5.4. Review Board analysis and conclusions: use of the NT1 range in this EA

The developer's use of the 65% undisturbed habitat threshold to infer whether boreal caribou (tǫdzı) are self-sustaining, and the use of the NT1 range for the study area in this environmental impact assessment did not help the Review Board understand the significance of effects from the project, nor did it allow parties to understand the effects of the project at a scale that matters to them.

The Review Board heard from multiple parties that the developer's use of the NT1 range, and broad assumptions about the stability of caribou populations in this range, may not be accurate, and may lead to a false impression of the stability of discrete boreal caribou (tǫdzı) populations within the vast NWT-wide range.

The Review Board is concerned with the developer's assumptions that boreal caribou (tǫdzı) populations are likely self-sustaining. This assumption is based on insufficient data. Further, the developer applied this assumption over a vast study area which has significant variations in boreal caribou (tǫdzı) numbers and habitat disturbance. The Review Board agrees with the parties that identified significant flaws with using this assumption as the developer's assessment endpoint

The Review Board concludes that the developer's use of the NT1 range as a study area, and the use of the risk-based habitat disturbance threshold to infer whether boreal caribou (tǫdzı) are self-sustaining (for the purposes of assessing the significance of project effects) has serious flaws. The Board's concerns stem from:

- How effective the 65% threshold is at determining the self-sustaining status of boreal caribou (t̥d̥zı) throughout the proposed study area (the NT1 range) considering the following points:
 - incomplete data or lack of data on boreal caribou (t̥d̥zı) population trends and abundance;
 - significant uneven distribution of habitat disturbance across the NT1 range; and,
 - significant uneven distribution of boreal caribou (t̥d̥zı) throughout the NT1 range.
- Whether the developer's proposed NT1 range is the appropriate study area for assessing project specific effects. This range is very large and acts to dilute project specific effects. Further, this range was identified under the National Recovery Strategy for the purposes of assessing the general conservation of the species, and not project specific environmental impact assessment.
- The level of risk that remains even if the developer's 65% undisturbed habitat threshold is met. At this threshold, there remains an unacceptable level of risk that boreal caribou (t̥d̥zı) may not be self-sustaining.

In addition to the above concerns with the NT1 range and the 65% threshold, the Board observes that the use of "self-sustaining boreal caribou (t̥d̥zı) population" as the assessment endpoint for this EA is problematic. For instance, it doesn't address concerns about Aboriginal harvesting.

Developer's NT1 conclusions based on insufficient data

The ECCC scientific document¹ that proposed the 65% undisturbed habitat threshold states, "[t]he related goals of assessing the self-sustainability of ranges, and establishment of management thresholds for disturbance, must both acknowledge uncertainties resulting from availability and reliability of information about current population condition, as well as from limited knowledge about how populations will respond to additional and often interacting stressors" (PR#33 p90-91).

This quote raises serious questions about the impacts of the Project due to the lack of data, and about the reliability of the estimate of current population condition, both at the NT1

¹ Environment Canada, Scientific Assessment to Inform the Identification of Critical Habitat for Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada, 2011 update.

scale and in the vicinity of the Project. This also raises the issue of ECCC’s “interacting stressors” that at the NT1 scale, and in the area of the Project, include forest fires, uncertain harvesting and hunting levels, and uncertain wolf predation levels. The Review Board observes that the developer’s assumptions on the self-sustaining status of boreal caribou (tqdzı) relied primarily on habitat disturbance and omitted thorough consideration of caribou mortality rates. This and other stressors listed above cast significant doubts on whether the developer’s assumptions are accurate.

The Review Board is concerned that the developer’s predictions on the current status of boreal caribou (tqdzı) at the NT1 scale are not based on sufficient evidence to draw accurate conclusions. More important, are concerns based on evidence that points to likely declining boreal caribou (tqdzı) in the southern portion of NWT. This is compounded by further concerns over the current amount of existing habitat disturbance in the area surrounding the Project. If caribou are currently not self-sustaining in the region of the Project at base case, then there is a very real likelihood that the project may exacerbate this condition.

Habitat disturbance threshold is insufficient for significance determinations

In its closing argument, the developer stated that “the NT1 boreal caribou range is the most reasonable study area to use for the purpose of assessing the self-sustaining status of boreal caribou in the NWT, as illustrated by its adoption by ECCC (PR#218), and the federal and NWT boreal caribou recovery strategies (PR#38, PR#106, PR#242)” (PR#285 p14).

In the Review Board’s view, even if this range and the 65% disturbance threshold that is applied to it were used properly, with adequate data on population and trends, it would still be an inadequate threshold for EIA significance. This is because relying on this threshold at this scale:

- ignores potentially important effects in the area of the Project;
- ignores impacts on harvesting; and,
- defines impacts as acceptable even when those impacts are of a likelihood and severity that are significant in an EIA context.

The Review Board understands how important boreal caribou (tqdzı) are to traditional harvesters. The Tłchq, YKDFN, and NSMA expressed concerns over harvesting and how effects of the road have the potential to reduce the number of caribou in the region of the Project. The developer’s use of the NT1 range did not allow for a reasonable or meaningful

understanding of the potential significance of effects to Aboriginal harvesting. The Review Board observes that a sustainable harvest is a primary objective of the *Recovery Strategy for the Boreal Caribou in the NWT*. Questions about a possible sustainable harvest of boreal caribou (tòdzı) was not addressed in this EA at either the NT1 wide scale, or at a smaller scale in which the Project is located.

The Review Board notes that there is already a risk of significant impacts at the developer's chosen threshold. Even if the scale of the NT1 range was the only scale that mattered (and it is not), the Review Board notes that the threshold which forms the basis for the developer's conclusions at the scale of the NT1 range is different from the kind of threshold usually identified in environmental management. Even at the 65% disturbance threshold, there is a 40% chance that boreal caribou (tòdzı) populations are not self-sustaining. In the Board's understanding, if boreal caribou (tòdzı) are not self-sustaining, they are moving towards extirpation. This would be a grave consequence.

Considering the ecological and cultural severity of this consequence, four in ten odds are already at a level of likelihood that the Board considers a significant risk. In other words, the developer's use of the 65% threshold as means to measure whether its proposed assessment endpoint is achieved implies that it represents an acceptable level of risk to the NT1 population. The Review Board does not accept this. This evidence must not be interpreted to mean that caribou are currently at an acceptable level of risk, even at the NT1 scale.¹ Even if the Project does not increase disturbance beyond this threshold, the larger population is at an unacceptable likelihood of significant adverse impacts. The Project will add to that.

The 65% threshold applied in the recovery strategy, which comes from the ECCC scientific document, is the threshold that has apparently been chosen for ecological significance. This does not mean it is an appropriate threshold of significance for EA purposes.²

¹ As stated by the Review Board previously in its REA for EA0809-001 (p19), "for dealing with low-probability high-consequence events, the significance of potential effects modifies the likelihood that is acceptable in the Board's significance determinations. Where the Board identifies an unacceptable risk of impact likelihood and impact severity, the Board will identify it as likely to be a cause of significant adverse effects. It will do so based on its own determination of the risk". The extirpation of boreal caribou (tòdzı) from the NT1 range would, in the Board's view, be a "high-consequence event", and an unacceptable risk even at a 40% probability. Section 4.4.1 above discusses how the Board considers likelihood with respect to low-probability high-consequence events when determining impact significance.

² For further discussion of ecological significance vs EIA significance, see Ehrlich, A. and William Ross (2015): *The significance spectrum and EIA significance determinations, Impact Assessment and Project Appraisal*. 33(2) p94.

Recovery strategy goals are not all that matters

The Review Board understands that a self-sustaining boreal caribou (tǫdzı) population is the assessment endpoint proposed by the developer for this EA, and that this is also the primary goal of the National and Territorial Recovery Strategies. This assessment endpoint formed the basis of the developer's assessment of significance of effects. The developer asserted that measuring whether this assessment endpoint is achieved, relies primarily on the 65% undisturbed habitat threshold being met.

The Review Board observes the following aspects of the developer's assessment that stem from the National and Territorial Recovery Strategies. Both apply the same spatial scale (the NT1 range), the same assessment endpoint (a self-sustaining population)¹ and the same threshold (65% undisturbed habitat).

The Review Board is concerned that the assessment approaches taken by the developer may not be applicable to a project-specific environmental impact assessment (EIA). These methods stem from the National and Territorial Recovery Strategies and are not based on project-specific EIA. The GNWT has published its *Recovery Strategy for the Boreal Caribou in the NWT*, which clearly states that the purpose is to identify how the conservation and recovery of boreal caribou (tǫdzı) can be achieved (PR#106 pIV). The general conservation of the species is important to this Board and is an issue that is best dealt with in a cumulative effects assessment context in this project-specific environmental assessment. It is not a substitute for a proper project-specific assessment of impacts on boreal caribou (tǫdzı) in the vicinity of the Project.

It appears to the Review Board that the developer attempted to answer questions about how the road would affect the general conservation status of boreal caribou (tǫdzı) in the NWT, but by doing so exclusively, it failed assess how the road may affect boreal caribou (tǫdzı) in the vicinity of the Project.

The Review Board draws this conclusion from the developer's own statement about what meeting its proposed assessment endpoint means. The developer stated "[m]aintaining self-sustaining and ecologically effective wildlife populations is an **appropriate**

¹ In its response to WRRB IR1, the developer stated that its assessment endpoint is essentially about conservation. It stated "Achieving self-sustaining and ecologically effective populations is a primary goal of most species conservation, protection, or recovery plans. For example, achieving a self-sustaining population is the goal for the recovery strategy of woodland caribou (EC 2012)" (PR#149 p3).

assessment endpoint and basis for significance determination from a conservation perspective. This assessment endpoint, which is based on ecological science, is not sufficient for ecosystem services (such as wildlife harvest or viewing opportunities)” (PR#149 PDF p3, emphasis added).

The Board observes the developer’s closing argument where, in response to questions about the spatial scale for the assessment, the developer stated “[w]hile it is recognized that different impacts tend to occur at different spatial scales and that there is no single study area that will address all concerns, the NT1 boreal caribou range is the most reasonable study area to use for the purpose of assessing the self-sustaining status of boreal caribou in the NWT” (PR#285 p14). Although the self-sustaining status of boreal caribou (tòdzı) throughout the NWT matters, in this EA the potential impacts on the area around the project also matter and were not adequately assessed by the developer due to the developer’s reliance on the NT1 scale.

The Review Board observes that developer’s statements in the above reference accurately reflects the primary issues for this EA; different effects likely require a unique study area. Determining if the effect is significant requires a study area based on the nature and extent of the effect. The NT1 range as a study area for the Project does not appear to be linked to project effects. Rather, it is an administrative boundary intended for the Recovery Strategy and determining whether boreal caribou are self-sustaining for the purposes of conservation.

The Review Board notes that the developer’s assessment endpoint is an ‘assumption’ based primarily on habitat disturbance. The developer stated that “[a]ccording the national Recovery Strategy for boreal caribou, the NT1 boreal caribou population is assumed to be self-sustaining based on the fact that there is >65% undisturbed habitat within the NT1 range” (PR#99 p4). It appears the developer’s assessment and determination of significance is better suited to answering questions about whether entire population of boreal caribou (tòdzı) in the NT1 range will be significantly affected by the road. This type of assessment did not address impacts that are specific to the Project, such as questions about how the road could affect Aboriginal harvesting opportunities and success in the area of the road.

In its closing arguments the developer stated that it had provided sufficient information to allow parties to draw their own conclusions about what effects the road may have at a smaller range (PR#285 p15). The Review Board disagrees and concludes that the

developer did not provide sufficient baseline information and did not conduct an assessment of effects at a reasonable scale to allow for a meaningful understanding of effects.

The use of the NT1 range is intended to delineate boreal caribou (tǫdzı) in the NWT for the purpose of conservation at that scale. However, when the developer proposed to use this range for a project-specific effects assessment it chose the wrong tool for the job.

NT1 range too large to assess most impacts of the Project

Parties argued that there is a high degree of uncertainty about the current population trend of caribou. This matters because the developer considered project effects relative to a self-sustaining caribou population at the NT1 scale, meaning a population that has a stable or increasing population trend. However, as discussed below, the population at the NT1 scale may not be self-sustaining and is likely not self-sustaining in the area of the road. If the caribou population is not stable, the road may be contributing additional adverse impacts to a herd that is already declining. This would add weight to findings that effects of the road are likely significant.

The developer stated in its closing arguments that it provided sufficient information to allow parties to draw conclusions about effects of the Project at varying spatial scales, such as the Wek'èezhì Resource Management Area (PR#285 p14 and 15). However, the developer did not provide information about caribou population abundance, trends, or movement patterns in the area of the road. Nor did it provide information about whether boreal caribou (tǫdzı) are self-sustaining in the area of the road. Rather, the developer stated that this information is not available. This left parties unable to properly consider the effects of the project in the immediate context where it was proposed, because the developer provided insufficient information.

The developer argued that the parties did not provide a compelling case that a smaller study area would have improved the EA (PR#285 p14). The Review Board disagrees. A smaller study area would have improved the developer's and parties' EA predictions. Early in the EA process the Review Board provided guidance to the developer on focusing its assessment (discussed in detail in Section 6.5.3). Deciding how to draw a boundary of the appropriate smaller study area has its challenges. Presently, the main challenge is the lack of baseline data. Regardless, the developer's closing argument proposes a smaller study area - the North Slave region - be used after the EA, to focused on project effects (PR#285

p15). The Review Board is encouraged by planned efforts from the developer to better understand how this road may affect boreal caribou (tǫdzı).

The Review Board observes that the burden of proof is on the developer to convince the Board that its project will not cause significant impacts. Parties can usually extrapolate about potential effects based on the information presented to them by the developer but in this case had to base their conclusions about impacts in the vicinity of the road on limited evidence, and evidence from other sources. Parties found significant adverse effects are likely in the region of the Project. Due the many uncertainties described, the Review Board does not accept the developer's prediction that significant adverse effects on caribou from the Project are unlikely. The specific adverse impacts on caribou that the Board concludes are likely are discussed below, in Sections 6.6, 6.7, and 6.8.

Concerns with the NT1 range as the study area

The developer argued throughout the EA that the NT1 range was the appropriate study area from an EA specific context. In response to parties' concerns about the appropriate study area at which to assess effects, the developer stated, "[a]dopting a study area based on an area of jurisdiction or interest for a Party would not have satisfied the requirements for the geographic scope of assessment set out in the Terms of Reference" (PR#285 p14).

The Review Board observes that the developer adopted a study area based on the *National Recovery Strategy for Boreal Caribou* which sets out the range of boreal caribou (tǫdzı) for the purposes of the general conservation of the species in the NWT.

On April 28, 2017, the Review Board provided its views on the developer's response to the Review Board's *Adequacy Statement* and *Terms of Reference* (PR#111). The Review Board found there were issues with the developer's assessment presented in the ASR and stated that the remainder of the EA process will allow for these issues to be examined (PR#111 p1).

The Review Board observes that the *Terms of Reference* for this project provides the following guidance on considerations for defining the geographic scope for a Valued Ecosystem Component (VEC):

- the habitat range of wildlife species;
- the extent to which Project effects are no longer measurable (e.g. downstream water quality);

- community and traditional knowledge;
- current or traditional land and resource use by Indigenous groups; and
- other ecological, technical, social and cultural considerations.

The *Terms of Reference* also provides guidance that the spatial scale should be appropriate to the nature and extent of the impact and impact source. The following sections provide the Review Board's analysis of the NT1 range in the context of the guidance provided.

With respect to the 'habitat range of a wildlife species', the developer argued that there is one continuous range for the population of boreal caribou (tqdzı) in the NWT, and it occupies the NT1 range. This was the developer's premise for using such a large study area. However, the developer acknowledged that there are likely subpopulations within the larger NT1 range, and the *Recovery Strategy for Boreal Caribou in the NWT* require range plans and delineation of local populations within these smaller ranges. These smaller scale ranges are likely more appropriate to delineate the range of boreal caribou (tqdzı) affected by the Project and for a project-specific EA. The Review Board observes the importance of these range plans and adaptive management decisions for the Project will need to consider these range plans.

With regards to the 'extent to which effects are no longer measurable', the Review Board observes that this is where many parties took issue with developer's use of the NT1 range. The Review Board finds that the NT1 range, as a study area, was not linked to the extent of project effects. It does not appear to the Review Board that the developer considered the spatial extent at which a predicted residual adverse effect of the road is no longer measurable when it chose the NT1 scale. The NT1 range is so large that it dilutes effects to a point that for many predicted effects, the developer stated that they are not measurable at the NT1 scale. This would indicate the range is too large to use for evaluating the effects of the Project.

The Review Board considers Traditional Knowledge on par with western science. It is not clear to the Review Board how, or if, the developer used Traditional Knowledge in determining the study area for boreal caribou (tqdzı). With regards to 'the current or traditional use by Aboriginal peoples of the resource' (boreal caribou), the NSMA, YKDFN, and Tłchq Government did provide evidence of what a meaningful study area would be for assessing effects to its members' harvesting. The Review Board observes that the developer seems to try dismiss this evidence when it stated, "[a]dopting a study area based on an area

of jurisdiction or interest for a Party would not have satisfied the requirements for the geographic scope of assessment set out in the Terms of Reference” (PR#285 p14).

The developer acknowledged that “it is recognized that different impacts tend to occur at different spatial scales” (PR#285 p14 to 15). The NT1 scale is not appropriate for assessing effects to Aboriginal harvest. It is clear to the Review Board that Aboriginal peoples use the region surrounding the road to harvest boreal caribou (tqdzı). Effects to boreal caribou (tqdzı) in this area matter to these groups. The Review Board observes that many parties were not able to determine if harvest in the area surrounding the road would be significantly affected. Groups including the YKDFN, NSMA, WRRB, and Tłchq Government all expressed concerns about the potential for effects to harvesting.

With respect to the “nature and extent of the impact”, the study area proposed by the developer is disproportionately large compared to the nature and extent of the impact. The developer indicates that several predicted effects are likely not measurable at the NT1 scale, such as effects to survival and reproduction. This clearly indicates that the study area has not adequately considered the extent of the effect. In the draft WMMP, the developer is not proposing to monitor for effects at the NT1 range scale. Rather, the developer acknowledges that the WMMP “will need to focus on Project-related effects and to address Parties’ concerns, the proposed study area for boreal caribou (tqdzı) will be limited to the North Slave portion of the NT1 range” (PR#285 15). The Review Board observes that the scale at which effects of the project will be monitored and hopefully managed is likely the most appropriate scale for the assessment.¹

The ToR also provides guidance on conducting a cumulative effects assessment and states, “For cumulative impacts, the geographic scope will generally include a much larger study area that combines effects from past, present and reasonably foreseeable future projects that are predicted to combine with the impacts of the Project over its lifespan” (PR#69 p13). The Review Board observes that the spatial scale used by the developer is best suited to conducting a cumulative effects assessment of boreal caribou (tqdzı) at the NT1 scale. This scale is not appropriate for a project specific environmental effects assessment of the Project. The Review Board also observes the inherent difficulties with predicting

¹ In the developer’s response to the NSMA’s technical report the developer stated that “The GNWT will consider alternative proposals to the boreal caribou (tqdzı) study area during the WMMP approval phase, but ultimately the study area will be informed by ecologically relevant population unit boundaries and the area used and movement patterns of caribou on which GPS collars have been deployed in the vicinity of the TASR.” (PR#239 PDF page 51).

‘reasonably foreseeable future projects’ for the Project because it will likely be in place in perpetuity.

Problems with developer’s reliance on the Recovery Strategy

In its closing arguments, the developer stated that ECCC agreed with the developer’s position that the NT1 “was the most appropriate spatial scale on which to focus the assessment” (PR#285 p14). The Review Board notes above that the use of the very large NT1 range does not “focus the assessment”. Rather, it is overly broad. The Review Board reviewed ECCC’s position on the use of the NT1 range, and notes that while ECCC supports the use of the NT1 range at a minimum, that this support comes with cautionary statements. ECCC notes that population condition at the NT1 scale includes both a consideration of population trends and disturbance levels (PR#94). As noted previously by several other parties, ECCC observed that there is insufficient data on population trends at the NT1 scale to allow for a determination (PR#94 p1). Based on the lack of data for boreal caribou, ECCC is of view that there insufficient information to conduct an impact assessment with any confidence (PR#107 p2).

ECCC also pointed to the *Recovery Strategy for Boreal Caribou in the NWT* and the forthcoming range plans as an important consideration (PR#94 p2, PR#218 p24). The Review Board observes that the ECCC technical report highlights that although presently NT1 range is the range used in the Territorial and National Recovery Strategies, smaller ranges are forthcoming (PR#218 p24). The ECCC technical report also highlights that achieving self-sustaining local populations in all boreal caribou (tǫdzı) ranges throughout their current distribution is a requirement of the *National Recovery Strategy* (PR#218 p24).

The Review Board takes ECCC’s conclusion on the issues seriously. ECCC noted that in the absence of the range plan for the North Slave region, a precautionary approach is required (PR#94 p2).

The Review Board finds that the assumption of a self-sustaining caribou population based on habitat disturbance over the entire NWT does not answer questions about the impacts to the boreal caribou (tǫdzı) that matter to this EA: the caribou in the area of the road. It also doesn’t answer questions about how Aboriginal harvest may be affected.

The Review Board notes that the developer relied heavily on information and guidance from the National and Territorial Recovery Strategies and the ECCC scientific document that proposed the 65% habitat threshold. The Review Board is concerned that the

developer did not appropriately use the threshold, due to the requirement for additional considerations of caribou population abundance and trends. As noted by the developer, parties, and the recovery strategy document, there is incomplete, or a lack of data on population abundance and trends. It also appears that the developer did not take into account guidance and cautionary notes from the two documents.

For instance, the Review board observes that the ECCC scientific document, which suggests the 65% threshold, states that “[t]he 2008 Scientific Review established caribou ranges as the appropriate scale at which to **identify critical habitat**, and applied a probabilistic approach to assessing the adequacy of the current range conditions to support a self-sustaining population based on **three lines of evidence: percent total disturbance, population growth and population size**” (PR#33 piii, emphasis added).

The Review Board agrees with ECCC that determining a self-sustaining status requires accurate predictions of population growth and size for the entire NT1 range, and that this information is not presently available, the developer acknowledged this numerous times during the EA. The Review Board agrees that the 65% threshold, as it applies to the assessment endpoint, is one part of determining the whether boreal caribou (tǫdzı) are likely self-sustaining at the NWT wide scale. But this is not the only question that this Board must address. The Board must also consider whether the road would lead to declines of boreal caribou (tǫdzı) in the area of the road, and whether Aboriginal harvest will be affected.

One of the cautionary notes that the Review Board observes from the ECCC scientific document is that “averaging habitat condition over a large, continuous area will mask spatial variation in disturbances, potentially resulting in range contraction where human development is concentrated” (PR#33 p15). The developer argued that the effects of the road on habitat are not significant at the NT1 scale (PR#110 p4-171). The Review Board is concerned that range contraction could occur due to existing factors, and that the road may further contribute to a contraction.

Slow implementation of range plans

The Review Board is part of the co-management structure for resource management in the Mackenzie Valley. The Review Board considers the views of other co-management groups, such as the WRRB very seriously. The WRRB’s role is to provide an assessment of wildlife management in the Wek’èezhì Resource Management Area and make recommendations on

wildlife management to both the Tłıchǵ and NWT governments. This board is a co-management institution with close ties to Indigenous harvesters. The Review Board observes that the developer does not appear to take the views of the WRRB seriously enough. For many of the WRRB's recommendations, the developer had deferred their concerns to the eventual implementation of the range plans that are required under the Recovery Strategy. The Review Board agrees with the developer that the range plans are the appropriate mechanism to manage boreal caribou (tǫdzı), but the timing of when these range plans will be implemented is a large concern.

The *Recovery Strategy for the Boreal Caribou in the NWT* is not fully implemented and appears to be a long way off. The GNWT has missed deadlines, as noted in the Federal Government's progress report on the implementation of the Strategy (PR#242).

In its closing arguments, the developer noted the WRRB's recommendation for completion of the range plans. The developer stated that progress is ongoing. With respect to the ongoing efforts to implement the range plans, the developer said "[t]he GNWT is working in partnership with the Tłıchǵ Government and Canada to develop a business case for land use planning in Wek'èezhì" (PR#285 p9). It appears to the Review Board that the development and implementation of range plans for boreal caribou (tǫdzı) is a legal obligation of GNWT under both its own and federal SARA legislation. These obligations are not tied to a "business case". There have been previous unexplained delays in implementing the range plans. The Review Board has been provided no evidence that the plans "are being advanced at a steady and appropriate pace" (PR#285 p9), as the developer argues. Multiple parties to this proceeding have expressed concerns that the pace is not fast enough.

The Tłıchǵ Government also commented on the importance of the recovery strategy for managing boreal caribou (tǫdzı) in the NWT and stated, "ENR has developed the NWT Boreal Caribou Recovery Strategy and it is in the process of developing regional range plans to demonstrate how the requirements in the federal *Recovery Strategy for the Woodland Caribou, Boreal population in Canada* will be met in the NWT" (PR#96 p69).

The WRRB stated that "[t]he WRRB believes that the completion of range plans, and specifically a Wek'èezhì/North Slave Range Plan is essential for assessment of the TASR." (PR#228 p1)

The Review Board observes the developer's closing arguments with respect to the WMMP, which said "[t]he GNWT will also appropriately monitor and manage impacts to wildlife and wildlife habitat associated with the TASR because GNWT-ENR is responsible for ensuring wildlife and habitat be managed for the benefit of current and future generations" (PR#285 p7 to 8). The Review Board shares the developer's sentiment and the Board has a similar responsibility to identify and mitigate significant impacts to that wildlife and habitat are available for future generations.

The developer has set out no mitigation plans which demonstrated that it can effectively manage the potential effects of the Project on boreal caribou (t̥d̥z̥), partially because the developer specifically did not assess the effects of the Project on boreal caribou (t̥d̥z̥) in the local area. Further, the developer is suggesting that eventual implementation of range plans will address many concerns. However, the GNWT has missed deadlines for implementing the recovery strategy. Without the *Recovery Strategy for the Boreal Caribou in the NWT* fully implemented, the Board is of the view that there is little evidence that boreal caribou (t̥d̥z̥) will have the necessary protections in place to ensure they persist throughout their current distribution, and of particular concern for the EA, the region in which the Project is located.

The Review Board notes that "the GNWT has the authority and takes very seriously its responsibility to manage wildlife in the NWT under the *Wildlife Act* and the *Species at Risk (NWT) Act*" (PR#285 p7). The numerous delays in implementing the boreal caribou (t̥d̥z̥) recovery strategy range plans raise concern with the GNWT's management of a threatened species. Rather than implement the range plans as required, the developer is proposing to add additional stressors to boreal caribou (t̥d̥z̥) and has not provided reasonable answers to basic questions about how this project will affect caribou and Aboriginal harvest.

The Review Board notes that the ECCC document states "[i]n general, the less information available, the less certainty there will be in outcomes, and the more precautionous the management approach should be with respect to conservation" (PR#33 p89). The Review Board finds that this project requires a precautionary approach to management of impacts on caribou.

The ECCC document also states that "[a] particular focus is to identify and avoid actions that carry a high risk of unintended outcomes or irreversible harm" (PR#33 p91). The developer stated that that road is intended to operate indefinitely and that there will be effects to both habitat and directly and indirectly to caribou. The Review Board considers

this to be a potential cause of irreversible harm. The irreversible nature of the effects from the Project is one more reason why the Review Board is taking a precautionary approach.¹

Boreal caribou determination and suggestions from the NICO Report of EA

The results of the Review Board's environmental assessment of Fortune Minerals' Nico Mine include commitments, measures and suggestions that are relevant to the Tłıchǫ All-season Road Report of Environmental Assessment. The Review Board observes that the NICO EA and the road EA are related. The NICO mine requires this road for the mine to proceed. While the NICO EA formed the first part of the assessment of boreal and barren ground caribou for these two related projects, the road EA furthers the assessment. The Review Board observes that the NICO REA provided the Board's views at the time of the potential for effects to caribou. This includes recommendations and suggestions. In the NICO REA, the Review Board observed that "[f]urther consideration of impacts to boreal caribou will be done during the assessment of the Tłıchǫ Road which is required before this project can proceed" (PR#266 p94)

The NICO report of EA also provides the Review Board's findings of significance, "[d]espite the commitments and measures listed above [in the NICO report of assessment], the Board finds that there will likely be significant adverse impacts to caribou and caribou habitat as a result of improved access around the Project area" (PR#266 p89). The Review Board is of the same view for the area around the road.

For the Tłıchǫ All-season Road Project EA, there was new evidence submitted on boreal caribou (tǫdzı) and barren ground caribou. For instance, the current state of boreal caribou (tǫdzı) habitat disturbance has changed, and the number of Bathurst caribou has declined further, 32,000 in 2009. For boreal caribou (tǫdzı), based on the evidence provided during the NICO EA the Board suggested that wildlife managers begin "developing and implementing range management plans and a comprehensive monitoring program that will track boreal caribou population indicators and landscape activities across the boreal caribou range in the Northwest Territories" (PR#266 p95). The Review Board observes that this suggestion from 2013 has not been implemented. Based on the evidence submitted during this EA, the Review Board is again suggesting the *Recovery Strategy for the Boreal Caribou in the NWT* and range plans are fully implemented.

¹ See Chapter 4 for discussion of the Review Board's use of the precautionary approach in this EA.

Conclusions on developer's predictions at NT1 scale

The developer's use of a self-sustaining caribou population as the assessment endpoint, which uses the NT1 range scale, and is based on assumptions from a risk-based habitat disturbance threshold is not sufficient for determining significance of project specific effects.

With respect to the application of the 65% threshold to the assessment endpoint for project specific effects assessment, the Review Board finds that there is insufficient evidence to justify its use for an assessment of project specific effects. Without a clear understanding of caribou abundance and trends throughout the NT1 range, and in the area of the road, relying primarily on habitat disturbance does not provide sufficient confidence in predictions of population trend.

Boreal caribou require protection, and not additional stressors. This protection will be largely fulfilled with the implementation of the *Recovery Strategy for the Boreal Caribou in the NWT* and range plans. The GNWT has missed deadlines for implementing range plans. This does not provide confidence that the developer can effectively manage boreal caribou (tǫdzı) in the area of the road, or at the NT1 scale.

6.6. Effects of the highway to boreal caribou (tǫdzı) habitat

The developer has identified that the Project is proposed in boreal caribou (tǫdzı) habitat and acknowledges that the road will have impacts on boreal caribou (tǫdzı) habitat. The developer's ASR states, "[t]he Project will affect boreal caribou survival and reproduction through habitat loss (vegetation clearing), sensory disturbances..." (PR#110 p 4-172). Traditional Knowledge submitted by the Tłıchǫ Government also identifies that boreal caribou (tǫdzı) use the area of the Tłıchǫ All-season Road Project and that it is boreal caribou (tǫdzı) habitat. The NSMA, YKDFN, and ECCC have also identified the presence, and importance, of boreal caribou (tǫdzı) in the area of the Project.

As discussed in Section 6.5, there is uncertainty to what extent the effects to habitat will have on boreal caribou (tǫdzı), due in large part to a lack of baseline information.

The developer described how the road will follow an existing abandoned trail which will require significant widening for the 60 metre right of way, with additional clearing for construction related infrastructure, such as quarries and access roads. The vegetation clearing for the right of way will be permanent while some of the effects to habitat from

construction related infrastructure will be remediated. Direct habitat loss is discussed further in Section 6.6.1.

The road will also affect boreal caribou (tǫdzı) through sensory disturbances, which can cause caribou to avoid the area around the road. The developer added a 500-meter buffer on either side of the 60 metre right of way to account for these potential behavioural impacts leading to a reduced amount of effective habitat for boreal caribou (tǫdzı). Parties have predicted that boreal caribou (tǫdzı) may not cross the highway, or cross the route less than they now do, resulting in habitat fragmentation. This is discussed further in Section 6.6.2.

The Review Board's analysis on the effects to habitat follows in Section 6.6.3, with the Board's conclusions and measures presented in Section 6.10 and 6.11.

6.6.1. Evidence: direct habitat loss

In its *Adequacy Statement Response* (ASR), the developer calculated that the road will have a buffered¹ disturbance footprint of 4,504 ha (PR#110 p4-170). The disturbance footprint of the Project is approximately 0.1% of the total habitat within the NT1 range, and 11% of the Wek'èezhì Resource Management Area (PR#110 p4-170).

The developer noted that existing habitat conditions along the Project corridor are dominated by recent forest fires. Figure 6-6 (below) shows the burnt areas in pink. The fire disturbed habitat overlaps with approximately 60% of the disturbance footprint of the road (PR#110 p4-171). The developer argued that the fire disturbance has already caused disturbance to habitat and will mask the effects of habitat disturbance from the road. The developer submits that this means the road will affect only 1780 ha of undisturbed habitat, because much of the full 4504 ha of the Project's ecological footprint will be in areas already disturbed by recent fires (PR#110 p4-170).

The developer provided estimates of habitat disturbance from the project at the large NT1 scale and at smaller scales, including the North Slave region and the Wek'èezhì Resource

¹ The developer's calculation of the amount of habitat disturbed by the project includes 500 meters on either side of the road. The application of this buffer is intended by the developer to more fully account of the various effects of the project may have on boreal caribou (tǫdzı). This includes effects from sensory disturbances (such as noise from traffic) and effects from predation by wolves that may use the road to facilitate their movement.

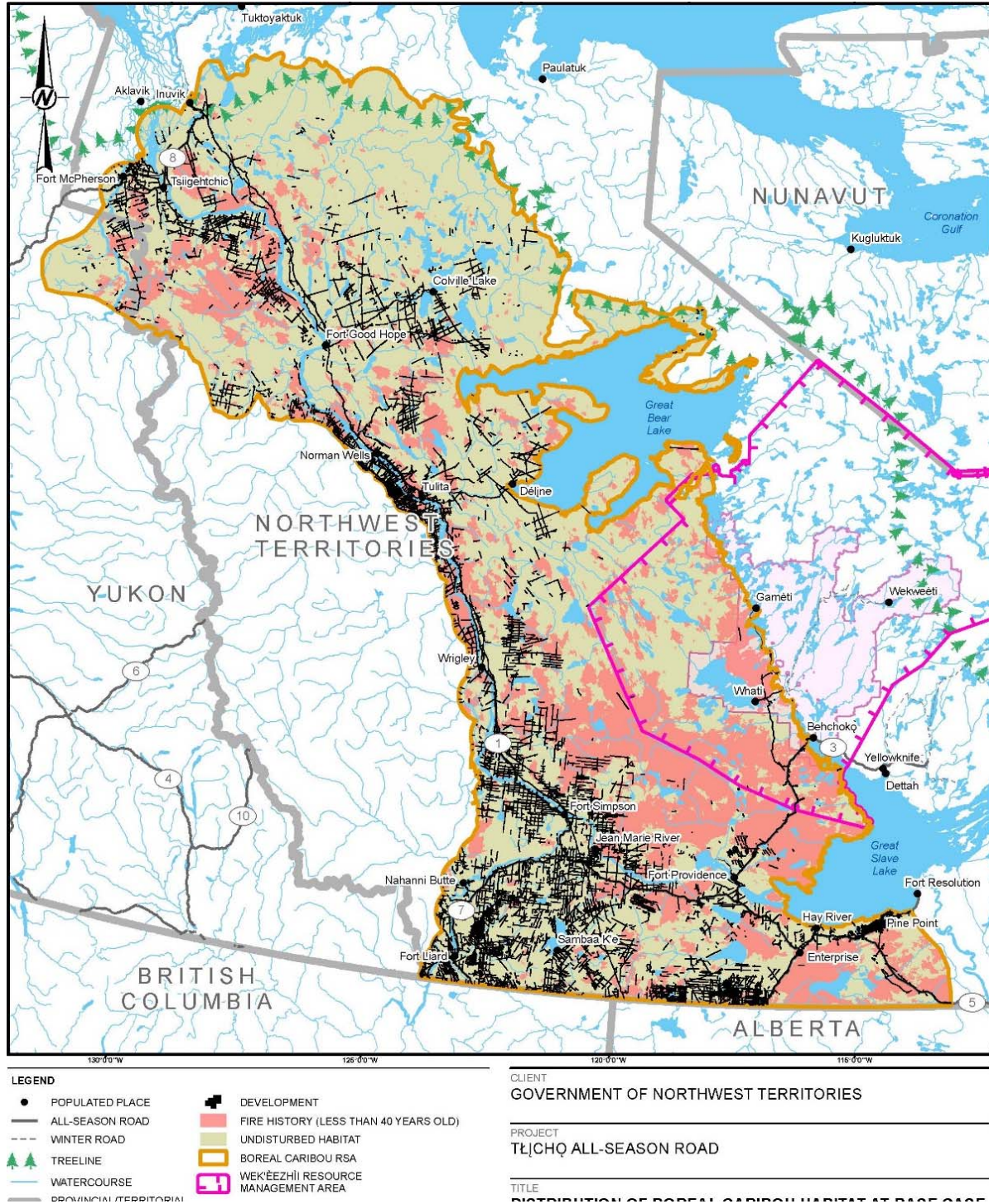


Figure 6-6. Distribution of Boreal Caribou Habitat Disturbances.

(Source: PR#110 p4-43)

Management Area (WRMA). The amount of disturbance for each of these regions is as follows:

The percentage of the NT1 range habitat that is disturbed by fire is 24.4% and 8.9% from buffered development disturbance. This results in a total of 66.8% undisturbed habitat (PR#110 p4-40). At the hearing, the developer provided an updated analysis of total habitat disturbance and stated that “there is a 65.9 percent undisturbed habitat through RFD [reasonably foreseeable development] case which remains near and still above the 65 percent threshold as reported in the ASR” (PR#274 p17).

The percentage of the North Slave region habitat that is disturbed by fire is 47.4%. in addition, 0.6% of the North Slave region is disturbed by development.¹ This results in a total of 52% undisturbed habitat (PR#110 4-41).

The percentage of the Wek’èezhì region habitat that is disturbed by fire is 39.1% and 0.9% buffered development disturbances. This results in a total of 60% undisturbed habitat (PR#110 4-41).

As discussed in Section 6.5, within the NT1 range there are uneven amounts of habitat disturbance from both natural and human causes. Natural disturbances are primarily from forest fires, with most of the disturbance occurring in the southern portion of the NT1 range, as shown in Figure 6-6.

The WRRB and NSMA noted that the amount of existing disturbance in the region of the road (the North Slave or the WRMA) exceeds the 65% intact critical habitat threshold proposed by the developer, and that the road will add additional habitat disturbance and habitat fragmentation (PR#282 p5; PR#281 p2). Figure 6-3 from the WRRB’s public hearing presentation shows the amount of habitat disturbance in relation to the likelihood of a boreal caribou (tòdzı) population being considered self-sustaining.

Based on the threshold being exceeded in the region of the road at base case, parties expressed concerns that there may not be sufficient habitat for a self-sustaining boreal caribou (tòdzı) population, and that the road will add to this concern. Concerns over the

¹ Described as “buffered development disturbance” in the developer’s ASR.

threshold being exceeded are exacerbated by a 1) lack of data on population abundance and trends and 2) the likelihood that boreal caribou (t̨qd̨z̨) numbers are likely declining in the area of the road, as discussed in Section 6.5.

In its *Adequacy Statement Response*, the developer stated that the “[l]ocal impacts from habitat loss were associated with the physical footprint and sensory disturbance from construction and operational activities and are predicted to influence individuals that travel through or occupy habitats within 500m of the Project site (Environment Canada 2012), and possibly more depending on traffic volumes” (PR#110 p4-211). The use of this 500 metre buffer is required when calculating habitat disturbance in order use the 65% threshold (PR#33). In its technical report, the WRRB cautioned that effects to boreal caribou (t̨qd̨z̨) and their habitat caused by the Project may extend further than 500m, and more precautionary buffer would be 2500 m on each side of the highway (PR#228 p18). These effects to boreal caribou and their habitat may result from such effects as sensory disturbances (noise, sight, or smell), use of the road by predators to fascinate preying, or alteration of vegetation by dust.

In its technical report, the WRRB recommended a habitat offset for the buffered disturbance of the project. The WRRB follow-up on this topic in its closing arguments and recommended that the GNWT should work with elders to identify boreal habitat to set aside as a special conservation area equal to the Project corridor, with a 2.5 km buffer on each side (PR#282 p9). In its closing arguments the NSMA also recommended habitat offsets to compensate for habitat loss from the Project (PR#281 p6).

At the public hearing, the developer stated that it is not considering creating habitat offsets to compensate for impacts to boreal caribou (t̨qd̨z̨) from the Project specifically. The developer said that the GNWT is considering habitat offsets in the context of range planning under the *Recovery Strategy for the Boreal Caribou in the NWT*, which includes a range for the North Slave Region. The developer indicated that GNWT’s approach to managing habitat will include managing the amount of undisturbed habitat over the long term and working towards the 65% undisturbed habitat threshold by balancing new disturbance with the recovery of existing disturbed areas (PR#274 p53):

The developer acknowledged the potential for future developments that could further affect boreal caribou (t̨qd̨z̨) habitat to be induced or made possible because of the road. It stated that “(t)he road will open up the road for economic development opportunities. The Tł̨chq̨ government offers its support for the project for very similar reasons” (PR272 p21).

The developer observed that lowering transportation costs increases the range of economically viable developments (PR#272 p77).

The Tłıchǵ Government's Traditional Knowledge study report also notes concerns by Elders that the road would lead to increased use of trails, increased hunting and fishing, and increased industrial development (PR#28 p41). The Traditional Knowledge study states that "[c]oncerns exist over increased exploration and the possibility of discovery of new mineral or oil and gas deposits: Concerns over the possibility of the establishment of new mines. Concerns over the possibility of more development in wildlife habitat and preferred harvesting areas" (PR#28 p41).

6.6.2. Evidence: effects of traffic and sensory disturbance

Parties examined the potential for traffic on the proposed Project to cause sensory disturbances to boreal caribou (tǫdzı) from noise, smell and sight, which would change caribou behaviours and movements, resulting in habitat fragmentation. For example, the Tłıchǵ Government's Traditional Knowledge study noted the sensitivity of boreal caribou (tǫdzı) to noise and human activities (PR#26 p35). Parties also considered the potential for traffic to result in collisions with boreal caribou (tǫdzı).

The developer's predictions of the effects of traffic to boreal caribou (tǫdzı) was based a prediction of approximately 20 to 40 vehicles a day using the highway. This consists of approximately 22 public use vehicles, 9 industrial mine vehicles for the proposed NICO mine, and 9.5 commercial vehicles per day (PR#110 Appendix C p 3). The developer considered the effects of traffic to boreal caribou (tǫdzı) by using the average number of vehicles per hour, 1.7, and assessed what effects this traffic may have on boreal caribou (tǫdzı) (PR#110 p4-171).

The developer acknowledged that the number of vehicles per day may fluctuate considerably, due to special events occurring in the Tłıchǵ communities, or other seasonal events, such as hunting seasons or the winter road season to Gamètı and Wekweètı. In appendix C of its *Adequacy Statement Response*, the developer provided its evidence and rationale for its prediction of 20-40 vehicles per day (PR#110).

The developer identified that the road will change movement patterns of boreal caribou (tǫdzı) and may act as a barrier to caribou movement (PR#110 p4-171). The developer

also acknowledged there is the potential for vehicles to hit boreal caribou (tǫdzı).¹ The developer's views are provided in the following statements:

- "The low traffic volume and speed limits is predicted to mitigate effects to injury and mortality and connectivity for self-sustaining and ecologically effective boreal caribou populations" (PR#110 p213).
- "[N]oise or visual stimulus from traffic will be periodic and unlikely to result in permanent reduction of movement potential through the area." (PR#110 p4-171)
- "[E]ffects to movement from either fragmentation or avoidance of the Project during construction or operation will be localized and not likely to be measurable at the NT1 range scale" (PR#110 p4-171).
- "The risk of vehicle strikes is continuous and permanent for all-season roads, but strikes may not be frequent enough to influence survival at the NT1 range scale, and therefore this effect is probable but predicted not to have a strong influence on caribou survival or reproduction" (PR#110 p4-212).

The developer argued that these effects will not be significant for several reasons. Due to the low traffic volume and speed limit of 70km/h the developer argued that the road would not act a significant barrier to movement, and therefore, would not completely isolate a portion of the range (PR#110 p4-172). The developer also argued that the NT1 range contains a self-sustaining population and that these predicted effects, when considered in the context of the larger NT1 population, are small and in some cases not detectable.

Several parties, including the NSMA and WRRB, raised concerns about what the effects of traffic might be to boreal caribou (tǫdzı) in North Slave or Wek'èezhì Resource Management Area regions. However, parties were not able to fully understand the significance of the effects to boreal caribou (tǫdzı) in this smaller region because of a lack of baseline data, and because the developer did not determine if boreal caribou (tǫdzı) in this smaller region are self-sustaining. In response to a WRRB information request, the developer stated that "the ASR did not determine whether boreal caribou in the Wek'èezhì portion of the NT1 range are self-sustaining and ecologically effective" (PR#142 p15).

In its technical report, ECCC raised concerns about how the road could affect habitat connectivity (PR#218 p25). ECCC stated (PR#218 p25):

¹ Please see Sections 5.3.7 and 5.4.7 for discussion of impacts to human safety and emergency response.

The potential effects of the Project on Boreal Caribou habitat connectivity has been of concern to ECCC and is directly related to the population and distribution objectives in the recovery strategy. Potentially at risk from the Project is the functional loss of an estimated 142,600 ha patch of undisturbed habitat that lies directly east and extends to the boundary of the range.

Regardless of whether boreal caribou (tǫdzı) are self-sustaining in the region of the road, parties are concerned that effects from traffic may have been underestimated by the developer.

The developer stated that its approach to assessing effects to boreal caribou (tǫdzı) ensured that effects were not underestimated, was precautionary and provided confidence in its conclusions (PR#274 p12-13). However, parties raised concerns with the developer's use of an averaged traffic rate likely did not accurately characterize the effects of traffic on the road. In its closing arguments, the NSMA recommended that the developer collect traffic data that provide accurate information on the actual number, frequency, and timing vehicles to help to inform adaptive management (PR#282 p7).

6.6.3. Review Board analysis: disturbance and effective habitat loss

The Review Board is of the view that there is insufficient evidence provided by the developer to substantiate the predictions that the road will not cause significant adverse effects to boreal caribou (tǫdzı) habitat, either by direct disturbance or by sensory disturbance.

The Board's concerns are compounded by the developer's use of the very large NT1 range, and assumptions about whether boreal caribou (tǫdzı) are self-sustaining at this scale, to determine whether the effects of the road are significant. (These concerns are discussed in detail in Section 6.5). Further, the developer did not assess what the potential effects of the road would be at a smaller scale, which would have allowed for meaningful insights into how the road may affect boreal caribou (tǫdzı) and their habitat around the Project. The Board gave the developer specific direction to consider Project effects in the North Slave Region, but the developer did not do this.

The Review Board notes that the Project will require clearing of habitat and that sensory disturbances from the road will likely increase the size of the disturbance footprint. The developer is not presently considering habitat offsets for the Project. The developer used a habitat disturbance threshold to infer whether boreal caribou (tǫdzı) are self-sustaining at the NT1 range scale. The Board understands that this threshold will apply to the boreal

caribou range plan for the region of the NWT where the highway is located (the North Slave region). Based on evidence provided by the developer, this threshold is already exceeded in this region.

These points raise concerns for this Board. The Review Board accepts that the threshold is not exceeded at the NT1 scale, although it is within 1% of being exceeded. The Review Board does not agree that this ecological threshold represents an acceptable level of risk for EA purposes, as the developer has argued.¹ The Review Board notes that over 65% of boreal caribou (tłdzı) habitat in the North Slave region is already disturbed, meaning the developer's threshold is exceeded now. This suggests that boreal caribou (tłdzı) may not be self-sustaining in the area of the road at present. When the overdue range plan is implemented, this threshold will apply to the North Slave region.

The Review Board heard the developer's argument that the 65% threshold may not be appropriate for the North Slave region due to the amount of forest fire disturbance (PR#99 p2) and because, in the developer's view, there is not evidence that this region contains a biologically distinct population of boreal caribou (PR#142 p15). This is discussed Section 6.5.3. However, the Review Board did not hear compelling evidence that this 65% threshold is inappropriate and could not be applied. Rather, the Review Board heard the argument from the developer that there is uncertainty with applying this threshold to the North Slave region due to the high amount of forest fire disturbance and on the premise that the region does not contain a biologically distinct population of boreal caribou (tłdzı). During an EA, the burden of proof is on the developer to substantiate its position.²

The Review Board observes the developer's position for achieving the 65% threshold is about balancing new disturbance with the natural rate of recovery for existing disturbances (PR#274 p53):

[a] lot of the human disturbance that we currently have on the landscape is decades old and is recovering and will recover so it will be about balancing disturbance from new development with a rate of recovery of the existing disturbance on the landscape and that's something that we think we can manage to keep us above 65 percent.

¹ See Section 6.3 for details.

² As stated in the Board's Rules of Procedure, "any party seeking to convince the Review Board of any point or position in a proceeding bears the burden of proof in so doing and has the responsibility to introduce information or evidence to support their position". While the actual burden of proof can shift during an EA, issue by issue, depending on whether the developer or a party is attempting to convince the Review Board of a position, to a large extent the obligation to identify and evaluate the environmental impacts of a proposed development rests with the developer.

The Review Board acknowledges the developer's argument that the Project follows an existing corridor that is already disturbed, and that large areas of the right of way are disturbed by fire. These burnt areas will regenerate and likely become important habitat for boreal caribou (tǫdzı) in the future. Since the road is proposed for perpetuity, when these fire disturbed areas regrow, and become suitable undisturbed habitat, the road will still cause effects to this recovered habitat that will reduce its effectiveness. In the context of the Projects lifespan, it is only for a relatively short period that the recent burns would reduce the portion of habitat disturbance caused by the Project.

The Review Board did not hear compelling evidence that the developer is currently actively working on balancing the rate of new habitat disturbance against the natural rate of landscape recovery from historical disturbance. The Review Board understands that maintaining this 65% threshold will be required when boreal caribou (tǫdzı) range plans are eventually implemented, and that this proposed approach for balancing new disturbance with old disturbance will apply. However, firm commitments on implementing these range plans were not presented during the EA. In the absence of range plans, the Review Board is concerned that new developments and disturbances to boreal caribou (tǫdzı) habitat are occurring without proper consideration of, or protection of, boreal caribou (tǫdzı) and their habitat. This is particularly relevant in this EA with respect to the range plan for the region where disturbances from the Project will occur.

The Review Board's concerns are heightened by the potential effects of induced development. The Review Board recognizes there is uncertainty about what future developments may occur and how these could affect boreal caribou (tǫdzı). The likelihood of developments occurring is much higher given that the road is intended to be permanent, providing an unlimited period of access for new developments. The Review Board notes that both the developer and Tłıchǵ Government support the Project partly because of the belief that it will lead to induced development. The absence of a land use plan (except for the small portion of the road on Tłıchǵ lands) and the lack of implementation to date of the range plans for boreal caribou (tǫdzı) does not provide this Board with confidence that boreal caribou (tǫdzı) habitat is currently being effectively managed in the area of the road, nor has the Board heard compelling evidence of when effective management will be in place.

In its closing arguments, the WRRB recommended a habitat offset based on a 2.5 km buffer on each side of the road. In response to WRRB's recommendation, the developer stated that the GNWT is working towards a policy for habitat offsets, and that offsets are best dealt

with through the forthcoming range plans (PR#285 p9, p15). This policy on habitat offsets was not provided as evidence during this EA. The Review Board takes note of the delays in the implementing the range plans. Several parties have requested that these range plans be implemented and that the GNWT speed up its efforts. (A discussion of the implementation of range plans is found in Section 6.5).

The Review Board agrees with the developer that habitat offsets are best suited to range planning. The Review Board also agrees with the WRRB and NSMA that habitat offsets are required to mitigate effects of the Project. The Tłı̨chǫ GOVERNMENT in its technical report also suggested that direct habitat loss from the Project be mitigated (PR#216 p8). The amount of habitat lost from this project, either through direct habitat loss or effective habitat loss requires mitigation. Ensuring that boreal caribou (tǫdzı) remain in the area of the Project requires managing boreal caribou (tǫdzı) habitat over the long-term.

With regards to the existing trail, the Review Board is of the view that the likely effects of the Project to boreal caribou (tǫdzı) habitat will likely be much greater than the effects of the existing trail. These additional effects will have an adverse effect on boreal caribou (tǫdzı) and their habitat.

The developer's closing arguments stated, "the information provided by the GNWT has provided all Parties with sufficient information from which to reasonably extrapolate to their various areas of interest" (PR#285 p15). The Review Board disagrees. Parties clearly did not have sufficient information to extrapolate to their area of interest. For instance, the developer acknowledged the lack of baseline information about boreal caribou (tǫdzı) abundance and trends in the area of the North Slave region. Further, the developer specifically did not determine whether boreal caribou (tǫdzı) are likely self-sustaining in the area of the Project. This lack of information did not allow parties to make reasonable detailed and quantitative predictions about how the Project is likely to affect boreal caribou (tǫdzı).

In its technical report, ECCC highlighted the lack of baseline data for the North Slave Region and the potential for the road to lead to habitat fragmentation (PR#218 p25). Habitat fragmentation is a concern to the Review Board. It is not clear how habitat fragmentation effects caused by the road could be mitigated. Managing effects of the road on boreal caribou (tǫdzı) habitat is extremely important given how sensitive boreal caribou (tǫdzı) are to sensory disturbances from potential barrier effects of the road from noises, sights and smells.

The Review Board is of the view that managing effects of the Project to boreal caribou (tǫdzı) habitat will require a long-term management approach. The developer has alluded to this in its statements about managing old habitat disturbances that are regenerating with new habitat disturbances. This approach is best suited to the forthcoming range plans. The Review Board is recommending that range plan(s) are in place prior to the road being open to the public. The Review Board is also recommending the amount of habitat disturbed by the project is offset (Please see Review Board findings and measures in Section 6.10 and 6.11).

6.7. Effects of predation

6.7.1. Evidence: effects of predation

Parties, including the Tłıchǵ Government, NSMA and WRRB, expressed concern that the road may lead to increased predation of boreal caribou (tǫdzı) by wolves (PR#216 p8; PR#281 p4; PR#228 p8; PR#142 p PDF22). The primary driver for this concern is that wolves are known to use linear features, such as roads, to increase their ability to prey on boreal caribou (tǫdzı). These concerns are exacerbated by the recent forest fires around the road, which are predicted to cause an increase in moose densities, because moose favour browsing on the primary plant succession that follows burns (PR#142 PDF p24). This increase in moose is predicted to lead to increases in wolf densities as the wolves follow the moose into the region, or as wolves increase in population because the increased availability of moose increases wolves' energy budget and results in larger wolf litters (PR#110 p4-172). This increase in wolf density can cause greater rates of predation on boreal caribou (tǫdzı). This is referred to as 'apparent competition'.

In its *Adequacy Statement Response*, the developer acknowledged the role of wolves and stated "[p]redation, primarily by wolves, is considered to be the main factor limiting caribou populations, and increased predation by wolves and possibly other predators is facilitated by underlying landscape changes through apparent competition" (PR#110 p4-45).

The developer contends that potential increases in wolf densities is not due to the road, but rather to forest fires. In response to a WRRB information request#11, the developer stated that "[t]hese expected changes are largely related to existing fire disturbance, not to the Project, and would occur with or without the Project" (PR#142 PDF p24).

The developer argued that existing trail is likely used by wolves and that the proposed road will not change this. The developer's views on apparent competition are provided in its response to the NSMA technical report (PR#230 PDF p47):

The weight of available evidence, including the evidence provided by the NSMA, indicates that incremental and cumulative changes from the Project and other developments should not have significant adverse effects on the self-sustaining and ecologically effective boreal caribou population in the NT1 range. Although apparent competition is an important mechanism driving population decline, and the NSMA have identified uncertainty about whether or not this mechanism is important in the NWT, there is little evidence to support the potential for the TASR to contribute in significant ways to either the functional response (i.e., increasing the rate at which wolves kill caribou) or numerical response (i.e., increasing wolf density) components of apparent competition. The potential for the TASR to contribute to either functional or numerical responses is limited because the TASR will follow an existing linear disturbance.

In response to the WRRB's technical report the developer reiterated its position and stated that "[b]ecause the TASR will follow an existing trail, linear feature density will change little from existing conditions and changes in predation by wolves, bears, or people are not expected to be substantial" (PR#240 p2-12).

In its technical report, the WRRB noted concerns that the draft WMMP lacks details regarding monitoring and managing wolves. The WRRB stated that "[t]he draft WMMP has few details for how mitigation will avoid or minimize increased harvesting, increased predation resulting from changes in moose and bison, increased road induced mortality, and barrier effects to caribou" (PR#228 p15). In response to a WRRB information request, the developer said that "[c]hanges in predation could be measured by undertaking an intensive study of the survival of collared boreal caribou, including rapid field investigation of mortality signals to determine cause of death" (PR#142 PDF p24).

The Tłıchǵ Government stated in its technical report stated that increased predation risks that result from the Project should be considered and mitigated through adaptive management (PR#216 p8). The Tłıchǵ Government expressed its views that the information gaps it identified in its technical report will be addressed through the upcoming range plans required under the *Recovery Strategy for the Boreal Caribou in the NWT*, and that this information will be used to inform the WMMP (PR#216 p10). The Tłıchǵ Government specifically identified "[i]ncreased predator population and predator movement along the TASR, specifically from wolves" as an information gap that should be addressed in range plans, and that this information should be used to inform the WMMP and adaptive management actions as needed (PR#216 p10).

In its technical report and closing arguments, the NSMA expressed its concerns that wolf numbers may increase due to the recent forest fires, and that the road could lead to increased predation of boreal caribou (tǫdzı). This could reduce caribou numbers (PR#281 p5). The NSMA said that these concerns over caribou numbers are compounded by the other predicted effects of the road and concerns that boreal caribou (tǫdzı) population in the region may not be stable (see Section 6.5). These combined effects could adversely affect Aboriginal harvesting (PR#281 p5).¹ In its closing arguments, the NSMA recommended measures to monitor wolf populations, and if needed, options for adaptive management and mitigation measures (PR#281 p6).

Regarding its predictions, the developer notes there is uncertainty and states that “[a]lthough moose are expected to increase and this may result in higher wolf abundance and predation risk for boreal caribou, the effect this may have on boreal caribou populations remains uncertain” (PR#142 PDF p24). The developer contends that monitoring of wolves is not required and stated that “[a]t this time, the resources required to additionally monitor wolf densities are not justified. If the monitoring indicates a concern with the status of boreal caribou (tǫdzı), moose or bison, then the monitoring of wolves may be initiated as a management response” (PR#239 PDF page 48).

6.7.2. Review Board analysis: changes to predation from the Project

The Review Board finds there is considerable uncertainty regarding what effects the road may have on predation of boreal caribou (tǫdzı) by wolves. The developer stated that the road will lead to changes in predation by wolves but argued that these changes will not be substantial and won’t cause boreal caribou at the NT1 range scale to no longer be self-sustaining. The Review Board listened to the concerns from the NSMA and other parties about the potential effects of wolf predation on boreal caribou (tǫdzı) may be greater than the developer asserts. In the Board’s view, the uncertainty of effects is exacerbated by the lack of information on wolf densities or predation rates in the area of the Project. Without this information, the Review Board is not convinced by the developer’s arguments that the road will not lead to a substantial increase in predation levels of boreal caribou (tǫdzı) by wolves. The onus is on the developer to persuade the Board that the Project will not have a significant impact on caribou from increased predation success along the road. The Review

¹ As discussed in Chapter 9.

Board also understands that the developer is not proposing to gather any information on wolf densities or predation rates that would allow for a validation of its predictions.

The Review Board notes the developer's closing arguments, where it stated that it had provided enough information to allow parties to understand the effects of the Project at a scale that is meaningful to that party (PR#285 p15). However, the developer did not provide sufficient evidence about wolf populations in the area of the Project, or about the boreal caribou (tǫdzı) population and trends, to allow parties to understand the potential effects of the Project.

The Review Board notes that the *Recovery Strategy for the Boreal Caribou in the NWT* and the developer's *Adequacy Statement Response* highlight the strong role wolf predation has on boreal caribou (tǫdzı). According to the developer's *Adequacy Statement Response*, wolves are the primary limiting factor for boreal caribou (tǫdzı) populations and linear features, such as roads, facilitate predation (PR#110 p4-45). Whether the change in wolf predation caused by the road is significant depends largely on the population trend of boreal caribou (tǫdzı). Based on the lack of data for the region, this is presently unknown. A small increase in wolf predation could cause a significant adverse effect to a boreal caribou (tǫdzı) population if its population trend is negative.

As noted, the road is predicted to have multiple effects to boreal caribou (tǫdzı), any one could be lead to a population decline. A consideration of all the predicted adverse effects combined supports the prediction that the Project is likely to cause an adverse effect to boreal caribou (tǫdzı).

Concerns over predation by wolves, and how the road may affect predation success, is further complicated by the recent forest fires. These fires are predicted to lead to an increase in the moose population, which is predicted to increase wolf densities. The Review Board agrees with the developer's position that this predicted increase in the wolf population is not attributable to the Project. With respect to use of the Project by wolves, the Review Board understands that the developer is not predicting a substantial change. This is based on the developer's premise that wolves are likely using the existing the trail and their behaviour is assumed to not change due to the change of the trail to an all-season highway.

The Review Board notes there is no baseline data on usage of the existing trail by wolves. Further, the Review Board is not aware of any proposed monitoring of wolf densities,

movement patterns, or predations rates for this project. The Review Board notes that the developer's WMMP states "[t]he presence of some uncertainty in these conclusions is recognized, and the conclusions will be confirmed through the boreal caribou monitoring described in the WMMP" (PR239 p2-5).

The Review Board agrees with the Tłchq Government when it stated, "[u]nderstanding the interaction between the Project and wolves to caribou populations is important to ensure that management actions address this interaction to the extent possible" (PR#216 p10). The Tłchq Government recommended that these information gaps be filled through the GNWT's efforts to implement the range plans for boreal caribou (tqdzı) and that this information is considered by the WMMP and used to inform adaptive management as needed. The Review Board agrees.

For reasons described in Chapter 10, the Board accepts that the Project is likely to increase the number of bison in the area. In the Board's view, this may attract wolves which will opportunistically prey on boreal caribou (tqdzı). During the November 16, 2017 public hearing in Whatı, the WRRB stated that "[a]dditional prey species, such as bison and moose, may increase the number of wolves and other predators in the area, thus impacting on the [tqdzı] [boreal caribou] and [zekwq] [barren ground caribou]" (PR#274 p152). The WRRB specified that roads facilitate "...movement of alternative prey species, which wolves may follow, thus increasing the probability of encounter with boreal caribou, thus increasing their predation" (PR#274 p175).

Considering this, along with 1) the lack of information, the strong role wolves have on boreal caribou (tqdzı) populations, and uncertainties with how the Project corridor may affect wolf predation rates, and 2) the importance and vulnerability of boreal caribou (tqdzı), the Review Board accepts that a precautionary approach is appropriate for this topic. The Board concludes that adverse effects on caribou are likely from increased predation indirectly resulting from the Project. This is a consideration in the Review Board's overall conclusions about boreal caribou (tqdzı), presented in Section 6.10 at the end of this chapter.

6.8. Effects from hunting and harvesting on boreal caribou (tqdzı)

This section discusses the potential effects the road may have on boreal caribou (tqdzı) from predicted increased hunting and harvesting pressures.

In some instances, the developer has used the term ‘harvesting’ to include both non-aboriginal hunting and Aboriginal harvesting. To ensure consistency, the Review Board refers to Aboriginal harvesting and non-Aboriginal hunting in this document.

The Review Board notes that effects to boreal caribou (tǫdzı) and effects on Aboriginal harvesting are linked. Predicted effects of the road, including hunting and harvesting pressures, can cause adverse effects to boreal caribou (tǫdzı) populations, which in turn, can have adverse effects on people’s ability to hunt and harvest boreal caribou (tǫdzı). Effects to boreal caribou (tǫdzı) from harvesting and hunting are discussed below. Consideration of effects to Aboriginal harvesting is presented in Chapter 9.

6.8.1. Evidence: effects of hunting and harvesting

The developer predicted an increase in hunting and harvesting pressures during the operational phase of the road. The developer predicted that these effects would not significantly affect the entire boreal caribou (tǫdzı) population in the NWT (provided this population is self-sustaining), nor would these significantly effect Aboriginal harvesting. The developer stated in its WMMP:

- “one of the key concerns associated with the TASR is increased wildlife mortality associated with a) hunting along the road; b) greater hunter access from the road into previously difficult-to-access harvesting areas” (PR#151 p6p5)

In its *Project Description Report*, the developer stated that:

- “As access becomes easier, furbearer trapping, hunting and poaching is likely to increase in areas that were not easily accessible prior to the TASR construction. An increase in trapping, hunting and poaching along the proposed TASR may lead to over-harvesting of populations if not properly managed.” (PR#7 p8-15)
- “The proposed TASR will allow hunters and trappers greater access to harvesting areas adjacent to the road and more remote areas off the road on a year-round basis and, consequently, will likely increase harvest pressure on caribou, moose furbearers, and waterfowl. Though the road follows disturbed habitat that is currently accessible to ATV’s and snowmobiles, the road will allow larger vehicles into the area with greater ease, which could facilitate larger harvests.” (PR#7 p8-15)
- “The proposed TASR is expected to improve access to hunters. Although hunting is thought to pose a risk to its conservation, it is estimated that only 80 boreal

woodland caribou were harvested annually in the NWT in the 2000s; this estimate may be unreliable due to underreporting or species misidentification (SARC 2012).” (PR#7 p8-18)

The developer argued that current harvest levels of boreal caribou (tqdzı) are low and provided evidence that there is likely very low hunting pressure along the existing trail (PR#142 PDF page 4; PR#7 p8-18; and, PR#285 p12 to 13). In its closing arguments the developer stated that there are no boreal caribou (tqdzı) hunting tags issues for Wildlife Management Zone R, which is where the proposed road will be located (PR#285 p12). However, there is a great deal of uncertainty regarding hunting and harvesting pressures (PR#7 p8-18). In its response to the WRRB technical report, the developer “acknowledges that the levels of boreal caribou harvest at the Base Case is an uncertainty” (PR#240 p2-8) and in response to information requests stated that “[h]arvest records are limited to hunter survey records completed by resident hunters and do not account for Aboriginal harvest” (PR#145 PDF page 4).

In its *Adequacy Statement Response*, the developer argued that effects of hunting to the boreal population will not be significant for several reasons. The developer predicted that there will be few caribou harvested or hunted because caribou occur in low densities and are spread out over large areas of undisturbed habitat. The developer also asserted that the proposed road won’t substantially change existing hunting pressures because it follows an existing trail which is currently used for hunting (PR#110 p4-172).

The developer did not identify any mitigations for the likely increase in hunting pressures on boreal caribou (tqdzı). At the public hearing in Whatı, the developer stated (PR#274 p82):

We’re not proposing any additional mitigation measures at this time. We have proposed a number of monitoring programs to try and detect a change, if there is one, and if there are problems that we think need to be addressed, then we’ll look at implementing mitigations at that time.

To understand how boreal caribou (tqdzı) would be affected by likely increases in hunting and harvesting, an understanding of the boreal caribou (tqdzı) population in the vicinity of the road is required. As noted in Section 6.5, there is considerable concern with the lack of information about boreal caribou (tqdzı) in the area of the road. Due to the lack of information, the developer stated that “the ASR [adequacy statement response] did not determine whether boreal caribou in the Wek’èezhı portion of the NT1 range are self-

sustaining and ecologically effective” (PR#142 p15). Without a prediction of how boreal caribou (tqdzı) are doing near the road, it was difficult for parties to understand what effects the road may have on boreal caribou (tqdzı), or how Aboriginal harvesting will be affected by the road.

In its technical report, the NSMA observed that in its view, boreal caribou (tqdzı) in the area are likely not self-sustaining (PR#214 p7). The NSMA raised concerns that predicted increases in hunting pressures have the potential to cause further declines to boreal caribou (tqdzı) in the area. The NSMA noted there is a lack of information regarding hunting and harvest levels, but also on boreal caribou (tqdzı) in the area. Due to the lack of information there is a great deal of uncertainty over the magnitude of effects. Based on concerns over the stability of the boreal caribou (tqdzı) population in the area of the road and the lack of data, the NSMA recommended monitoring of harvest and hunting (PR#214 p7).

The YKDFN highlighted the concern with the potential for increased hunting of boreal caribou (tqdzı) due to the current restrictions on barren ground caribou, which has put increased importance on boreal caribou (tqdzı) as a source of country food (PR#283 p3). The WRRB noted the same concern with Tłchq community members relying more on boreal caribou (tqdzı) (PR#284 p6).

In its closing arguments, the YKDFN raised concerns that the boreal caribou (tqdzı) population around the road is likely not stable and is likely declining (PR#283 p4). The YKDFN also noted a lack of information that did not allow for boreal caribou (tqdzı) population and trend estimates in the area of the road. The YKDFN expressed its view that hunters are likely the single greatest cause of boreal caribou (tqdzı) deaths. In light of this hunting pressure, in conjunction with evidence pointing to likely declining caribou population in the area of the road, and concerns with preserving boreal caribou (tqdzı) for harvesting, the YKDFN recommended that “limits be placed on recreational hunters” (PR#276 p4). In the opinion of the Yellowknives, by restricting hunting, a significant source of boreal caribou (tqdzı) mortality would be eliminated, and this would help to ensure boreal caribou (tqdzı) are maintained in the area.

The Tłchq Government’s Traditional Knowledge study also raised concerns with effects of non-Aboriginal hunters. To mitigate this concern the Traditional Knowledge study recommended reducing outsider access to hunting, and a no hunting and trapping zone in the immediate area along both sides of the road (PR#28 p41).

In its closing arguments, the developer addressed the YKDFN's recommendation in two ways. Firstly, the developer stated that any discussion on limiting hunting should not be done in an EA specific context. Secondly, the developer asserted that there is insufficient evidence on the public record to justify the YKDFN's assertion that presently resident hunters are causing a significant effect to boreal caribou (tǫdzı) at the NT1 scale, or that resident hunters using the road will cause a significant effect to boreal caribou (tǫdzı) (PR#285 p12 and 13).

The developer also stated that the "GNWT is limited in the actions it can take to restrict harvesters along a public road unless it can identify a public safety or conservation concern" (PR#151 p 6). The developer acknowledged that in order to determine if there is a conservation concern due to increased hunting, enhanced monitoring is required (PR#151 p6). In its closing arguments, the WRRB raised concerns with the developer's efforts to understand the potential effects of hunting and stated there "is currently no accurate population estimate for tǫdzı [boreal caribou] in Wek'èezhì, and no plans for population surveys, which raises the question of how the effects of any increased harvesting for tǫdzı will be detected" (PR#282 p7).

6.8.2. Review Board analysis: effects from hunting and harvesting

The Review Board heard concerns from multiple parties about the potential for an increase in non-Aboriginal hunters and effects to boreal caribou (tǫdzı). The developer and parties agreed that an increase in hunting is likely but disagreed on the how large this increase might be, and the severity of the impact. Parties' concerns were based largely on the absence of data to support the developer's predictions, and on a lack of proposed monitoring to verify these predictions.

The developer's position is that "there is insufficient evidence on the public registry for this EA to demonstrate that resident hunters are likely to cause a significant adverse impact to boreal caribou as a result of TASR" (PR#285 p13). However, the developer did not persuade the Review Board that adverse impacts from increased hunting are unlikely. Due to the absence of baseline data, the population trend and abundance of boreal caribou (tǫdzı) in the area of the Project is unknown, along with an absence of a sustainable harvest level estimate.

The Review Board recognizes Aboriginal people's right to harvest should not be infringed upon but cautions that any allowable harvesting or hunting should take into consideration whether boreal caribou (tǫdzı) populations trends can support it.

The Review Board acknowledges the developer's position that the number of successful hunts during operations of the Project may be low. The Review Board heard concerns that this estimate may not be accurate due to the proximity of hunters in Yellowknife (with its population of approximately 20 000, many times that of Whatı). The Review Board notes that the severity of the effect of increased hunting is largely uncertain due to the lack of baseline data on non-Aboriginal hunters and boreal caribou (tǫdzı) populations. The developer's impact predictions and views on significance are questionable as it has not determined the population and related trends of boreal caribou (tǫdzı) in the region of the Project and has therefore not met its burden of proof. The Review Board is concerned that if the boreal caribou (tǫdzı) population in the area of the road is already declining, then even a small increase in hunting could have a significant effect on the local boreal caribou (tǫdzı) population.

Without adequate baseline information the Review Board cannot agree that the predicted impacts to boreal caribou (tǫdzı) resulting from an increase in hunting will be insignificant in the area of the road or at the NT1 regional scale. Considering the uncertainty due to inadequate baseline information, and the potential serious harm of additional impacts to a species that is territorially and federally at risk and of ecological and cultural importance, the Review Board considers it appropriate to adopt a precautionary approach.¹ The Board concludes that the Project is likely to cause effects on boreal caribou (tǫdzı) from increased hunting and harvesting. This is a consideration in the Review Board's overall conclusions about the significance of impacts to boreal caribou (tǫdzı), presented in Section 6.10 at the end of this chapter.

The Review Board is of the view that the developer's (or GNWT's) proposed monitoring is not sufficient to collect information on hunting in the area of the road. The Board lacks confidence that the developer will adequately mitigate adverse impacts on boreal caribou (tǫdzı) in a timely manner, therefore requires legally binding and enforceable measures to do so. The Review Board has recommended measures intended to prevent or reduce

¹ Please see Chapter 4 for details about the precautionary approach.

adverse impacts on wildlife so that they are no longer significant. They are at the end of this chapter, following the Review Board's overall conclusions.

The Review Board notes the Tłıchǫ Government's Traditional Knowledge which recommended a hunting ban in the area of the road, and the YKDFN's recommendation for the same thing. The Review Board is also taking into account the NICO Report of EA, which assessed a new road in the same general area and considered the effects of increased access on boreal caribou (tǫdzı). The NICO REA contained measure 11 for a no hunting corridor on the NICO access road (PR#266 p89).

The Review Board notes that there is a lack of data to support an estimate of sustainable harvest and hunting levels. The Review Board observes that boreal caribou (tǫdzı) are listed as threatened. In light of the above, the Review Board concludes that hunting of boreal caribou (tǫdzı) by non-Aboriginal hunters needs to be restricted in the area of the road to prevent significant adverse impacts. The Review Board recognizes that Aboriginal rights to harvest should not be infringed upon. The intent of this measure is not only to protect boreal caribou (tǫdzı), but also to help ensure that Aboriginal harvest is maintained.

The Review Board also takes note of the *Recovery Strategy for the Boreal Caribou in the NWT* which identifies roads as a primary pathway for overharvesting (PR#106 p17). With respect to confirming predictions and monitoring resident hunters in the area of the road, the developer stated that it disagreed with the YKDFN's use of ENR's data on resident hunter tags for boreal caribou (tǫdzı). The developer argued that this data is not appropriate to draw conclusions about hunting levels in the area of the Project (PR#285 p13). The Review Board agrees and finds that this is another example of the developer, or other GNWT departments, not providing sufficient information to allow parties to extrapolate about the potential effects of the road.

The Review Board considered the disagreement between the YKDFN and the developer about the potential effects that non-Aboriginal hunters are likely to have on boreal caribou (tǫdzı) mortality. In its closing arguments, the YKDFN asserted that non-Aboriginal hunters are the single greatest source of mortality to boreal caribou (tǫdzı) (PR#283 p4). The developer responded in its closing arguments and stated it disagreed that non-Aboriginal hunters are the single greatest source of mortality at the NWT wide scale (PR#285 p13). As stated previously, the developer argued that wolves are the primary effect on boreal caribou (tǫdzı) mortality. With respect the YKDFN's assertion about effect of non-

Aboriginal hunters, the developer provided its estimates of caribou mortality non-Aboriginal hunters and Aboriginal harvesters and observed that the Aboriginal harvest is likely much higher. The Aboriginal harvest on boreal caribou (tǫdzı) is a potentially important unknown effect on a species at risk, and there is a lack of effective monitoring of this.

In its closing arguments, the developer made reference to “potential harvest monitoring” in the WMMP (PR#285 p13). The Review Board understands that this “harvest monitoring” described in the WMMP applies to non-Aboriginal hunters only and not to Aboriginal harvesters. The Review Board is of the view that monitoring and reporting non-Aboriginal and Aboriginal harvest is important to understand the effects of the Project, and to inform decisions about the long-term conservation of boreal caribou (tǫdzı). The Review Board encourages efforts to monitor and report on Aboriginal harvest. This information is critical for informing decisions on sustainable harvest and adaptive management.

The Review Board did not find evidence of effective monitoring of non-Aboriginal hunting, presently, or proposed, for the area of the road. This information is required to understand how the road may affect boreal caribou (tǫdzı) and to validate the developer’s predictions. The Review board prescribes measures for effective monitoring and reporting of both Aboriginal harvest and non-Aboriginal hunting in the area of the Project (see Section 9.4.1 for the measure on Aboriginal harvest monitoring).

6.9. The Wildlife Management and Monitoring Plan

6.9.1. Evidence: Wildlife Management and Monitoring Plan

The developer’s proposed monitoring, mitigation and adaptive management for managing effects of the Project on boreal caribou (tǫdzı) is found in the developer’s draft WMMP. Parties expressed concern that this document did not contain sufficient details on adaptive management options, triggers, or thresholds. Without this information parties did not have confidence that the developer can identify and mitigate potential effects.

In its closing arguments, the WRRB voiced its concerns that the developer has not provided sufficient evidence of effective mitigations and adaptive management (PR#284 p4). These concerns are compounded because in the WRRB’s view, there is also significant uncertainties in the developer’s predictions. The WRRB concluded that, “[t]here is much work that remains to be done for short and longer-term monitoring and adaptive mitigation for both road construction and operations” (PR#284 p10).

The Tłchq Government stated that it “...considers both the effects of the road itself, as well as the facilitation of increases in linear corridor density, the total amount of young forest (40 years or younger) on the landscape, and the potential changes over time in predator / prey relationships, and the increase in hunter access, to be important impacts to boreal caribou (tòdzı) that should be considered in the design of monitoring and mitigation strategies through the WMMP in the permitting phase” (PR#216 p10).

The Tłchq Government also stated that the source of much of the information needed to understand the effects listed in the above, is not presently available and in the view of the Tłchq Government, should be collected as part of the implementation of the range plans (PR#216 p10).

6.9.2. Review Board analysis: Wildlife Management and Monitoring Plan

The developer’s closing arguments stated, “[t]he available information does not yet permit analysis of sub-population trends within NT1 (PR#99, response to the MVEIRB information request #3 [PR#141]), but studies currently underway will fill this gap (WMMP section 5.2.3, response to ECCC information request#7 [PR#199])” (PR#285 p14). The Review Board notes that parties have concerns with the developer’s proposed studies and whether they will fill these gaps. In ECCC’s technical report, ECCC noted that the developer’s proposed collaring program for the North Slave region “represents a small sample size and short period to date” (PR#279 p25).

The Review Board observes the developer’s closing arguments where it proposed focusing boreal caribou (tòdzı) monitoring on the area of the Project. This proposed monitoring is a good start. It will help wildlife managers understand boreal caribou (tòdzı) population trends in the area of the Project and will provide valuable data needed for implementation of range plans.

Additional monitoring efforts may be required to understand population abundance, distribution and movement patterns. This type of information is required for implementation of the Recovery Strategy, to accurately identify project effects and adaptively manage them as needed.

An improved understanding of boreal caribou (tòdzı) in the area of the Project is critical to identifying and managing potential effects. Due to the lack of information on which to base predictions in this EA, the importance of an effective WMMP is critical. There are concerns

with the monitoring currently proposed in the WMMP. The Review Board understands that the WMMP will include Aboriginal parties, the WRRB, ECCC, and ENR. These groups are eminently qualified to provide guidance on the monitoring needs from both a western science perspective and a Traditional Knowledge perspective.

Having a robust monitoring and reporting requirement of the WMMP is critical. The Review Board will leave questions on monitoring and adaptive management to these qualified experts. To ensure that input to the WMMP is meaningful the Review Board has recommended the WMMP as a measure (see Section 10.4.2.)

The Review Board observes that the approach taken by the developer of applying the 65% habitat disturbance threshold also requires robust adaptive management to deal with the risk inherent in the use of the risk-based threshold. However, the Review Board heard significant concerns from parties that the developer's adaptive management strategies were lacking. Appendix B of this report provides guidance on properly applying adaptive management. The measures prescribed by the Review Board at the end of this chapter require the developer's adaptive management efforts to conform to this guidance at a minimum.

6.10. Review Board's overall conclusions

6.10.1. Review Board does not accept developer's impact determinations

The Review Board is not persuaded by the evidence from the developer that the Project will not cause significant adverse impacts on boreal caribou (tǫdzı) in the vicinity of the Project. The developer's arguments about the significance of the impacts focussed on the wrong scale. The well being of the entire boreal caribou (tǫdzı) population of the NWT is very important but does not adequately address the other impacts of the Project on the caribou that may encounter it. The Review Board identifies many problems with the developer's arguments about the significance of the Project's impacts:

- The broad scale of the NT1 range masks and dilutes relevant impacts in the vicinity of the Project.
- At that scale, the developer's conclusions that boreal caribou (tǫdzı) are currently self-sustaining were based purely on habitat. Due to information gaps, it neglected necessary considerations of population size and trends.

- The 65% threshold from the developer applied to habitat disturbance at the NT1 range is an ecological threshold that does not represent an acceptable level of risk for EA purposes.¹
- This habitat disturbance threshold is barely even met at present. It is within less than within 1% of being exceeded in the NWT. It is likely exceeded in the North Slave region, where the Project is.

6.10.2. Collectively significant impact on caribou

In the Review Board's analyses of sub-topics related to impacts on boreal caribou (tǫdzı), it has accepted the evidence of parties that identified multiple potential adverse impacts from the Project including:

- direct habitat loss;
- effective habitat loss resulting from sensory disturbance and related behavioural impacts;
- barriers to movement and fragmentation;
- increased predation success; and,
- increased hunting pressures resulting from increased access.

Because boreal caribou (tǫdzı) are already at risk, any additional adverse impact from the Project is cumulatively significant. The developer failed to produce useful baseline information caribou population and trends in the vicinity of the Project, making it difficult for parties to make quantitative predictions about the specific likelihood of impacts on boreal caribou (tǫdzı).

The onus is on the developer to persuade the Board that the Project will not have a significant impact on boreal caribou (tǫdzı) and their habitat. In the Board's view, the developer has not met this burden of proof, in part because it has not sufficiently studied and described baseline conditions for the boreal caribou (tǫdzı) population(s) and trends, at the NT1 scale and at the scale of the Project area. The Review Board particularly notes the lack of baseline information to be of particular concern because boreal caribou (tǫdzı)

¹ It suggests that a 40% risk of boreal caribou (tǫdzı) not being self-sustaining is not significant. The Review Board thinks it would be because the importance of boreal caribou (tǫdzı) in the NWT lowers the level of acceptable risk from an EA significance perspective. See Section 6.5.4 (page 146) for further discussion.

are a species at risk. In the Board's view, additional adverse impacts on boreal caribou (tòdzı) on a species that is already at risk poses the risk of serious harm.

Considering the lack of baseline information and the risk of serious harm, the Review Board concludes that a precautionary approach is appropriate.¹ Even though the developer's baseline information on caribou population and trends in the Project area is insufficient, the Review Board is sufficiently persuaded by evidence from other parties with wildlife expertise to conclude that the above impacts collectively are likely to result in significant adverse impacts from the Project on boreal caribou (tòdzı).

6.10.3. Review Board concerns with proposed mitigation

The Review Board is not convinced that the developer has recognized the potential impacts of the Project. It lacks confidence that the developer's proposed monitoring and management of the impacts will adequately mitigate the Project's impacts on boreal caribou (tòdzı).

Although the developer's closing arguments asserted that many concerns raised by parties will be addressed through the implementation of the *Recovery Strategy for the Boreal Caribou in the NWT*, this depends on when the GNWT implements it, particularly for the region in which the impacts from the Project to boreal caribou (tòdzı) will occur. The GNWT has already missed important deadlines for implementing range plans. The Review Board is concerned that the road will be constructed and be operational for an unknown period of time without the *Recovery Strategy for the Boreal Caribou in the NWT* being fully in place in the region of the Project to mitigate its impacts on boreal caribou (tòdzı). This could lead to situation where the developer does not have the appropriate tools to manage these impacts. The adaptive management that is proposed by the developer lacks triggers, action thresholds and viable mitigative options. The mitigations below are required to further reduce or avoid the significant adverse impacts that are otherwise likely.²

¹ The preamble to the federal Species at Risk Act states "if there are threats of serious or irreversible damage to a wildlife species, cost-effective measures to prevent the reduction or loss of the species should not be postponed for a lack of full scientific certainty". See Chapter 4.4 for detail on the Review Board's application of the precautionary approach.

² The Board notes that its responsibilities under section 79 of the federal *Species at Risk Act* require mitigation even if these adverse impacts were not determined to be significant.

6.11. Measures and suggestions

This species at risk is of the highest concern to the Review Board. For millennia, caribou have been vital to the survival of Aboriginal people in the area where the Project is now proposed. Now, the survival of caribou appears to be increasingly dependent on people. Boreal caribou matter to Aboriginal people as part of this profound relationship. The following measures and suggestions are made in this spirit.

6.11.1. Implement the NWT Recovery Strategy and range plans

Range plans are required by the *Recovery Strategy for Boreal Caribou in the Northwest Territories*. The Review Board is concerned that these range plans have not been implemented in the Northwest Territories. Mechanisms within the Recovery Strategy and regional range plans would not only help mitigate cumulative impacts on caribou, but would also mitigate Project-specific impacts to boreal caribou (tǫdzı) in whatever region they are experienced.¹ Without the full implementation of the *Recovery Strategy for the Boreal Caribou in the NWT* and associated range plans, evidence provided during this EA suggests that boreal caribou (tǫdzı) will not have adequate protection to ensure the population is self-sustaining over the short and long term, in either the Project area or at the NT1 scale.

Notwithstanding the Review Board's comments above about the habitat disturbance threshold, the *Recovery Strategy for Boreal Caribou in the Northwest Territories* requires many actions to help protect boreal caribou (tǫdzı).

The following measure is focused on the area of the range plan(s) in which caribou are likely to experience effects of the Project, and ensures that the Project operations (specifically, public use of the road) does not proceed until range plans are implemented for boreal caribou (tǫdzı) in the North Slave region and in any other region where boreal caribou (tǫdzı) may experience impacts related to the Project. This measure is required to mitigate significant adverse project-specific and cumulative impacts to boreal caribou (tǫdzı).

¹ Although the Project is in the North Slave region, the caribou exposed to Project effects may also frequent other regions, such as the DehCho, which is only 65 km away approximately.

Measure 6-1: Implementation of the *Recovery Strategy for the Boreal Caribou in the NWT*, and required range plans, for boreal caribou affected by the Project

6-1, Part 1: Develop and implement range plans

The GNWT-ENR will develop and implement a range plan for boreal caribou (t̥d̥zı) in the North Slave region, as required by the *Recovery Strategy for the Boreal Caribou in the NWT*. The GNWT-ENR will also develop and implement a range plan for any other region where boreal caribou (t̥d̥zı) may experience impacts related to the Project.

The range plan(s) will be developed collaboratively with Aboriginal groups and co-management partners. The range plan(s) will be completed before the Project is opened for public use.

The GNWT-ENR will manage the amount of undisturbed habitat in the North Slave region to achieve the National Recovery Strategy recommended threshold for critical habitat, or a threshold proposed by the GNWT-ENR and approved by Environment and Climate Change Canada.

6-1, Part 2: Information and adaptive management requirements

For the area identified by the range plan(s) in measure 6-1, part 1 the following must be included in the development and implementation of the *Recovery Strategy for the Boreal Caribou in the NWT* and range plan(s):

- monitoring of population trends, abundance and distribution;
- determination of population thresholds and triggers to inform adaptive management;
- harvest monitoring and reporting including Aboriginal harvesting and non-Aboriginal hunting;
- determining sustainable harvest levels;
- identifying critical habitat;
- ongoing habitat disturbance monitoring;
- setting and meeting critical habitat objectives for each range; and,
- monitoring predator populations including densities, movements and predation rates.

Monitoring will meet the requirement of Appendix C. GNWT-ENR will work with the developer to adaptively manage Project impacts on boreal caribou (tǫdzı) (following guidance in Appendix B).

6.11.2. Fully implement the NWT boreal caribou Recovery Strategy

The Board observes that the *Recovery Strategy for the Boreal Caribou in the NWT* lists boreal caribou (tǫdzı) as threatened. This means “boreal caribou are likely to become endangered in the NWT if nothing is done to reverse the factors leading to its extirpation or extinction” (PR#106 piv). The Review Board also notes that Land Protection Directive 6.2.C of the Tłıchǫ Wenek’e / Tłıchǫ Land Use Plan states that “In partnership, the Tłıchǫ Government will work to implement the National Recovery Strategy for Boreal Woodland Caribou”.

The Review Board is concerned that the GNWT has made little progress on implementing the range plans required by the *Recovery Strategy for the Boreal Caribou in the NWT* and that the GNWT has missed deadlines for range plan implementation. The Review Board is unaware of any actions that the developer, or the GNWT, have taken to reverse the factors causing adverse effects to boreal caribou (tǫdzı) or their habitat. The evidence the Review Board is aware of points to additional and increased pressures on boreal caribou (tǫdzı), including those from the proposed Project.

The Review Board notes the developer’s position in its closing argument, which asserted that the NT1 range scale was the appropriate scale to determine whether boreal caribou (tǫdzı) are self-sustaining. The Review Board finds that additional information is required to accurately determine whether boreal caribou (tǫdzı) are likely self-sustaining throughout their current distribution in the NWT. At a minimum, information on caribou abundance, distribution, movements and population trends is required.

The NT1 range is the range used in the *Recovery Strategy for the Boreal Caribou in the NWT*. Considering the narrow margin of undisturbed habitat compared to the 65% threshold,¹ and the lack of information regarding boreal caribou (tǫdzı) population and trends at that scale, the Review Board finds that cumulative impacts on boreal caribou (tǫdzı) are likely already significant; this is demonstrated by their species-at-risk status in the NWT and nationally. The incremental additional pressure of the Project is likely to increase this

¹ particularly in the portion of the NT1 range south of Great Bear Lake

significance. To mitigate this, the Review Board suggests that the *Recovery Strategy for the Boreal Caribou in the NWT* be fully implemented across the NWT. The actions required by the *Recovery Strategy* would increase the likelihood that boreal caribou (tǫdzı) are self-sustaining.

It is important that the *Recovery Strategy for Boreal Caribou in the Northwest Territories* is implemented as soon as possible. If numbers are indeed declining, there will be fewer boreal caribou (tǫdzı) left to protect with each passing day.

Suggestion 6-1: Implementation of the Recovery Strategy for the Boreal Caribou in the NWT

The GNWT-ENR should fully implement the <i>Recovery Strategy for Boreal Caribou in the Northwest Territories</i> as soon as possible.

6.11.3. Temporary no hunting corridor

Without additional mitigation, the Project is likely to result in significant adverse impacts to boreal caribou (tǫdzı) from increased non-Aboriginal hunting pressures along with the other impacts from the Project to boreal caribou (tǫdzı). Collectively, these adverse effects create a conservation concern that requires management of these effects, including hunting. The following measure is required to mitigate significant adverse impacts to caribou that the Board concludes are otherwise a likely result of increased non-Aboriginal hunting due to increased access to the Project area. This measure will be developed in consultation with the Tłıchǫ Government and WRRB. Details of the no-hunting corridor, such as its width, will be determined through the wildlife management procedures set out in the *Tłıchǫ Agreement*.¹ This measure is not intended to interfere or limit Aboriginal harvesting rights protected under section 35 the *Constitution Act, 1982*.

The Board notes that a no-hunting corridor along a new road in the area was required by a Measure 11 in the NICO Mine Report of EA (p89).

¹ Subsection 12.5.1 of the *Tłıchǫ Agreement* requires that any party “before taking any action for management of wildlife in Wek’èezhì, including such actions as set out in a management plan, submit its proposals to the Wek’èezhì Renewable Resources Board for review under 12.5.4”. Subsection 12.5.4 describes the WRRB’s review of proposals, and 12.5.5 describes its determinations.

Measure 6-2: Temporary no-hunting corridor for boreal caribou (tǫdzı)

To mitigate significant adverse impacts from the project on boreal caribou (tǫdzı), the GNWT-ENR and Tłıchǵ Government will submit a wildlife management proposal under section 12.5.1 of the Tłıchǵ Agreement to the Wek'èezhì Renewable Resources Board. The proposal will establish a temporary no-hunting corridor to reduce the take of boreal caribou (tǫdzı) along the Project route. Only individuals exercising section 35 rights will be allowed to harvest boreal caribou (tǫdzı) in this corridor.

The corridor will be established prior to the road being opened to the public. At a minimum, this hunting restriction will remain in place until the *Recovery Strategy for Boreal Caribou in the Northwest Territories* is fully implemented in the area of the range plan(s) required by measure 6-1, and sustainable harvest levels for the North Slave region are determined.

6.11.4. Habitat offset plan

The Board finds that the Project will likely have significant adverse impacts on boreal caribou habitat. These impacts include direct habitat disturbance and Project impacts that would cause a loss of effective habitat. The developer did not propose any mitigations or offsets for the Project related effects to boreal caribou habitat. The Review Board understands that the developer intends to implement a range plan for the area in which the Project is located, and that it will follow the boundary of the North Slave region. Less than 65% of the boreal caribou (tǫdzı) habitat in the North Slave region is currently undisturbed. The federal government's report on the recovery strategy implementation states, "[f]or ranges with less than 65% undisturbed habitat, identify in a range and/or action plan specific areas of existing undisturbed habitat, as well as those areas where future habitat is to be restored to an undisturbed condition over reasonable, gradual increments every five years" (PR#242 p20).

The Review Board accepts that the WRRB's suggested 2500 m buffer on each side of the road's right-of-way would likely capture the Project's impacts on boreal caribou effective habitat more completely than the 500 m buffer proposed by the developer. The Board cautions that this buffer may not address the potential habitat fragmentation effects of the Project.

In light significant uncertainties with the current status of boreal caribou (tǫdzı) in the area of the Project, the existing high amount of habitat disturbance and the lack of any proposed

habitat mitigations, the Review Board recommends that the developer provide a habitat offset plan for the buffered disturbance caused by the Project. This will offset Project impacts and help mitigate the contribution of the Project to cumulative impacts on caribou related to the net amount of disturbed boreal caribou (tǫdzı) habitat.

Measure 6-3: Habitat offset and restoration plan

The developer will offset effective boreal caribou (tǫdzı) habitat lost because of disturbance from the Project. The offset calculation will, at a minimum, be based on the area of the right of way with a 2500 m buffer on each side.

The developer, with the involvement of GNWT-ENR, will prepare and implement a habitat offset plan. This plan will describe how the required habitat offset area (calculated as set out above) will be achieved. In preparing the plan, the developer will collaborate with Tłıchǵ Government and the Wek'èezhì Renewable Resources Board, and consult with the following participants to this environmental assessment:

- Environment and Climate Change Canada;
- Yellowknives Dene First Nation; and,
- North Slave Métis Alliance.

The developer will make funding available to the parties to support this consultation and collaboration. The developer will submit a draft and a final plan as described below. Once approved, the developer will operate in accordance with the plan.

The developer will submit a draft plan to the Wek'èezhì Renewable Resources Board for review under section 12.5.1 of the Tłıchǵ Agreement, a minimum of 90 days prior to commencement of construction. The developer will submit the final habitat offset plan to the Wek'èezhì Renewable Resources Board for review under section 12.5.1 of the Tłıchǵ Agreement, as soon as possible, and no later than 90 days prior to public use of the road. This final plan will include, at a minimum:

- the goals and objectives of the plan;
- a discussion on the expected effectiveness of mitigations and offsets;
- a decision framework to prioritize restoration areas, mitigations, and offsets, including references to the research on which the decision framework was based;

- a discussion of how any proposed mitigations or offsets align with the Recovery Strategy for the Boreal Caribou in the NWT and range plans;
- details of proposed ways to offset habitat disturbance including restoration sites, mitigation measures, offsets, forest fire fighting policies, or habitat management approaches;
- a description of the spatial scale of the proposed offset, the habitat quality and type, site specific restoration activities, and any challenges;
- a timeline for offsetting;
- a quantitative and qualitative assessment of the total area of boreal caribou habitat proposed for restoration and the timeframe required for restoration;
- a summary of consultation feedback that was integrated into the draft and final plans;
- a description of any Traditional Knowledge that was considered in the development of the plan, and how it was incorporated; and,
- a description of any resources provided to Aboriginal groups to support their involvement in the drafting of the final plan, and for any involvement in the implementation of the plan.

7. Barren-ground caribou (ʔekwò)

7.1. Summary of findings

The Review Board finds that the Tłıchǫ All-season Road (the Project) is likely to cause significant adverse impacts to barren-ground caribou (ʔekwò) due to increased access and related mortality. The Review Board's reasons for this determination are summarized as follows:

- barren-ground caribou (ʔekwò) are designated as threatened by the Northwest Territories Species at Risk Committee and federal Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and are at a historic low point in their population cycle, making them particularly vulnerable;
- Traditional Knowledge confirms that barren-ground caribou (ʔekwò) occupy the Project area;
- the Project will extend the time that harvesters can access the winter range of barren-ground caribou (ʔekwò) each year, resulting in increased harvest;
- range planning initiatives are incomplete and will not address Project specific impacts in the near term;
- improved harvest reporting is necessary for herd recovery and sustainable barren-ground caribou (ʔekwò) management; and,
- the impacts resulting from increased access from the Project to caribou are irreversible and permanent and are likely to adversely affect caribou for future generations.

7.2. Evidence from parties and the developer

The first part of this section describes the current status of barren-ground caribou (ʔekwò)¹ in the Northwest Territories that are potentially impacted by the Project. This status description is followed by evidence from the parties and the developer on predicted impacts from the project to barren-ground caribou (ʔekwò) followed by predictions on cumulative impacts from the Project to barren-ground caribou (ʔekwò) and other reasonably foreseeable developments.

¹ Any reference to caribou in this Chapter refers to barren-ground caribou

7.2.1. Barren-ground caribou are a threatened species

In April 2017, the Northwest Territories Species at Risk Committee completed its *Species Status Report for Porcupine Caribou and Barren-ground Caribou in the Northwest Territories (Status Report)* (PR#198). It was published by the Government of the Northwest Territories Department of Environment and Natural Resources (GNWT-ENR). The *Status Report* was prepared with expertise of from both Traditional Knowledge holders and scientists. The *Status Report* determined that barren-ground caribou (ᐱᓃᓂᓂᓂ), including the Bathurst and Bluenose herds are threatened in the Northwest Territories. The report concluded that barren-ground caribou (ᐱᓃᓂᓂᓂ) are (PR#198 pvi):

Likely to become endangered in the Northwest Territories if nothing is done to reverse the factors leading to its extirpation or extinction.

The Northwest Territories Species at Risk Committee reasoning that barren-ground caribou (ᐱᓃᓂᓂᓂ) fit the criteria for “threatened” is that (PR#198 pvi):

There is evidence that the population is declining in such a way that it could disappear from the Northwest Territories in our children’s lifetime.

The *Status Report* identifies the main threats to barren-ground caribou (ᐱᓃᓂᓂᓂ) as climate change, including vegetation shifts, predation, fires, parasites and industrial development. It cites industrial development as one of the most significant factors affecting barren-ground caribou (ᐱᓃᓂᓂᓂ) because it facilitates access for both human harvesting and for predators. The *Status Report* states that harvest and predation play a stronger role in combination with other factors leading to extirpation or extinction when barren-ground caribou (ᐱᓃᓂᓂᓂ) are at low numbers. The threats mentioned above are acting in addition to large fluctuations in herd numbers. The *Status Report* warns that the cumulative effects from multiple interacting threats to barren-ground caribou (ᐱᓃᓂᓂᓂ) are considered unprecedented (PR#198 ppvi-vii).

Prior to the GNWT designation for caribou as threatened, the federal COSEWIC designated barren-ground caribou (ᐱᓃᓂᓂᓂ) as threatened in November 2016 (PR#105; PR#104). The reasons for the federal designation of threatened are like the reasons of the GNWT Species at Risk Committee and stress that for the Northwest Territories populations of barren-ground caribou (ᐱᓃᓂᓂᓂ) (PR#104 p1):

...available demographic data indicate no sign of rapid recovery at this time and cumulative threats are without historical precedent for most of these subpopulations.

Correspondence from Environment and Climate Change Canada (ECCC) to the Review Board regarding the threatened designation by COSEWIC advises that (PR#105 p2):

As a matter of best practice, ECCC recommends that species under consideration for listing on SARA, including those designated as “at risk” by COSEWIC, be considered during a project assessment in a manner similar to listed species under s.79.

7.2.2. Impacts from the Project to barren-ground caribou (ᐱᓇᓇᓇᓇ)

The Tłıchǫ All-Season Road is located at the western edge of the winter range for the Bathurst caribou herd (see Figure 7-1). In its *Adequacy Statement Response*, the developer reports that the Project likely occurs outside of the core range of the herd, based on information from collared caribou.

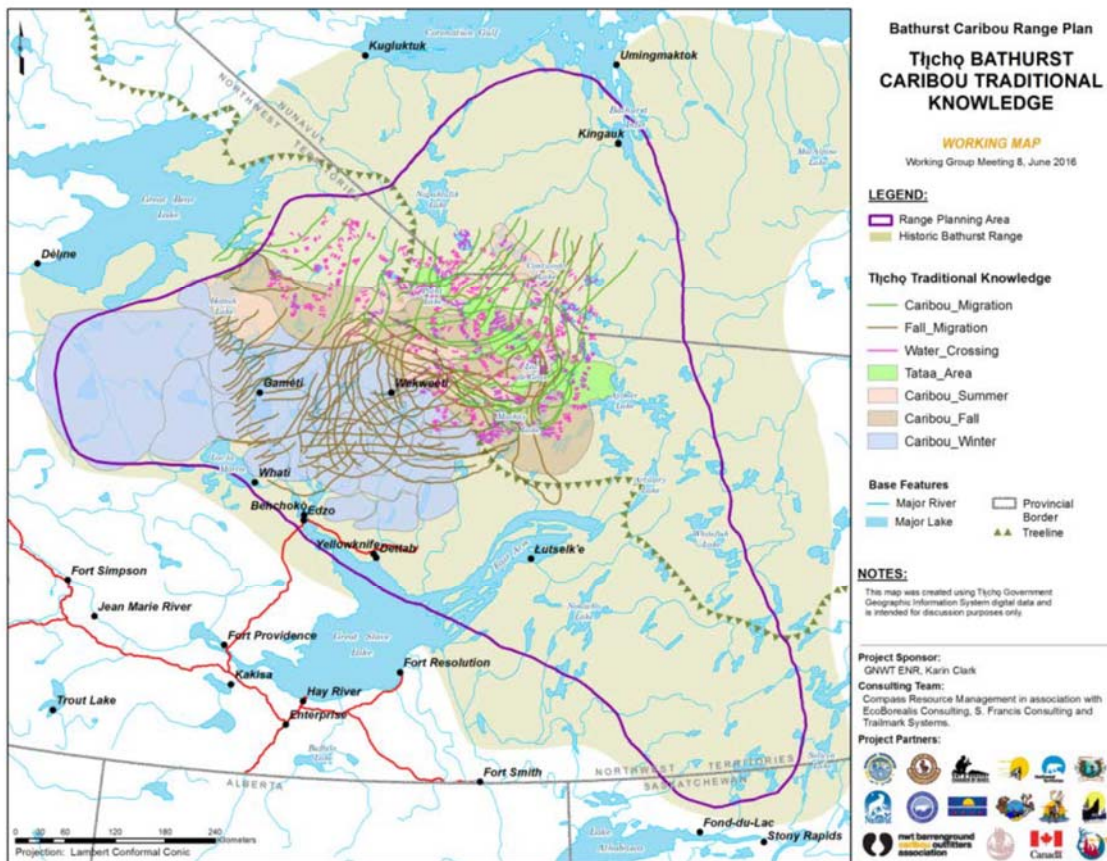


Figure 7-1. Bathurst caribou herd historic range and winter range from Bathurst Caribou Range Plan meeting to review Traditional Knowledge.

(Source: PR#239 PDF p68)

The developer predicts that regular interaction between the Project and caribou on their winter range is not expected (PR#110 pp4-26,4-27). However, the *K'agòò tı́lı Deè' Traditional Knowledge Study for the Proposed All-Season Road to Whatì* (TK Study) submitted by the Tłıchǵ Government documents barren-ground caribou (ʔekwò) winter use of the project area in the past. This was evident in the in the 1990s, when numbers of caribou were higher (PR#28 p34-35). Barren-ground caribou use of the area and migration routes crossing the Project are documented in the Traditional Knowledge Study and shown in Figure 7-2. Harvester observations are also highlighted in the TK Study. These harvesters observe that in recent years hardly any caribou have been seen in the project area (PR#28 p34-35). In the words of Elder Francis Simpson, "...even close to Whatì, at one time there were always lots of caribou around....Today the caribou do not come to our area. They stopped coming."

In its technical report, the Tłıchǵ Government advised that while barren-ground caribou (ʔekwò) are present in the study area from November to March, few have been observed in recent years (PR#216 p12). The developer does not anticipate that barren-ground caribou (ʔekwò) will regularly interact with the Project, but supports Traditional Knowledge from the Tłıchǵ Government which documents barren-ground caribou (ʔekwò) presence at the north end of the road during winter in the past (PR#192 p9).

In contrast, Traditional Knowledge presented in the Wek'èezhì Renewable Resources Board (WRRB) technical report documents the presence of barren-ground caribou (ʔekwò) during a low point in the caribou population cycle as well. This occurred in the early 1950's near Whatì and James Lake (PR#215 p37). The WRRB stated that the Project will "...provide more access to the area and with that will come additional harvesting which at times will include disrespectful harvesting"¹ (PR#215 pp37-38). In its response to the WRRB technical report, the developer concluded that the Project is only likely to impact barren-ground caribou (ʔekwò) during periods of high population abundance, and during those periods, impacts would be small (PR#239 PDF p82).

¹ Disrespectful harvest is referred to as practices of outside hunters who lack the knowledge of respectful harvesting. By contrast, "respectful harvesting includes, but is not limited to, taking direction from Tłıchǵ leaders about where and when to hunt, knowing how to approach barren-ground caribou, which should be done softly not by chasing animals with fast skidoos (Legat et. Al. 2008)". (PR#215 p38)

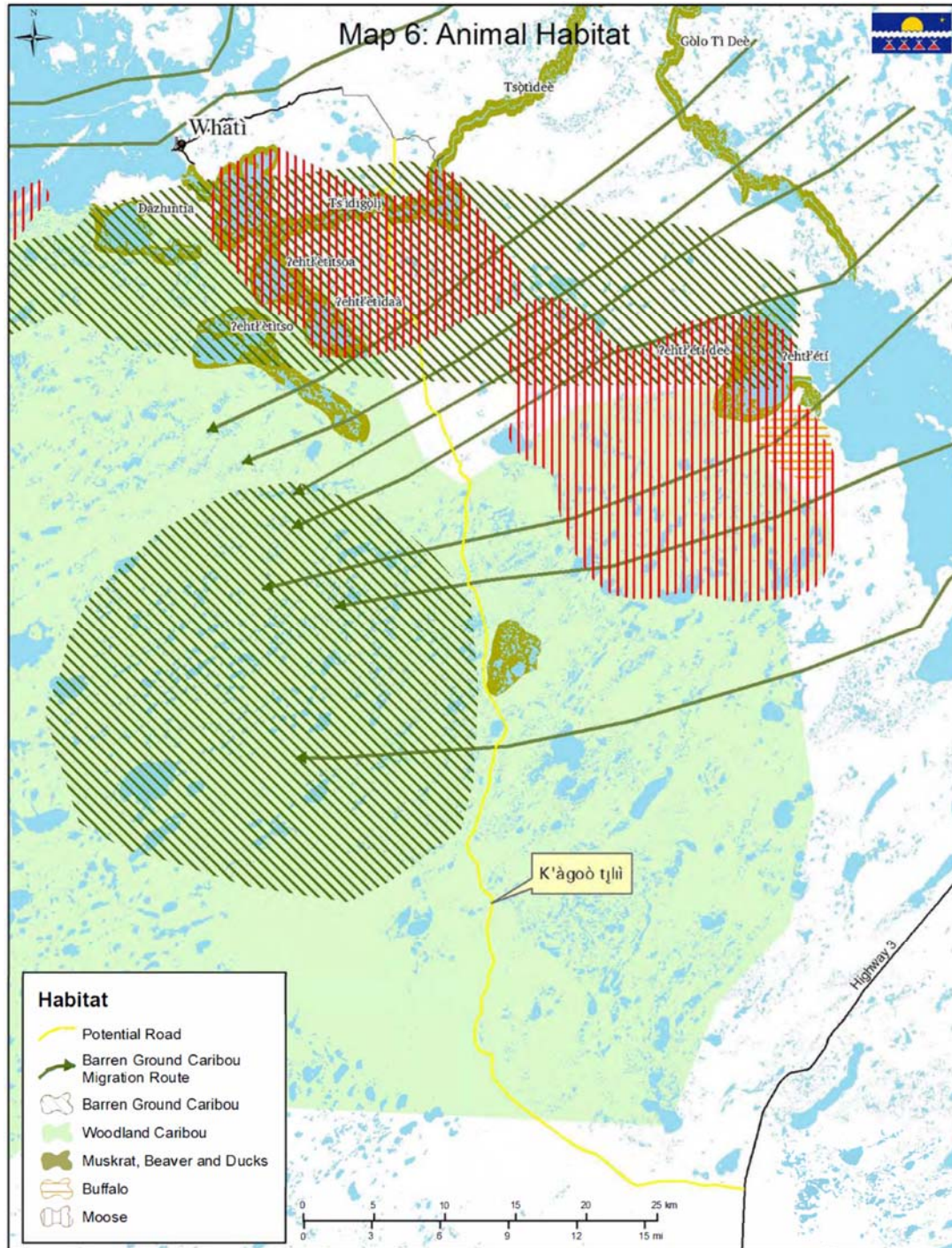


Figure 7-2. Wildlife presence from Elder and harvester observations, K'agòò tılı Deè Traditional Knowledge Study for the proposed All-season Road to Whatì.
(Source: PR#28 p36)

During the public hearings in Whatı, Elders and harvesters from the community spoke of the importance and value of barren-ground caribou (ʔekwǵ) for food and clothing (PR#273 p202-205). John B. Zoe spoke of how the anticipated benefits from resource development twenty years ago have been overshadowed by impacts to barren-ground caribou (ʔekwǵ). Mr. Zoe observed that in hindsight, the management of caribou at the time of mining development on the barren lands was not aggressive enough. During the Whatı public hearing on November 16, Mr. Zoe further stated that (PR#274 p160-161):

...times are different now. There's much... bigger communities that need a lot of energies. So even though the footprint might be small, it's the access, it's the access that -- that opens the way for more people to go hunting and there's better equipment, [there are] a lot of electronics. 20-25 years ago we're talking hundreds of thousands [of caribou] and all of a sudden we're in a recovery plan like almost overnight, and that's how quickly it can happen.

In its response to technical reports, the developer acknowledged that the Project will allow hunters to travel more efficiently into the winter range of barren-ground caribou (ʔekwǵ). In its opinion, however, behavioural changes due to hunting pressure would not be substantial (PR#239 p80-86). During the public hearing in Whatı, the developer stated that its commitments towards increased monitoring of harvest associated with the road is already in the *Wildlife Management and Monitoring Plan* (WMMP). These commitments include moving the harvester check station to the Project, hiring a GNWT-ENR wildlife officer in Whatı and extending the season of aerial surveys to correspond with the potentially extended harvest season. Additional support for community monitoring associated with that is described in the WMMP (PR#274 p37, 57).

In its WMMP, the developer stated that monitoring will determine “if the highway is resulting in a pattern or level of harvest morality for moose and caribou that would suggest a conservation concern or need for additional harvest management actions” (PR#192 p35-36). The developer acknowledged that barren-ground caribou (ʔekwǵ) may re-occupy the Project corridor in the future. Figure 7-3 shows barren-ground caribou crossing a two-lane gravel highway. The existing caribou collaring program for the Bathurst herd will be used to determine whether caribou are approaching the corridor. In addition to the collaring program the developer, with support from the Tłıchǵ Government, is committed to (PR#192 p41 emphasis added):

*supporting, **subject to availability of additional resources**, the TG in the design and implementation of a program that uses Tłıchǵ harvesters' traditional knowledge and methods to monitor the state of barren-ground caribou (ʔekwǵ) winter habitat, during and after the completion of the project.*

In response to questioning during the public hearing in Whatì on the duration of the WMMP, the developer advised that the monitoring outlined in the WMMP would go on for at least five years of road operations after construction. After the five years of operations, a comprehensive review of the WMMP would take place involving all parties (PR#274 pp59-60).



Figure 7-3. Porcupine caribou herd crossing the Dempster Hwy

(Source: WRRB hearing presentation PR#256 p13)

In its TK Study, the Tłıchǫ Government described ways proposed by Tłıchǫ Elders to mitigate adverse impacts to wildlife resulting from new access provided by the Project. Mitigations described in the TK Study could include changes to regulations, specifically:

- #22. Develop hunting and trapping regulations that minimize outsiders' access to and harvesting pressure on local animal populations.

- #23. Impose a no hunting and trapping zone in the immediate area along both sides of the road (PR#28 p42).

In its technical report, WRRB predicts that the Project will provide more access to the area around the road corridor, which will bring additional harvesting. The WRRB expressed concern that some of the increased harvesting based on the new access may be disrespectful. The WRRB technical report describes respectful harvesting as taking direction from Tłıchǫ Elders about where and when to hunt and not chasing caribou with skidoos (PR#215 p38). In its technical report, WRRB submits two recommendations to mitigate these impacts. They include:

- an in-depth TK study on barren-ground caribou (Ɂekwǝ) habitat in the Project area; and,
- monitoring by Tłıchǫ Elders and harvesters who have knowledge of caribou in the Wek'èezhì area (PR#215 p38).

During the November 16, 2017 public hearing in Whatì, the WRRB stated that it lacks confidence in the developer's impact predictions and proposed mitigations. To resolve this lack of confidence, the WRRB requires that the developer demonstrate how data resulting from monitoring program for barren-ground caribou (Ɂekwǝ) that has not yet been developed, will be incorporated into adaptive management (PR#274 pp157-158). In its closing argument, the WRRB stressed the importance of the mitigation and monitoring provisions in the WMMP and said that the WMMP must be in force during both construction and operations phases of the Project. The WRRB's reasoning is that adaptive management requires longer term monitoring to test the effectiveness of mitigation and to modify or intensify the mitigation actions as required. In addition, the larger scale range management plans for barren-ground caribou (Ɂekwǝ) are not yet in place. To mitigate these impacts the WRRB recommends that the developer:

- obtain an independent technical review of the draft WMMP using knowledgeable experts in both traditional knowledge and science from universities and/or non-government organizations;
- accelerate completion of the Wek'èezhì Boreal Caribou Range Plan, the Bathurst Caribou Management Plan and Range Plan, Wek'èezhì Land Use Plan, and updated fire management legislation; and,
- interim measures and thresholds for development and habitat should be implemented through the WMMP until the various range and management plans are

completed. In the absence of clear information, as set out in the Tłıchǵ Agreement, a precautionary approach should apply (PR#282 p8).

7.2.3. Cumulative effects from the Project to barren-ground caribou (ᑭᑭᑭᑭ)

In its cumulative effects assessment for the Project to barren-ground caribou (ᑭᑭᑭᑭ), the developer considered impacts from the Project combined with the NICO Project and the Nailii Hydroelectric Project as reasonably foreseeable projects. The developer observed that if the NICO Project all-season access road is built it will remove caribou habitat and may influence animal movements and increase mortality from vehicle strikes or increased harvest. However, in the opinion of the developer, while the reasonably foreseeable developments will influence local movements and distribution of caribou, the developer does not believe the Project will cause an adverse and long-term or permanent change in population survival, including mortality from harvest (PR#110 p4-217).

In its *Adequacy Statement Response*, the developer considered cumulative effects from the Project and other reasonably foreseeable developments on barren-ground caribou (ᑭᑭᑭᑭ), specifically with respect to survivability and reproduction, which includes harvest. The developer noted that the Project may improve access and increase harvest of barren-ground caribou (ᑭᑭᑭᑭ) by extending the harvesting season along the existing Gamètì and Wekweètì winter roads to reach wintering areas to the north of the Project area (PR#110 p4-215-218). Figure 7-4 shows the Bathurst caribou herd on their winter range.

The developer stated that recent analysis on Bathurst collared caribou during the Dominion Diamond Ekati Corporation Jay Project environmental assessment found that caribou arrived in their wintering area in the boreal forest later in the year as herd size has declined. The developer pointed out that (PR#110 p4-215-218):

...the Bathurst herd currently has extreme harvest restrictions due to its significant vulnerability state, the Bluenose East herd has a regulated harvest. Thus, improved access provided by the Project and Gamètì and Wekweètì winter roads may result in increased harvest when the herds are much more abundant and closer to the Gamètì and Wekweètì winter roads but also at a time when the herd is more resilient to harvest (i.e., when more abundant).

In the developer's view, the cumulative impacts to barren-ground caribou (ᑭᑭᑭᑭ) from increased harvest is possible but predicted not to have a strong influence on caribou survival (PR#110 p4-216). The developer concluded that cumulative effects to survival and

reproduction of barren-ground caribou (ᐱᓃᓄᓄ) are predicted to be small (PR#110 p4-201). The developer's confidence in this prediction is lower than its prediction for the project-specific impacts. This is due to uncertainties in the timing of reasonably foreseeable developments and challenges in predicting ecological systems in a time of climate change (PR#110 p4-217).



Figure 7-4. Bathurst herd, barren-ground caribou (ᐱᓃᓄᓄ) on winter range
(Source: WRRB hearing presentation, PR#256 p20)

In its technical report, the WRRB advised the Board that it does not agree with the developer's predictions on impacts to barren-ground caribou (ᐱᓃᓄᓄ) from cumulative effects from the Project and other reasonably foreseeable developments. The WRRB is concerned that the developer may have underestimated impacts, which increases uncertainty in the developer's prediction of risks to barren-ground caribou (ᐱᓃᓄᓄ). The WRRB believes that this concern is particularly acute at this time because the Bathurst

herd has recently been assessed as threatened by COSEWIC and the herd is at historically low numbers. For these reasons the WRRB questions the conclusion of the developer that cumulative impacts to barren-ground caribou (ᑭᑭᑭᑭ) will be “small” (PR#215 p22). To address these concerns, the WRRB recommends in its technical report that (PR#215 p24):

- the relationship between responses to harvesting and roads be reconsidered; and,
- the developer review the implications of what is meant by ‘small’ effects relative to the current state of barren-ground caribou (ᑭᑭᑭᑭ).

The Project has an indefinite life. The WRRB is concerned that implementing the WMMP for only five years after construction may not be able to inform or sustain adaptive management. The WRRB does not want to see the Project managed the same as the rest of the Northwest Territories highway system, with no thought given to adaptively managing the impact of road operations on wildlife (PR#215 p25).

The WRRB is concerned with the developer’s characterization of the residual effects of the project to barren-ground caribou (ᑭᑭᑭᑭ) as only ‘small’ changes. WRRB points out that after a 97% decline in the size of the Bathurst herd and the current curtailment of harvesting, small changes from the Project may have disproportionate effects on caribou survival, since the population is already low. In addition, small impacts are difficult to detect, resulting in greater uncertainties for effects monitoring and adaptive management (PR#215 pp25-26).

In its technical report, the WRRB observes that the societal values of barren-ground caribou (ᑭᑭᑭᑭ) are important in northern communities but that the caribou are in trouble. This is a point repeatedly articulated in environmental assessments and consultations for barren-ground caribou (ᑭᑭᑭᑭ) management and range planning consultations (PR215 pp25-26).

The WRRB suggests its recommendations for barren-ground caribou (ᑭᑭᑭᑭ) described in its Technical Report can be implemented as a measure by the Review Board. The WRRB also observes that the shortcomings in the effects assessment for the Project can be remedied if the operations phase of the Project undergoes (PR#215 pp25-26):

- further review to collaboratively revise the WMMP;
- development of specific management plans such as for access and traffic management; and,
- the establishment of an Independent Oversight Committee, to ensure that the road's monitoring and mitigation is highly protective of barren-ground caribou (Ɂekwǝ), people and the environment, and is based on Tłıchǵ Elder's knowledge and experience as well as technical information.

In its response to recommendations from the WRRB, the developer contended that barren-ground caribou (Ɂekwǝ) monitoring proposed in the WMMP is only meant to address project specific impacts from the Project, not cumulative impacts (PR#239 PDF p89). The developer, stated that: (PR#239 p89)

While some of the monitoring proposed in the WMMP may contribute to existing cumulative effect initiatives and help to detect impacts in the local study area to help inform range level actions, it is not within the scope of a project-specific WMMP to monitor and manage cumulative effects. This view is consistent with GNWT's "Cumulative Effects Assessment, Monitoring and Management Framework" developed in response to Measure 8 from the NICO project environmental assessment.

7.2.4. Caribou herd range planning and Project specific impacts

The developer stated that in its view, the focus of the WMMP for the Project should be to manage and mitigate impacts specific to the construction and operation of the Project (PR#239 p89). The developer contends that cumulative effects to barren-ground caribou (Ɂekwǝ) (PR#239 pp89-92):

...are being addressed through the GNWT-ENR mandate to manage wildlife, and through initiatives such as the Bathurst Caribou Range Plan, Boreal Caribou Range Planning Framework and the Cumulative Impact Monitoring Program.

The developer noted that between range planning, co-management processes under the Tłıchǵ Agreement and the Bathurst Caribou Advisory Committee, there will be sufficient opportunity for the monitoring and adaptive management of impacts to barren-ground caribou (Ɂekwǝ). Outcomes from those initiatives can be applied to the Project to minimize project-specific impacts to caribou (PR#239 p92).

The developer submitted its *Bathurst Caribou Range Plan Interim Discussion Document, December 2016* (BCRP) in September 2017 (PR#197). The management goal of this planning initiative is to "maintain the Bathurst caribou herd annual range in a resilient

landscape condition” (PR#197 p8). The specific objectives in the BCRP to achieve this goal include (PR#197 p9):

1. Maintaining the amount of human disturbance below threshold levels;
2. Maintaining connectivity between seasonal ranges;
3. Maintaining the integrity of sensitive habitats; and,
4. Managing human access.

The objective on managing human access states that the primary unintended consequence of increased access is harvesting wildlife, “which, for caribou, can have significant and lasting impacts”, and that (PR#197 p10):

Consequently, effective access management is an important objective which requires consultation and collaboration among appropriate governments, boards, agencies, organizations, companies, communities and users, as well as regular compliance and community-based monitoring.

During the public hearing, the WRRB re-stated that it is concerned the developer has underestimated exposure of barren-ground caribou (ᐃᓕᓄᓂ) to the Tłıchǵ All-Season Road. The risk of adverse impacts, including harvest, over the life of the Project is high once barren-ground caribou (ᐃᓕᓄᓂ) numbers recover and they return to the Project area (PR#274 p152).

In its closing argument, the WRRB questioned the developer’s confidence in the ability of existing wildlife co-management processes to address cumulative effects from the Project to barren-ground caribou when combined with effects from other existing and future developments. The WRRB pointed out that initiatives to manage caribou, such as the Bathurst Caribou Range Plan, are not complete (PR#282 p6). Until the Bathurst Caribou Range Plan and other planning initiatives are finalized, the WRRB is concerned with the many uncertainties about the developer’s predictions on cumulative impacts to caribou. In the view of the WRRB, an alternative approach to the lack of completed plans is to expand and intensify mitigation as a precautionary approach based on the uncertainties (PR#282 p6).

7.3. Review Board analysis and conclusions

The Review Board finds that the Project is likely to cause significant adverse impacts to barren-ground caribou (ᐃᓕᓄᓂ) due to increased access and related mortality from harvesting. The Review Board’s reasons for this determination are summarized as follows:

- barren-ground caribou are designated as threatened by Northwest Territories Species at Risk Committee and COSEWIC, and are at a historic low point in their population cycle;
- Traditional Knowledge tells us that barren-ground caribou (ᑭᑭᑭᑭ) occupy the Project area;
- the Project extends the time that harvesters can access the winter range of barren-ground caribou (ᑭᑭᑭᑭ) each year, resulting in increased harvest;
- range planning initiatives are incomplete and will not address Project specific impacts in the near term;
- improved harvest reporting is necessary for herd recovery and sustainable barren-ground caribou (ᑭᑭᑭᑭ) management; and,
- the impacts from the Project to caribou are irreversible and permanent and will adversely impact caribou for future generations.

The sections below set out the Review Board’s analysis and conclusions relating to these reasons.

7.3.1. Caribou listed as threatened by Species at Risk Committee

As of April 2017, barren-ground caribou (ᑭᑭᑭᑭ) from both the Bathurst and Blue-nose east herds are now listed as threatened by the Northwest Territories Species at Risk Committee. According to the *Species Status Report*, in the years from 1989-2016 the Bluenose East herd population has decreased by 89% and the Bathurst herd by 96% (PR#198 p. xix). The Review Board takes seriously the Report’s warning that if nothing is done to reverse the factors leading to the extirpation or extinction of barren-ground caribou (ᑭᑭᑭᑭ), they could disappear from the Northwest Territories in the near future.

The GNWT is both developer for the Project and the regulator of wildlife in the Northwest Territories. In the opinion of the Review Board, the developer has not taken seriously enough the plight of barren-ground caribou (ᑭᑭᑭᑭ) described in the *Species Status Report*. In the opinion of the Review Board, the developer has not done enough to ensure that the Project will not indirectly harm barren-ground caribou (ᑭᑭᑭᑭ). This is reflected in the developer’s optimistic impact predictions and absence of meaningful mitigation for the Project. The developer’s apparent lack of urgency for the state of barren-ground caribou (ᑭᑭᑭᑭ) is particularly demonstrated in the developer’s reliance on advisory boards and plans that have yet to be completed or implemented (PR#282 p6).

In the view of the Review Board, building the Project will increase the opportunity to harvest barren-ground caribou (ᑕᓴᓴᓴ). The Review Board observes that by constructing the Project, the developer is doing the direct opposite of what the *Species Status Report* recommends.

The Review Board finds that the construction and operation of the Project increases the risk that the Bathurst and Bluenose East barren-ground caribou (ᑕᓴᓴᓴ) herds could disappear from the Northwest Territories. Barren-ground caribou are a cultural cornerstone to Aboriginal people in the Northwest Territories, as well as an ecological keystone species. Improved access leads directly to improved opportunities to harvest caribou. In the Review Board's view, any human development that further puts barren-ground caribou (ᑕᓴᓴᓴ) at risk of extirpation is a significant impact. The Project is such a development and is being constructed during a time of peak vulnerability for Northwest Territories barren-ground caribou (ᑕᓴᓴᓴ).

In the opinion of the Review Board, the construction and operation of the Project has the potential to make the threatened status of barren-ground caribou (ᑕᓴᓴᓴ) worse. For this reason, the Review Board concludes that the Project is likely to cause a significant adverse impact to barren-ground caribou (ᑕᓴᓴᓴ). In Section 7.4 below, the Board has prescribed measures to mitigate this impact.

7.3.2. Traditional knowledge tells us caribou (ᑕᓴᓴᓴ) use Project area

The Review Board heard from traditional knowledge holders that barren-ground caribou (ᑕᓴᓴᓴ) have occupied the northern end of the Project during the winter in the past. Evidence from the Tłıchǫ Government's Traditional Knowledge Study and the submissions from the WRRB confirm this (PR#28 p36, PR#215 p38). Tłıchǫ Elders observe that caribou have been present in the northern portion of the Project area in previous low points in the population cycle. This is contrary to the developer's prediction that barren-ground caribou (ᑕᓴᓴᓴ) would only use this area when numbers are higher and the population is more resilient to increased harvest (PR#215 pp37-38).

The Review Board accepts evidence from the developer and parties that barren-ground caribou (ᑕᓴᓴᓴ) are present in the northern portion of the Project area during the winter, particularly when herd numbers are higher than at present. The Review Board also accepts evidence from the Tłıchǫ Government and the WRRB that barren-ground caribou (ᑕᓴᓴᓴ) may be present in the Project area when caribou herd numbers are low.

7.3.3. Project extends winter hunting season

The Review Board agrees with the WRRB that the Project will result in greater access for harvesters to the winter range of the Bathurst caribou herd and potentially increased harvest (PR#215). The Review Board recognizes commitments made by the developer to address the potential for increased harvest of caribou, including increased monitoring, a check station and a GNWT-ENR wildlife position in Whatì (PR#274 p37,57). However, monitoring without follow-up actions does not stop increased caribou harvest. The Review Board observes that the developer did not propose specific mitigative actions it could take in response to monitoring results showing elevated harvest numbers.

The Review Board notes that in its WMMP, the developer argues that it is limited in what it can do to restrict access unless there is a safety or conservation concern, and that enhanced monitoring is needed to determine if and by how much harvest will increase with the Project (PR#192 p35). In the Review Board's view, there is clearly a well documented conservation concern with both the Bathurst and Bluenose East caribou herds. In the opinion of the Review Board, actions are needed to prevent any harvest due to resulting from use of the Project because of the ongoing conservation concerns with barren-ground caribou (ᑕᑦᓴᓴᓴ). The reaction time for a government to implement actions after it has conducted monitoring may be too slow to save barren-ground caribou (ᑕᑦᓴᓴᓴ) in the Northwest Territories if proper action levels are not developed in advance.

7.3.4. Incomplete range plans do not mitigate Project impacts

The Review Board recognizes that the developer intends to address both project-specific and cumulative impacts to barren-ground caribou (ᑕᑦᓴᓴᓴ) from the Project through the outcomes of range plans, cumulative impacts monitoring, and existing co-management processes (PR#239 pp89-92). The Review Board supports these planning initiatives and any recommendations that may result from planning to maintain sustainable barren-ground caribou (ᑕᑦᓴᓴᓴ) populations. Specific objectives from the draft *Bathurst Caribou Range Plan Interim Discussion Document*, for example, include maintaining the amount of human disturbance below threshold levels and managing human access (PR#197 p9).

However, because these planning initiatives are not complete, they have not been implemented, and are therefore not currently effective in reducing adverse impacts to barren-ground caribou (ᑕᑦᓴᓴᓴ) from the Project. In addition, the developer has not described any timelines for the completion of these planning initiatives.

The Review Board agrees with the WRRB that, until such time as outcomes and specific mitigations from these plans are determined and can be implemented, the plans themselves cannot be considered effective mitigation for impacts to barren-ground caribou (ᑕᑭᑦᑲᑦ) from the Project.

In the opinion of the Review Board, it is crucial that these planning initiatives are completed in a timely manner, so that mitigations to address adverse impacts to caribou from the Project can be identified, implemented and monitored for effectiveness.

7.3.5. Improved harvest reporting is necessary for herd sustainability

The Review Board acknowledges that while the Project will assist harvester access into the winter range for barren-ground caribou (ᑕᑭᑦᑲᑦ), there are currently severe harvest restrictions in place. A Mobile Core Bathurst Caribou Management Zone¹ is the current management tool in place to recover barren-ground caribou (ᑕᑭᑦᑲᑦ) populations. Harvesting of barren-ground caribou (ᑕᑭᑦᑲᑦ) is banned within this zone and harvest monitoring check stations are in place on the winter road north of Whatì. Harvest monitoring is effectively addressed at present because of current harvest restrictions for barren-ground caribou (ᑕᑭᑦᑲᑦ).

The Project is a permanent road and the impacts to caribou from increased access by harvesters are long-term. If barren-ground caribou (ᑕᑭᑦᑲᑦ) herd recovery is successful, barren-ground caribou (ᑕᑭᑦᑲᑦ) may return to their winter range in the Project area and in areas accessed from the Project along existing winter roads to Gamètì and Wekweètì. Since part of the goal of herd recovery is to enable a sustainable harvest by Aboriginal people, current harvest restrictions will be eased once caribou populations can sustain harvesting.

In the opinion of the Review Board, a key part in the long-term management of barren-ground caribou (ᑕᑭᑦᑲᑦ) is accurate knowledge of causes of mortality of caribou. The Review Board accepts the statement in the SARC *Species Status Report* that “harvest and predation play a stronger role when barren-ground caribou (ᑕᑭᑦᑲᑦ) are at low numbers” (PR#198). A key recommendation from the SARC *Species Status Report* (PR#198 pvii) is to improve harvest monitoring and reporting (PR#198 pvii). The Review Board agrees with the recommendations of the SARC *Species Status Report* that harvest monitoring and

¹ <http://www.enr.gov.nt.ca/en/services/mobile-core-bathurst-caribou-management-zone>

reporting needs to be improved in order for barren-ground caribou (ᐱᓃᐱᓃ) to be managed sustainably.

The Review Board agrees with the WRRB's statement that the risk of adverse impacts, including harvesting, over the life of the Project is high once barren-ground caribou (ᐱᓃᐱᓃ) numbers recover and they return to the Project area (PR#274 p152). In the opinion of the Review Board, significant adverse impacts to barren-ground caribou (ᐱᓃᐱᓃ) are likely once harvest restrictions are lifted along winter roads accessible from the Project, without a robust harvest monitoring and reporting framework.

7.3.6. Impacts are ongoing

The Project will be a permanent highway and will permanently increase access for harvesting barren-ground caribou (ᐱᓃᐱᓃ). The Review Board agrees with the parties that impacts from increased harvest to caribou from this new access will be ongoing in duration, because the road is permanent.

Since the road will be in place in perpetuity, the predicted impacts to caribou including disturbance, displacement and harvest along this new access road are not reversible and are permanent. Given the importance of caribou to Aboriginal communities and other people in the Northwest Territories, the Review Board finds that a permanent adverse impact to barren-ground caribou (ᐱᓃᐱᓃ) is a significant impact.

7.3.7. Conclusions

Considering the evidence on the public record, the Review Board concludes that the construction and operation of the Project is likely to result in significant adverse impacts to barren-ground caribou (ᐱᓃᐱᓃ). The Review Board's reasons for this conclusion are that Bathurst herd of barren-ground caribou (ᐱᓃᐱᓃ) have recently been designated as threatened by SARC and COSEWIC and are at an extreme low point in their population cycle. In addition, traditional knowledge tells us that barren-ground caribou (ᐱᓃᐱᓃ) occupy the Project area, and the Project extends the time that harvesters can access the winter range of barren-ground caribou (ᐱᓃᐱᓃ) each year, resulting in increased harvest. Finally, the Review Board observes that range planning initiatives for barren-ground caribou (ᐱᓃᐱᓃ) are incomplete and will not address Project specific impacts in the near term, and, the impacts from the Project to caribou are irreversible and permanent and will adversely impact caribou for future generations.

7.4. Measures and suggestions

The primary measures to minimize significant adverse impacts to barren-ground caribou (ᓵekwǵ) is the harvest monitoring measure (9-1) described in Chapter 9.

In addition to the harvest related measures in Chapter 6 and Chapter 9, the Board requires the developer and Tłıchǵ Government to implement the following measures to mitigate significant adverse impacts to barren-ground caribou (ᓵekwǵ) from increased harvest opportunities and pressure. This measure builds on a commitment made by the Tłıchǵ Government and the developer to reduce adverse impacts to caribou from increased access due to the operation of the Project.

7.4.1. Traditional knowledge and caribou monitoring

The developer has committed to support, subject to available funding, the Tłıchǵ Government in the design and implementation of a program that uses Tłıchǵ harvesters' Traditional Knowledge and methods to monitor the state of barren-ground caribou (ᓵekwǵ) winter habitat, during and after the completion of the Project (PR#192 pp41-42).

The following measure builds on this commitment, which is a necessary part of mitigation, and is outlined in the WMMP (PR#192 pp41-42).¹ The Review Board notes, however, that the developer's commitment to incorporate Traditional Knowledge as described in this commitment is "subject to the availability additional resources" (PR#192 p41). This measure is required to ensure that funding is made available by the developer to implement the measure.

Measure 7-1: Incorporate Traditional Knowledge into monitoring of barren-ground caribou (ᓵekwǵ)

To improve and inform mitigation of significant adverse impacts to barren-ground caribou (ᓵekwǵ) resulting from increased access due to the Project, the developer will include Traditional Knowledge in barren-ground caribou (ᓵekwǵ) monitoring and management. Prior to operations, the developer will:

- | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| a) support the Tłıchǵ Government in the design and implementation of a program that uses Tłıchǵ harvesters' traditional knowledge and methods to monitor the |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|

¹ Please see Sections 10.2.3 and 10.3.5 for further details about the WMMP. A measure to enshrine the WMMP and all its commitments is described in Measure 10-2 (Section 10.4.2) of this Report.

- state of barren-ground caribou (ᐱᓃᓂᓂ) winter habitat, during and after the construction of the Project;
- b) fund the implementation of the program in paragraph a); and,
- c) incorporate the findings of the program in paragraph a) into the *Wildlife Management and Monitoring Plan* while it is in place, and into any other barren-ground caribou (ᐱᓃᓂᓂ) management if the *Wildlife Management and Monitoring Plan* is not extended.

7.4.2. Implement mitigations from range plan initiatives

The developer's stated method to mitigate impacts to caribou as a result of improved access from the Project is through its existing mandate to manage wildlife and the implementation of its range planning initiatives. Since these planning initiatives are incomplete, the Review Board does not have confidence that effective mitigation or management will be in place. According to section 12.11.2 of the *Tłıchǵ Agreement*, a comprehensive proposal for the management of the Bathurst caribou herd was to have been prepared within three years after the effective date of the *Tłıchǵ Agreement*. The Review Board requires the implementation of key mitigation measures in the draft plans that are relevant to the Project.

Measure 7-2: Barren-ground caribou mitigation and policy changes

To manage significant adverse impacts to barren-ground caribou (ᐱᓃᓂᓂ) resulting from the Project, GNWT-ENR and Tłıchǵ Government, along with their co-management partners in the Wek'èezhì area, will:

- a) complete the *Bathurst Caribou Range Plan* as soon as possible and prior to the expiry of the *Wildlife Management and Monitoring Plan*; and,
- b) consider protecting barren-ground caribou (ᐱᓃᓂᓂ) historic winter habitat from fires when determining where and when fires are fought, to offset effective habitat loss from the Project.

8. Fish and water

8.1. Summary of findings

The Review Board finds that the Tłıchǵ All-Season Road (the Project) is likely to cause significant impacts on fisheries and fish harvesting¹. The Review Board's reasons for this determination are summarized as follows:

- The highway will increase access to Lac La Martre, as well as rivers and small lakes along its route.
- Increased access is likely to result in increased fishing pressure by recreational fishing enthusiasts.
- There is a lack of data on fish populations and fish harvesting in the affected area.
- There are problems with the developer's identified mitigation measures.
- The developer has no plans to monitor fisheries or harvest and there are insufficient monitoring and management commitments from parties.
- Fishing is important to the Tłıchǵ way of life and to the people of Whatì.

The Review Board concludes that access and fishing pressure will increase because of the Project. Due in part to a lack of data on fish populations and fish harvesting, as well as the importance of fishing to the Tłıchǵ and Whatì way of life, the developer has not persuaded the Review Board that the mitigations currently proposed are sufficient to mitigate the impacts of increased fishing pressure due to the Project. The Review Board therefore believes that adverse impacts on fisheries related to increased access are likely and significant.

8.2. Evidence from developer and parties

Fish and water are important considerations in this environmental assessment. The Review Board heard from the public on the importance of fish and water. Elders told the Review Board that fish were a fundamental part of survival for the Tłıchǵ people: "We're living with the water" (PR#272 p54, Elder Francis Simpson), and "That's how we survived — with fish" (PR#274 p114, Elder Charlie Apple).

¹ Harvesting in this section refers to all fishing and is not limited to Aboriginal fishing activities.

Although water is clearly of importance to parties and the public, the focus in the environmental assessment has largely been on the inter-related topic of fish, including fish habitat and harvesting. Water quality and fish habitat are combined in the following section (8.2.1) because they are related and were often discussed together. Fisheries and harvesting have been one of the main topics of the environmental assessment and are discussed in Section 8.2.2.

8.2.1. Water quality and fish habitat

The Project is in the Great Slave sub-basin watershed and the Marian watershed (PR#7 p6-37). The developer acknowledged that while site-specific information is limited, there is a general indication that water quality of lakes and rivers in the area is good (PR#7 p6-37). The Project crosses four major watercourses (Duport River [Figure 8-1], James River, Tsotideè [La Martre River] and an unnamed watercourse) that will require bridges, one location that will require an arch culvert and eleven smaller watercourses that will require culverts (PR#7 p4-15).



Figure 8-1. Duport River crossing in September, facing upstream (west).
(Source: PR#235 p15)

The developer identified Tsotideè (La Martre River), James River and Duport River as potential over-wintering habitat for fish but assumed that all the watercourse crossings can provide fish habitat for part of the year (PR#7 p6-49). Of the 18 fish species the developer identified as possibly occurring in the project area, none of them are listed by COSEWIC or SARA (PR#7 p6-50; PR#110 p3-15).

Developer's assessment

In its *Project Description Report* (PDR), the developer provided a variety of mitigation measures to prevent impacts from reduced water quality and changes to flow during freshet (PR#7 p8-25). Some examples of the mitigation the developer provided for water quality and flow include following guidelines, taking water samples during construction and designing crossings for 1 in 100-year floods (Figure 8-2) (PR#7 p8-26). The developer included a brief assessment of potential effects on fish and fish habitat in its PDR (PR#7 p8-28). The developer identified mitigations to prevent impacts from activities such as bridge construction, culvert installation, heavy equipment use, quarry development, water extraction and public access (PR#7 p8-29).

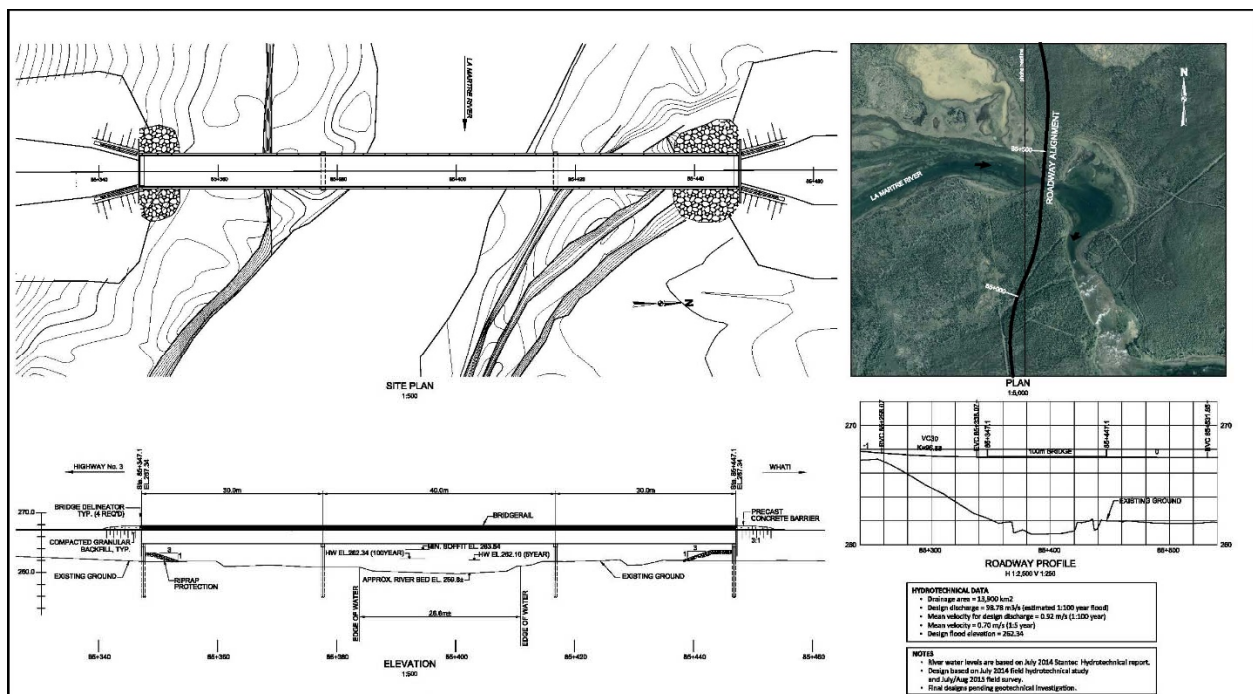


Figure 8-2. Early bridge design for crossing #15, La Martre River.
(Source: PR#7 Appendix I PDF p8)

The Review Board determined in its *Adequacy Statement* that additional assessment related to fish habitat was required (PR#70 p11). Specifically, the Review Board required that the developer assess the impacts of explosives, accidents and spills on water quality and how changes to water quality or physical impacts will affect fish and fish habitat (PR#70 p11).

The developer assessed a variety of pathways of effects to fish and fish habitat, including (PR#110):

- water pumping for isolation bypass;
- use of explosives near fish-bearing waters;
- blasting residue;
- acid generating materials;
- crossing structure footprint;
- sediment release from installing crossings;
- sediment release from road construction and land disturbance;
- riparian vegetation removal;
- dust/debris from construction and traffic;
- crossing structure effects on hydraulics/ geomorphology;
- invasive aquatic species;
- spills and leaks during construction;
- spills and leaks during operations;
- water withdrawal for camps; and,
- wastewater, runoff and waste/debris.

The developer identified all the above pathways as either secondary, where the developer predicts minor impacts that it believes can be effectively mitigated, or no linkage, where the developer predicts no impacts at all (PR#110 p2-2).

The developer has provided numerous commitments to mitigate and manage impacts on water quality and fish habitat (Appendix D).

Monitoring and management

Water quality and fish habitat monitoring and management came up in several technical reports submitted by parties. In its technical report, Environment and Climate Change Canada (ECCC) reviewed the work the developer has done so far and recommended adding

pre-construction water monitoring. ECCC also recommended that monitoring during construction and operations should continue until no changes are detected (PR#218 p12). The developer agreed to consider those changes (PR#239). In its closing arguments, ECCC indicated that it is satisfied with the responses to date and that those issues can be addressed adequately during the regulatory phase (PR#279 p1).

The Wek'èezhì Renewable Resources Board (WRRB) expressed concerns about fish and fish habitat in its technical report. WRRB acknowledged that although it believes construction is unlikely to affect fish habitat, it remains concerned about operations (PR#215 p28). WRRB recommended adding fish passage and annual inspections to the developer's operations commitment #6 (PR#215 p28), which states:

Watercourses will be inspected upstream and downstream of the crossings for erosion, scour, and flow blockages during the spring freshet and through the open water season, as required. Impacts will be minimized by culvert maintenance, including removal activities of debris (e.g., ice, beaver dams), following DFO guidance (i.e., gradual removal such that flooding downstream, extreme flows downstream, release of suspended sediment, and fish stranding can be avoided).

In response, the developer said it has already agreed to other commitments and the *Fish and Fish Habitat Protection Plan* to protect fish and fish habitat and maintain fish passage. The developer considers this to be sufficient (PR#239). The developer also pointed out that all highways undergo annual crossing inspections and that the Tłıchǵ Government has committed to a fish and fish habitat monitoring program during construction and operations (PR#239).

In its closing arguments, Fisheries and Oceans Canada (DFO) pointed out that the developer has agreed to implement all guidance and best management practices, to have appropriate maintenance and monitoring plans and to provide DFO with the final design and construction plans for crossings (PR#278 p3). Based on those factors, DFO believes impacts "...from the working, activities, or undertakings because of the construction of the water crossings along the Tłıchǵ All-season road can be effectively managed and significant impacts to fish and fish habitat can be avoided" (PR#278 p3). In its closing argument, the developer stated that it assumes the request for final design and construction plans for crossings refers only to large bodied fish-bearing water crossings (PR#285 p19).

ECCC requested more information about adaptive management for water quality issues and Environmental Assessment (EA) prediction on impacts to water quality, erosion and sedimentation (PR#169 PDF p2). In response, the developer discussed the reporting

procedures for the *In-field Water Analysis Plan* and *Erosion and Sediment Control Plan* and how this would address issues. The developer gave an example of a threshold, where if downstream samples are more than eight Nephelometric Turbidity Units higher than upstream samples, it will contact GNWT-INF-Environmental Affairs to discuss and direct further action (PR#169 PDF p2). The developer acknowledged that adaptive management planning would require clarifying possible further action but stated that the plans cannot be prepared until the P3 operator is identified and can contribute to the plans.

Arch culverts

One of the issues discussed near the end of the environmental assessment was the use of arch culverts. The Tłıchǵ Government indicated in its technical report that Elders were concerned that construction and the use of culverts might affect water flow or fish habitat (PR#216 p4). Specifically, Elders were concerned that culverts would affect streams, fish health and fish habitat, and were unconvinced by the developer's argument that these impacts would not occur (PR#216 p4). DFO also stated that it typically recommends arch culverts instead of closed bottom ones, to reduce disturbance to bed and banks because "...an arch culvert and/or clear-span bridge can avoid any disturbance below the [ordinary high-water mark] and eliminate any potential impacts to fish and fish habitat" (PR#221 p9).

To address these concerns, the developer took a harvester and Elders out to see the crossings and discussed culvert design (Figure 8-3) (PR#234 p1-2). The report on the registry (PR#234) indicated that Elders preferred the use of bridge and arch culvert crossings at rivers and streams as well as recommended the use of multiple culverts near wetlands or areas with soft soil (PR#234 p1-2). The PDR and a subsequent fish habitat survey identify one location where the developer intends to use an arch culvert (PR#235 p1). At the public hearings, the Review Board heard from the Tłıchǵ Government that Elders were satisfied by the trip to see the culvert locations and will continue to work with the developer to make sure construction follows Elders' guidance (PR#273 p141).

8.2.2. Fisheries and harvesting

Fisheries management and the ability of Tłıchǵ people to harvest fish have been important topics throughout this environmental assessment. The Project is in an area with multiple regulatory and enforcement agencies. Fisheries are co-managed by DFO, WRRB, Tłıchǵ Government and Tłıchǵ communities, with no authority held by GNWT Department of

Environment and Natural Resources (GNWT-ENR) (PR#221 p4; PR#215 p31; PR#278 p3). However, DFO, with WRRB as a co-management partner, is responsible for setting and managing sport fishery limits and has an agreement with GNWT-ENR to do the enforcement (PR#169 p10). DFO has indicated it intends to work with the WRRB and Tłıchǫ Government to address increased fishing access (PR#215 p30).



Figure 8-3. Elders on a site visit to James River.
(Source: PR#234 p5)

Fishing in the Project area

The area around Whatì and the Project is known for good fishing. The developer identified five fish species that are valued by communities, government agencies and the public as valued components in the effects assessment (PR#110 p3-5). These included arctic grayling, lake trout, northern pike, pickerel and whitefish (PR#110 p3-5).

In its response to information requests from the Review Board, the Tłıchǫ Government stated (PR#97 p4, emphasis added):

*Fishing remains a central cultural and economic activity for Tłıchǵ people. Harvesting fish is an activity that occurs year round. Fish are considered to be a secure source of food, which is relied on in times when meat may not be attainable. As such, **fishing, fish species, and fishing locations are crucial to the Tłıchǵ way of life.***

In its PDR, the developer described the project area as including “...important fish habitat and historic and current subsistence harvest areas for the Tłıchǵ peoples” (PR#7 p6-44). In the *Traditional Knowledge Study* (PR#28), one of the concerns identified by Elders was about the Project leading to increased pressure on various fish populations because of increased access to Tsotıdeè (La Martre River) and on Lac La Martre (PR#28 p41). Potential mitigation identified by Elders included developing “...fishing restrictions to minimize outsiders’ access to and pressure on fish populations...” (PR#28 p42). This was particularly important to Elders at locations such as Tsotıdeè (La Martre River), T’oohdeèhoteè¹ and Lac La Martre (PR#28 p42). T’oohdeèhoteè is the location or portage site where the K’agòdò tlıì harvesting trail crosses Tsotıdeè (La Martre River) (PR#28 p22). Figure 8-4, Figure 1-6, and Figure 1-7 show harvesting locations as described in the *Traditional Knowledge Study* (PR#28).

When discussing fishing in the area, one Elder said “[w]e got good fish year-round so I guess our neighbours and our relatives from our community want to come ... [fish] in our area. They're always welcomed.” (PR#273 p74, Elder Charlie Jim Nitsiza) and another said “[w]e have ... good fish here. There's fish and everybody's saying that ... most of the people around town, they're saying all the fish is good here” (PR#273 p240, Elder John Beaverho).

The Review Board heard from the Tłıchǵ Government about which locations in the project area are particularly important to harvesters for fishing. In addition to Lac La Martre, which is heavily used by Whatì harvesters and some fly-in tourists in summer (PR#110 p3-18), Tłıchǵ harvesters use a variety of other watercourses and waterbodies in the area. Tsotıdeè (La Martre River) is used consistently for fishing year-round at multiple locations above and at the waterfall (PR#28 p21; PR#97 p4; PR#110 p3-18). James River, Bòts’ıtı (Boyer Lake), Gò lo Tı’Deè (Marian River) and Lakes K’ıshıtı and Łıetı were also noted as good fishing locations in the *Traditional Knowledge Study* and in documents from the Tłıchǵ Government and developer (PR#28; PR#97 p4; PR#110 p3-18). Bòts’ıtı (Boyer Lake) is heavily used by residents of Whatì, while James River and Lakes K’ıshıtı and Łıetı

¹ A portage site on Tsotıdeè (La Martre River) (PR#28 p22).

are more difficult to access and used less heavily (PR#110 p3-18). Gò lo Tì Deè (Marian River) is most commonly used for fishing during spring walleye spawning (PR#110 p3-18).

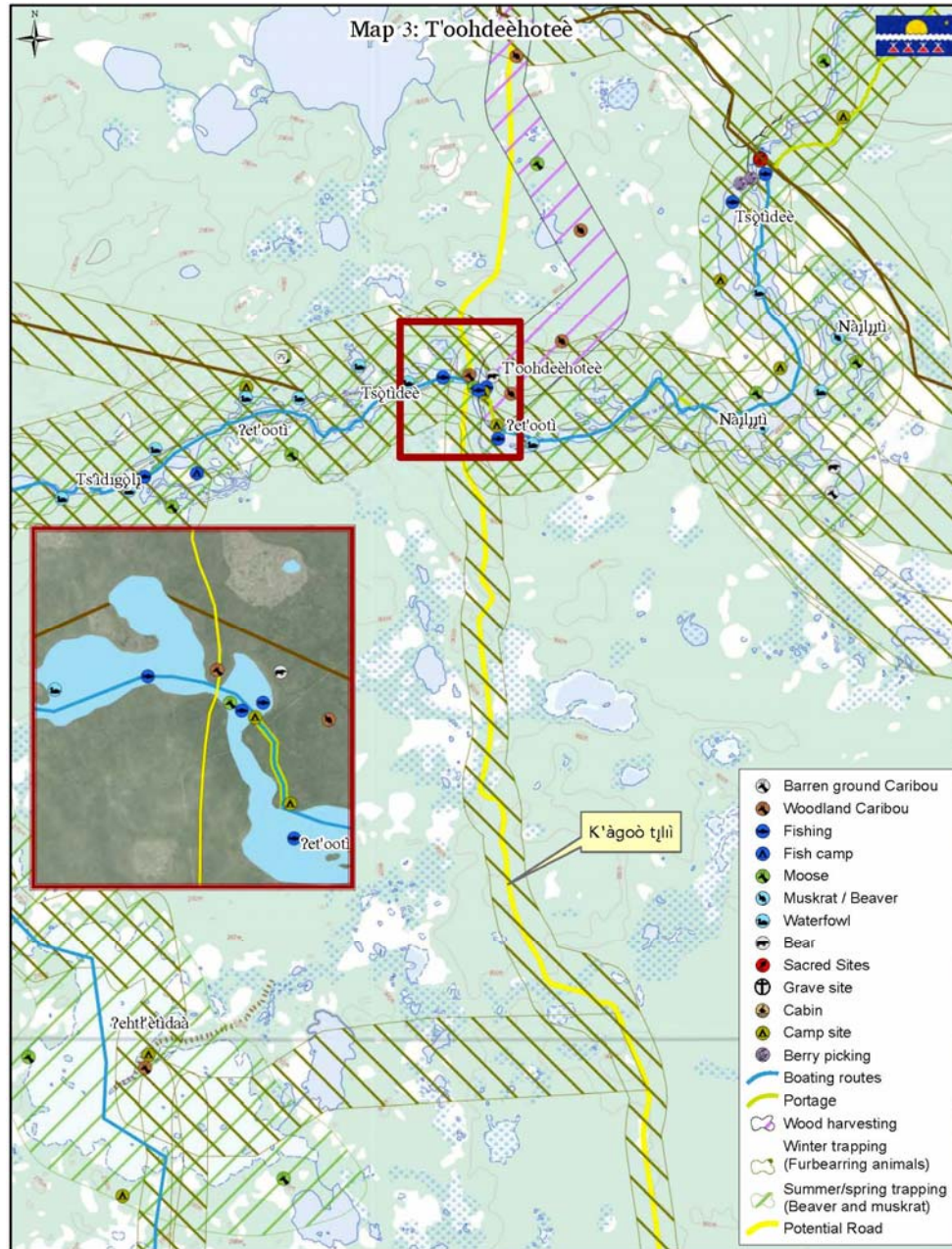


Figure 8-4. Map of traditional land use around Tsoidee (La Martre River).
(Source: PR#28 p20)

Developer's assessment

In its *Adequacy Statement*, the Review Board required that the developer assess how the impacts of accidents and spills, increased access leading to increased harvesting pressure and increased access to important fishing areas will affect fish harvesting (PR#70 p12). The only primary pathway of impacts identified by the developer related to fish and water was the potential overexploitation of large-bodied fish populations, due to improved road access for fishers (PR#110 p3-24). A primary pathway in this context is one that is likely to result in change compared to the current condition (PR#110 p2-2).

As part of its effects assessment on the potential overexploitation of large-bodied fish, the developer assessed the impacts on individual fisheries along the road, including (PR#110 p3-57):

- Lac La Martre
- Upper Tsotıdeè (La Martre River)
- Lower Tsotıdeè (La Martre River)
- Gò lo Tı`Deè (Marian River)
- Bòts'ıtı (Boyer Lake)
- Lake K'ıshıtı (Lac Levis)
- Lake Łıetı
- James River
- other waterbodies and watercourses

The Tłıchǫ Government has been clear that it wishes to maximize tourism by capitalizing on increased access to desirable fishing locations, although it does not expect the increase in tourism to be dramatic based on what is known of existing demand (PR#97 p5,6). The developer considered tourism in its effect assessment on fish and concluded that increased access and tourism would result in a moderate increase in use of Lac La Martre, upper Tsotıdeè (La Martre River) and Bòts'ıtı (Boyer Lake) (PR#110 p3-42 to p3-51).

The developer concluded that access to lower Tsotıdeè (La Martre River), Gò lo Tı`Deè (Marian River), Lac Levis and Lake Łıetı would be 'marginally increased' and access to James River, James Lake and other lakes and watercourses would increase (PR#110 p3-42 to p3-57). The developer concluded that the lakes and watercourses most likely to attract fishers were the larger ones that can sustain more fishing (PR#110 p3-58).

The developer proposed three measures to mitigate the potential effects of overharvesting, including (PR#110 p3-43 to 3-57):

- the possible implementation of fishing regulations and boat launch restrictions by the Tłıchǵ Government;
- maintenance of existing Northwest Territories fishing regulations by DFO; and,
- sustainable development of fishery-based tourism by the Tłıchǵ Government.

Regarding the first mitigation, the Tłıchǵ Government had stated that it “...has the tools to deal with this and has the jurisdiction to restrict access to Tłıchǵ lands and area...” (PR#97 p10). As examples, the Tłıchǵ Government suggested it might consider a daily catch limit for non-Aboriginal harvesters and pointed out that its land use plan does not allow commercial fishing in the Project area, except at the fishing lodge on Lac La Martre (PR#97 p10).

Regarding the second mitigation, the Review Board heard that neither GNWT-ENR nor DFO have a plan to increase enforcement or additional resources to address increased access to fishing areas because of the Project (PR#125 PDF p5; PR#133 PDF p12; PR#169 PDF p11). This was cause for concern for WRRB (PR#215 p29).

The developer determined that after considering mitigation, all effects on fisheries from Aboriginal Tłıchǵ harvesting, non-Tłıchǵ Northwest Territories resident harvesting and non-Northwest Territories resident harvesting will be negligible to low in magnitude (PR#110 p3-43 to 3-57). The developer characterized the impacts to fisheries as:

- local to regional in geographic extent;
- permanent in duration;
- continuous in frequency; and,
- probable in likelihood.

The developer considered the cumulative impacts of Fortune Minerals’ Nico Mine, the Nailii Hydroelectric Project at Nàııı (La Martre Falls) and the Tłıchǵ/Whatı Park Area at Nàııı (La Martre Falls) on fish harvesting in the area and determined that none of those reasonably foreseeable developments would act cumulatively with the Project (PR#110 p3-59).

Based on its assessment, the developer concluded that there would be no significant adverse impact on the ability of fish populations to be ‘self-sustaining and ecologically effective’ (PR#110 p3-64). The developer does not intend to monitor fisheries harvest in the project area (PR#169 PDF p10).

Increased access leading to increased harvesting pressure

In its closing argument, the WRRB pointed out that with respect to increased harvest pressure on fish from new access (PR#282 p7):

Roads have long been known to cause effects on terrestrial and aquatic ecosystems. Fisheries are notoriously challenging to manage, requiring an understanding of both fishing effort and the reaction of the Łıwe resource to fishing pressure.

Numerous Elders expressed concern that when the project is completed, more people will use the road to access the area for fishing. At the public hearing the Review Board heard Elder Jimmy Rabesca state (PR#272 p57):

... [I]f the all-weather road is in, it's going to be lots of people from all over, non-Native, they might go fishing. It would be good if they watch out for that because we live with fish ... We don't want them to go fishing and pick all the fish out. If we set nets that's how we live...

In addition to concerns raised in the *Traditional Knowledge Study* (PR#28 p41) and in scoping sessions (PR#19 p5,6), the WRRB noted that during its fish research in 2016/2017, Elders and harvesters raised concerns about impacts of fishers using the Project to access fish (PR#273 p174; PR#282 p7). The WRRB pointed out that fish are particularly important because they are consistently available, while other animals like caribou and moose are not always available (PR#282 p7).

In response to the concerns raised by parties and the public at the hearing, the developer pointed out that, in its opinion, the road will only open access to a small population of fishers in the Northwest Territories and that fisheries along the road will still be remote or inaccessible for people outside the territory. The developer also highlighted that Lac La Martre will still be more than a day trip for people from Yellowknife and will be less convenient than fishing locations near Yellowknife along the Ingraham Trail (PR#273 p19). Furthermore, the developer estimated that Lac La Martre could support an extra 13,500 recreational fishers, each fishing up to 30 hours per year (PR#211 p3).

In response to information requests from the Review Board, the Tłıchǵ Government stated that the project is expected to increase access to fishing sites (PR#284 p14; PR#97 p6-9)

and predicted higher impacts on fish populations closer to the road, such as in Tsotideè (La Martre River) and Bòts'ıtı (Boyer Lake) (PR#97 p6-9). In its technical report, the Tłıchǵ Government concluded that there will be an increase in harvesting pressure by both Tłıchǵ and non-Tłıchǵ fishers but agreed with the developer that due to the distance from Yellowknife, an increase in harvesting pressure from non-Tłıchǵ fishers will be low (PR#97 p5; PR#216 p3). The Tłıchǵ Government believes there will be increased fishing at bridges and water crossings and that Lac La Martre will be a desirable fishing spot (PR#216 p3). The Tłıchǵ Government concluded that it does not expect any decline in fish stocks or the harvesting ability of its citizens, but if there are adverse impacts, that they will be offset by development and tourism opportunities (PR#97 p11; PR#216 p4).

In its closing arguments, the Tłıchǵ Government also mentioned it will “...continue to apply adaptive management to fisheries monitoring as needed” (PR#284 p14). The Tłıchǵ Government made two new commitments in its technical report (PR#216 p6-7, emphasis added):

*The Tłıchǵ Government commits, **subject to the availability of additional resources**, to the design and implementation of a program that uses Tłıchǵ harvesters' traditional knowledge and methods to monitor, during construction and operation of the road the health of fisheries and the state of their habitat in rivers and lakes along the route of TASR.*

DFO and the Tłıchǵ Government commit to develop a strategy to monitor and manage impacts to fisheries from human fishing pressures created as a result of the operation of the Tłıchǵ All-season Road, including the joint-development of a creel¹ survey for three years following construction, and on an ongoing basis as needed.

The WRRB concluded in its technical report and closing arguments that the developer has underestimated the impacts of fishing on waterbodies near the road and does not have a full appreciation of fisher behaviour in the area (PR#215 p31; PR#273 p174; PR#282 p8). In WRRB's view, this is in part because DFO anticipates increased sport and subsistence fishing pressure near the road, particularly on James River, Duport River and Tsotideè (La Martre River). The WRRB also pointed out that most drive-up fishing locations and highway stream crossings in the Northwest Territories have been depleted of fish stocks and have low catch rates (PR#215 p31). In response to the Tłıchǵ Government's new commitments, the WRRB stated that it does not consider a creel survey sufficient to manage impacts along the Project (PR#215 p33).

¹ A creel survey is a type of angler or fisher survey.

The WRRB determined that the impact on fish close to the road (in watercourses and small lakes) will be of moderate to high magnitude unless there is active management (PR#215 p31; PR#273 p175; PR#282 p8). Figure 8-5 shows the named and unnamed waterbodies and watercourses crossed by the Project. The WRRB concluded that the impacts on Lac La Martre are effectively unknown, because of the way the developer used models and estimates (PR#215 p32). Although the WRRB found the developers assessment had too much uncertainty to understand the impacts well, the WRRB believes impacts could be low to moderate in magnitude (PR#215 p32).

Because of the concerns described above, the WRRB made several recommendations in its technical report (PR#215). Two of the recommendations were monitoring by Tłıchǵ harvesters who know the area and monitoring in a way that coincides with Tłıchǵ Traditional Knowledge (PR#215 p35, 37). The WRRB indicated that it believes the information gathered from Elders and harvesters in Whatì and Behchokǵ shows there is uncertainty about the impacts of the project on fish and that there is a need for an all-species approach to monitoring (PR#215 p34).

In response, the developer pointed to the Tłıchǵ Aquatic Ecosystem Monitoring Program and the Marian Watershed Stewardship Program that the Tłıchǵ Government and WRRB operate in the area (PR#216 p6; PR#239 p2-17, p2-18). At the public hearing and in its closing arguments, the WRRB emphasized that although the Tłıchǵ Aquatic Ecosystem Monitoring Program helps understand the health of fish and aquatic ecosystems, it believes that additional monitoring, particularly on fish harvesting pressure, is required to understand the impacts of the road (PR#273 p175; PR#282 p7).

Another recommendation from WRRB was for DFO, the developer and the Tłıchǵ Government to work together on a fisheries management plan (PR#215 p33). The WRRB was clear that it believes a fisheries management plan is an integral part of managing fishing pressure along the Project (PR#215 p34). At the public hearing, the WRRB adjusted this to recommend that DFO and Tłıchǵ Government, with WRRB and the developer involvement, develop the plan together (PR#273 p178).

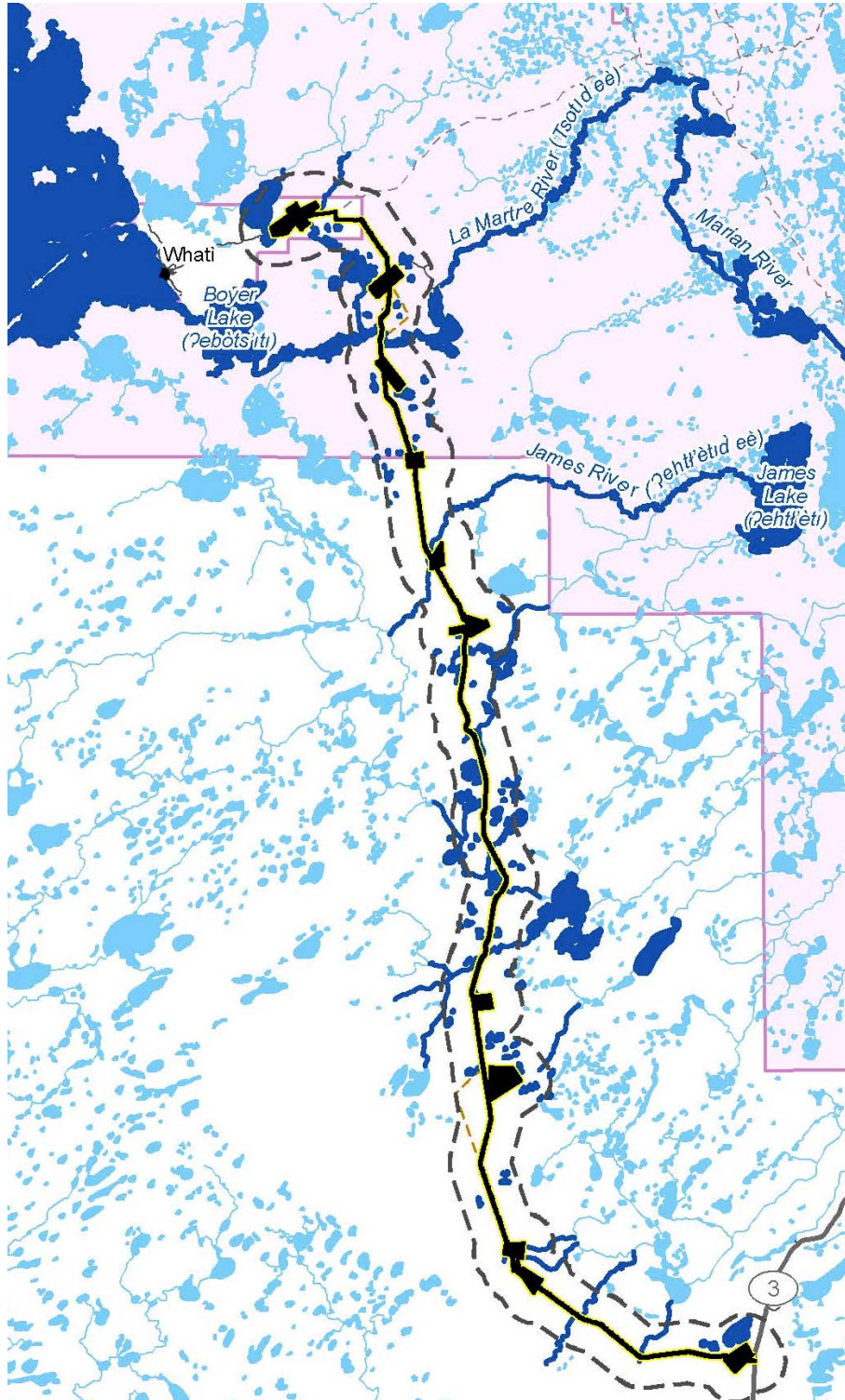


Figure 8-5. Waterbodies and watercourses near the Project (in dark blue).
(Source: PR#110 p3-9)

The fisheries management plan, as described by WRRB, would (PR#215 p33; PR#273 p178):

- establish fishery objectives;
- assess yield and harvest;
- identify management issues (such as access) and associated measures;
- clarify management and stewardship arrangements;
- design and implement a regulatory and compliance plan; and,
- design an adaptive management plan.

The developer did not agree, but pointed out that DFO, WRRB, Tłıchǫ Government and communities are responsible for cooperatively managing fisheries in the area (PR#239 p2-16).

At the public hearings, the Tłıchǫ Government reiterated that it has agreed to work with DFO “... to develop an approach to managing fisheries involving data collection” (PR#273 p138). It also stated it will work closely with DFO, co-management partners and the developer on monitoring and management strategies based on science and Traditional Knowledge (PR#273 p253; PR#284 p14).

Similarly, DFO agreed to put together a fisheries management plan if the Project proceeds and indicated that it believes this management plan will effectively manage the issue of access leading to increased fishing (PR#273 p164-165). DFO acknowledged that there are currently no priority areas or integrated fisheries management plans in the project area. DFO stated it would work with the developer, WRRB and Tłıchǫ communities during the EA process to (PR#125 PDF p4; PR#169 PDF p10):

... acquire relevant fisheries information and to identify priority Aboriginal subsistence fisheries/waterbodies where harvesting pressure may change as a result of increased access through the development of an all-season road.

DFO reiterated in its closing arguments that it will work with co-management boards and affected Aboriginal groups to get information on fisheries, identify priority Aboriginal subsistence fisheries/waterbodies and ensure impact are managed (PR#278 p3-4).

In response to this information, the WRRB stated that it was its “... expectation that with the integrated fisheries management plan any of our concerns would be dealt with accordingly” (PR#273 p181). In its closing arguments, the WRRB again emphasized the

importance of an integrated fisheries management plan, stating (PR#282 p9, emphasis added):

*... it is essential to continue to build on elders' and harvesters' knowledge and to monitor liwe and water with a system that coincides with Tłıchǵ knowledge. **It is unreasonable to conclude that no additional management or monitoring is required along the TASR and associated watersheds.** In Canada, Fisheries & Oceans Canada manages commercial fisheries using Integrated Fisheries Management Plans. Some plans apply across broad waterscapes while others focus on a specific body of water or fishery. **It would be irresponsible to expose a fishery to additional fishing pressure along the TASR and all the way to Lac La Martre without an Integrated Fisheries Management Plan.***

In its closing arguments, the developer reiterated its calculation that additional recreational fishing along the Project is sustainable and that the most likely fishing destinations are highly productive systems with ample room for additional harvesting (PR#285 p19). The developer stated that DFO and Tłıchǵ Government have committed to developing a fisheries management plan and that the developer will participate and comply with the plan as appropriate (PR#285 p19).

Fish and harvesting data

In October of 2016, the Review Board asked several parties for information on Aboriginal fisheries in the area and the potential impacts of harvesting pressure on these fisheries (PR#74).

The Tłıchǵ Government responded that it does not collect quantitative fish harvesting data, although Elders can provide extensive Traditional Knowledge on the subject (PR#97 p4). At the public hearing, the Review Board heard from several Elders about changes to fish health and harvesting, as well as the importance of monitoring. Elder Charlie Jim Nitsiza told the Review Board (PR#273 p76):

... [E]ven the whitefish it seems to be getting smaller every year... [W]e used to have some [six] inch mesh or [five] inch mesh and that, you know, we're getting [four] inch mesh because ... the fish size are getting smaller.

Elder Joe Champlain told the board about fish abundance (PR#273 p108):

You know, fish that used to be abundance in the past and now we don't catch that much fish like we used to ... It's [possibly] because of ... different types of reasons, you know, like something to do with the climate change...

And Elder Sonny Zoe spoke of fish distribution (PR#273 p232):

... [T]here used to be lots of fish by around September 15 now it's not like that. Some people set the nets way far from here and ... they can catch some fish.

The Review Board also heard from some Elders who weren't concerned about fish along the road corridor, particularly that there may not be many fish between Highway 3 up to Whatı because of the smaller size of lakes and river (PR#273 p104; PR#273 p110).

The Tłıchǫ Government commented that based on Elder comments at the hearing about water crossings (Section 8.2.1) and healthy fish stocks, it believes impacts on fisheries will be minimal (PR#284 p14). However, the WRRB pointed out that Elders' and harvesters' comments at the hearing and during WRRB engagement include evidence of negative changes to local fish populations, such as smaller sizes, unusual distribution, fewer numbers and different species (PR#282 p8).

Like the Tłıchǫ Government, the WRRB also told the Review Board that it does not collect fish harvesting data but provided a 1997 report on the status and harvest of fish in the region (PR#90 p1). This report identified some of the main fisheries issues in the North Slave area as potential overharvesting by sport fishers, potential adverse impacts from resource developments and the quality of fisheries information used in resource management decisions (PR#91 p4). Specifically, the report stated (PR#91 p5):

The magnitude of subsistence harvests in the North Slave area has also not been documented in recent years. This information gap is perhaps the greatest unknown to fishery managers in the area. The documentation of these fisheries and their harvests offers managers perhaps their greatest challenge.

In response to the same October 2016 Review Board information request discussed above, DFO stated that it does expect fish pressure to increase on some fisheries along the road, but that (PR#92 p1):

There may or may not be concerns about potential overharvesting of certain fish stocks in the area but it is difficult to assess this further until there is a full inventory of fish presence and their seasonal migrations/occupancy/habitat use in these rivers. It may be determined that existing information on these fisheries provided by other [information request] responses is sufficient to continue the discussion regarding pressures of fish harvesting.

The Review Board subsequently asked DFO what information would be required to assess the impacts of the project on fish stocks (PR#125 PDF p4; PR#169 PDF p9). DFO responded (PR#125 PDF p4; PR#169 PDF p9):

... further assessment of the linkage between overharvesting from increased access will require a detailed inventory of:

- 1. fish presence/species composition by waterbody;*
- 2. any seasonal migration needs for fish; and,*
- 3. occupancy and habitat use within all fish bearing watercourses.*

The developer did not include a commercial fishery as a reasonably foreseeable development¹, but it was discussed during the environmental assessment process. The Review Board heard that a commercial fishery was operated on Lac La Martre for several years, taking large harvests of lake trout and lake whitefish between 1969 and 1972 (PR#91 PDF p39). Although DFO fish surveys did not detect fish size differences between 1969 and 1972, there were concerns about changes of method between surveys (PR#91 PDF p39). Elders reported that after a few years the fish numbers went down (PR#273 p176). Ultimately, the commercial fishery closed in 1973 due to a combination of unfavourable economics partly related to the cost of flying out the fish, as well as concerns over the potential impacts to a subsistence fishery on the lake (PR#91 PDF p39; PR#273 p176; PR#282 p7).

8.3. Review Board analysis and conclusions

In the following sections, the Review Board will provide its analysis of the evidence above. For more details on the evidence, please see Sections 8.2.1 and 8.2.2.

8.3.1. Water quality and fish habitat

The Review Board appreciates that the developer has done a relatively thorough job assessing potential impacts on water quality and fish and fish habitat from the Project, as evidenced by the number and breadth of pathways it assessed. The Review Board agrees with the developer that most of these pathways are unlikely to lead to impacts on water quality or fish habitat.

¹ Although a commercial fishery was not included as a reasonably foreseeable development based on existing applications and licenses, the developer expects that Lac La Martre could support a commercial fishery (PR#159 p130). The Tłıchǵ Government pointed out that to apply for a commercial licence, an individual would have to live in a Tłıchǵ community for a minimum of six months (PR#159 p131). At the technical sessions the Tłıchǵ Government stated that if a commercial fishery is applied for, the Tłıchǵ Government and DFO will work together to review that application and that application would have to go through a preliminary screening (PR#159 p129).

ECCC recommended pre-construction monitoring and that monitoring during construction and operations continue until no changes are detected (PR#218 p12). The developer said it will consider ECCC's recommendations (PR#239) and ECCC's acknowledged that this can be further addressed in the regulatory phase (PR#279 p1). The Review Board accepts that minor outstanding issues, ones the Review Board does not expect will lead to significant impacts, can be addressed during the regulatory phase.

The developer took Elders and a harvester out on a site visit to look at stream crossing locations and discuss crossing methods (PR#216 p4; PR#234 p1-2). The Review Board was satisfied to hear at the public hearings that the developer had agreed to use an arch culvert¹ at one location and more importantly, that Elders' concerns regarding culvert crossings appear to have been addressed (PR#234 p1-2; PR# 235 p1).

The WRRB made recommendations about monitoring fish passage, including annual inspections, and the developer responded that it has already made sufficient commitments to protect fish and fish habitat (PR#215 p28; PR#239). In response to a statement by DFO that it was satisfied with the developer's commitment to provide it with final crossing designs, the developer clarified that it only intends to provide crossings designs for large bodied fish-bearing watercourses (PR#278 p3; PR#285 p19). The Review Board believes any outstanding issues related to WRRB or DFO concerns about watercourse crossings can also be addressed during the regulatory phase.

The Review Board is generally satisfied that the developer's plan to use four clear span bridges, one arch culvert and additional regular culverts will avoid direct impacts on water quality, fish and fish habitat during construction. The Review Board heard that the developer will use best management practices to minimize impacts from spills of fuel and other substances, for erosion and sediment control and for acid rock drainage. The developer has made many commitments to ensure that water quality and fish habitat are protected (Appendix D).

Overall, the Review Board is confident that potential direct effects on water quality, fish and fish habitat are adequately mitigated or can be addressed during the regulatory phase of the Project. However, the Review Board wishes to emphasize to the developer the importance of water monitoring to prevent impacts on water quality and fish habitat and

¹ An arch culvert is a culvert that only goes above the watercourse, forming an 'arch' of metal culvert overtop while leaving the substrate and riparian vegetation untouched.

allow for adaptive management. Establishing adaptive management thresholds during the regulatory phase will be particularly important and should not be left to the P3 operator.

8.3.2. Fisheries and harvesting

Increased access will lead to increased harvest pressure

During the EA, the Review Board heard that all parties, including the developer, agree that the Project will increase fishing pressure in the area, but there is disagreement about how much it will do so. The developer concluded that impacts will be small, as the affected area will still be a several hours drive from Yellowknife and less convenient than fishing locations along the Ingraham Trail (PR#273 p19). The developer calculated that there are plenty of fish to support additional recreational fishing on Lac La Martre (PR#211 p3). The Tłıchǫ Government concluded that there would be an increase in harvesting pressure but agreed that the distance from Yellowknife means the increase from non-Tłıchǫ fishers will be low (PR#216 p3).

In contrast, the Review Board heard concerns from Elders and the WRRB. Elders were concerned that more people will use the road to access the area and fish (PR#272; PR#273; PR#273 p174; PR#282 p7). The WRRB predicted that impacts will be moderate to high on rivers and lakes near the road and that there is uncertainty regarding impacts on Lac La Martre (PR#215 pp31-32; PR#282 p8). The WRRB pointed out that there is evidence across the territory that other drive-up fishing locations, including small lakes and highway stream crossings, are known to be depleted of fish stocks or have very low catch rates (PR#215 p31).

The Review Board is not convinced that the distance from Yellowknife and the southern provinces will limit non-Aboriginal recreational fishing enthusiasts as much as the developer and Tłıchǫ Government believe, because anglers from Yellowknife and even south into the provinces are likely willing to travel quite far for good fishing. The Review Board agrees with the WRRB that small lakes and watercourses may be more vulnerable. This is partly because small lakes and watercourses naturally have less fish stock and recover more slowly and can therefore support less fishing. Consistent fishing in a small lake or during a spawning run on a river could harm the local fish population.

Lack of information on fish and harvesting

The Review Board heard about several sources of uncertainty related to fish populations and information.

The WRRB provided evidence that two of the main issues in the management of fish in the area are overharvest by sport fishers and the poor quality and availability of information for making decisions (PR#91p4).

The Review Board heard that Elders are concerned about changes to fish health and distribution (PR#273). Elders have observed that fish are smaller, and harvesters must travel further to find them (PR#273 p76, 108, 232). According to the WRRB, Elders involved in existing monitoring programs in the region have raised similar concerns about changes to fish health (PR#282 p8). The Review Board also heard that a commercial fishery that operated on Lac La Martre for several years closed in part due to concerns over changes to the fish population and the subsequent impacts on an important subsistence fishery (PR#91 PDF p39).

Little quantitative data was used in the developer's effects assessment of increased fish harvesting. The developer and parties were unable to provide quantitative fish harvesting data (PR#97 p4). Fish population data used in the developer's assessment was based on a combination of desktop review and Traditional Knowledge. DFO told the Review Board that to understand the impacts of the Project, information on fish presence and composition for each waterbody, seasonal migrations requirements for fish and occupancy and habitat use within watercourses would be required (PR#125 PDF p4; PR#169 PDF p9). None of this information was available during the EA.

The Review Board is concerned at the lack of information on fish populations and fish harvesting in the region. The Review Board agrees with the WRRB's assertion that this lack of information is likely to present problems for fishery management. There is enough information from Traditional Knowledge to show that Elders are concerned about fish populations in the area and yet none of the information DFO said would be required to understand Project impacts is available.

Proposed mitigations are inadequate

The developer proposed three mitigation measures to address overharvesting of large-bodied fish resulting from increased access from the Project (PR#110 pp3-43 to 3-57):¹

- regulations for fisheries and boat launches by the Tłıchǫ Government;
- enforcement of existing Northwest Territories fisheries regulations by DFO; and,
- development of sustainable fishing tourism by the Tłıchǫ Government.

The Review Board has concerns with the likely effectiveness of these mitigations. The first mitigation identified by the developer is the development of the Tłıchǫ Government's regulations for fisheries and boat launches. There was also a similar recommendation from Elders in the *Traditional Knowledge* report that recommended the development of fishing restrictions (PR#28 p42). The Tłıchǫ Government has indicated that it has the jurisdiction to restrict access to Tłıchǫ lands and could, for example, implement daily catch limits for non-Aboriginal harvesters (PR#97 p10).

In response to a North Slave Métis Alliance information request about the status and proposed nature of Tłıchǫ Government fishing regulations, the Tłıchǫ Government responded that fisheries regulations are within its jurisdiction and outside the Review Board's jurisdiction (PR#169 PDF p48). However, the Review Board notes that the developer has identified the development of Tłıchǫ Government regulation of fisheries as one of the three mitigation measures to address overharvesting. It appears to be an important part of the developer's mitigations of Project impacts on fish populations and harvesting.

Assessing the impacts of the Project on fisheries and harvesting is the Review Board's responsibility. The lack of information on the Tłıchǫ Government's potential fishing regulations means the Review Board is unaware of the status (and therefore timely effectiveness) of this proposed mitigative measure. For example, it is not clear to the Review Board how long fishing regulations might take to enact. The Review Board also notes that this mitigation is only relevant to a small portion of the road – most of the Project is outside Tłıchǫ lands, which means Tłıchǫ regulations may not apply to the entire

¹ The Review Board notes that all three of these mitigation measures from the developer are for other organizations to implement and none will be implemented by the developer. This is unusual, because mitigations for Project specific effects are typically the responsibility of the developer. The Review Board is concerned that the developer has not taken any responsibility for managing Project impacts on fisheries and harvesting.

Project. Considering the above factors in combination, the Review Board is not convinced that this mitigation will reliably and effectively mitigate Project-related impacts on fisheries within an effective time period.

The developer's second mitigation to address overharvesting is the enforcement of existing Northwest Territories fisheries regulations by DFO. The Review Board heard during the EA that some of DFO's enforcement responsibilities, specifically those related to sportfishing, have been delegated to GNWT-ENR (PR#169 p10). However, the Review Board also heard that neither DFO nor GNWT-ENR is planning for additional fishing enforcement capacity (PR#125 PDF p5; PR#133 PDF p12; PR#169 PDF p11).^{1, 2} Therefore, it is unclear to the Review Board how this will mitigate Project impacts.

The final action proposed by the developer to mitigate impacts from overharvesting is the development of sustainable fishing tourism by the Tłıchǫ Government. The Tłıchǫ Government has also identified this as a mitigation or 'offset' for impacts on fish and harvesting (PR#97 p11; PR#216 p4). However, the Review Board notes that for an offset to mitigate an impact, it must benefit the same valued component that has been adversely affected. Adverse impacts on fish or adverse impacts on the harvesting abilities of citizens cannot be offset by tourism, which is an economic benefit. Increased tourism will not reduce impacts to fish.

Based on its effects assessment and the above three mitigations, the developer concluded there would be no significant adverse impact on the ability of fish populations to be self-sustaining and ecologically effective (PR#110 p3-64). The Review Board has previously stated in other EAs that this is an unhelpful assessment endpoint, particularly when social, cultural and economic values are accounted for. For harvesting purposes, it is not simply a matter of whether fish species are present and will continue to be present in some form, but also their size, distribution and health that matter to the people that fish them.

¹ In response to questioning, DFO made it clear that although DFO used to have a biologist based in Yellowknife, this region is currently being covered by biologists in other offices, such as Inuvik, Northwest Territories or Iqaluit, Nunavut (PR#273 p170). DFO does not think this would compromise its ability to effectively manage increased recreational fishing near Whatı. The Review Board does not share DFO's faith in this but is somewhat encouraged by DFO's plans to fill a position in Yellowknife by March 2018.

² The Review Board heard that there will be a new GNWT-ENR renewable resources officer position in Whatı (PR#274 p15). The Review Board think this is a good idea. However, the developer does not intend to monitor fisheries or fish harvest (PR#169 p10; PR#273 p21) and will not provide additional enforcement capacity. The Review Board concludes that the renewable resources officer in Whatı will not be assisting in fish harvest monitoring or fisheries enforcement. Therefore, the additional officer is unlikely help to mitigate impacts on fisheries.

Overall, it is clear to the Review Board that the developer's assessment includes insufficient mitigation and an unhelpful assessment endpoint. These flaws make the Review Board question the usefulness of the developer's assessment of impacts on the fishery. The Review Board is not persuaded that these impacts from the Project are sufficiently mitigated.

Monitoring and management are required

In response to questions about monitoring, the developer pointed to the existing monitoring programs in the area: the Tłıchǵ Aquatic Ecosystem Monitoring Program and the Marian Watershed Stewardship Program (PR#216 p6; PR#239 p2-17). The WRRB emphasized that although existing programs in the area are helpful, they are not appropriate for understanding and monitoring the Project's impacts (PR#273 p175; PR#282 p7). The Review Board heard that specific monitoring with the ability to detect Project impacts is required, particularly focusing on harvest pressure and including an 'all-species' approach to monitoring (PR#282 p7; PR#215 p34).¹

The developer also mentioned two commitments from the Tłıchǵ Government related to monitoring. The Review Board appreciates the Tłıchǵ Government's commitment to monitor fish health and the state of fish habitat along the Project (PR#216 p6). However, the Review Board notes that this commitment included the caveat of being "subject to the availability of resources" (PR#216 p6). The Review Board acknowledges the Tłıchǵ Government's commitment to work with DFO on a strategy to monitor and manage impacts to fisheries from human fishing pressures because of the road, including creel surveys for three years following construction and potentially in the future (PR#216 p7). However, the Review Board notes that the WRRB concluded that creel surveys are not sufficient for managing fisheries along the Project (PR#215 p33).

The Review Board concludes that the Tłıchǵ Government commitments are a good starting point for monitoring, and help address recommendations from the WRRB that monitoring include Tłıchǵ harvesters and coincide with Tłıchǵ Knowledge (PR#214 p35, 37).

The WRRB concluded that an integrated fisheries management plan for the Project area is crucial for preventing and managing impacts (PR#282 p9). In response, DFO agreed to

¹ The Review Board interprets an 'all-species approach' to mean that monitoring should not focus on just one or two indicator species, but rather the system as a whole.

develop an appropriate plan for monitoring and managing new impacts to fisheries and the Tłıchǵ Government agreed to develop a strategy with DFO and WRRB (PR#284 p14; PR#278 p3). While the Review Board appreciates the statements from DFO and the Tłıchǵ Government, it is not entirely satisfied with this language because it does not clearly commit to an integrated fisheries management plan.

The Review Board agrees with the WRRB that the effects of the Project need to be monitored in order to be properly evaluated and managed adaptively. This is particularly important because of the lack of information and inadequate mitigation proposed. The Review Board emphasizes that this type of work should occur along the entire Project route, not only on Tłıchǵ lands. The Review Board concludes that specific monitoring to understand the impacts of the project on fisheries and harvesting can be accomplished through the Integrated Fisheries Management Plan.

The Review Board agrees that the development of an integrated fisheries management plan, such as the one described by WRRB, is required in order to understand, mitigate and prevent likely significant impacts on fisheries and harvesting along the Project, particularly for small lakes and watercourses.

Fishing is important

The Review Board heard from the Tłıchǵ Government and from Elders regarding the importance of harvesting and consuming fish. Early in the EA, the Tłıchǵ Government told the board that “... fishing, fish species, and fishing locations are crucial to the Tłıchǵ way of life” (PR#97 p4). At the hearing, the Review Board heard from numerous Elders about their reliance on fish. Traditionally, fish has been the most dependable food source available to the community of Whatì (PR#274 p114; PR#282 p7); fish are available consistently year after year even when caribou or moose are scarce. A variety of lakes and rivers continue to be used today for fish harvesting (PR#28). At the hearing, the Review Board heard concerns from Elders about outsiders coming to fish.

The Review Board understands that the fisheries around Whatì and along the Project are important parts of a subsistence fishery the people of Whatì and other Tłıchǵ communities rely on. This is a central consideration in understanding the significance of impacts to fisheries and harvesting from increased access.

8.3.3. Conclusions

The Review Board concludes that the Project is likely to cause significant adverse impacts on fisheries and harvesting from increased access leading to increased fishing pressure. This is especially true for rivers and small lakes near the road. The Review Board has concerns regarding the lack of information on fisheries and harvesting as well as the specific mitigations identified by the developer. This lack of information makes effective fisheries management less likely. The Review Board emphasizes the importance of monitoring and management to detect, prevent and respond adaptively to likely adverse Project impacts. The impacts from increased access resulting from the Project are particularly significant because they are likely to affect an important subsistence fishery.

Additional mitigation is required to prevent these likely significant adverse impacts. In the following section, the Review Board has outlined one measure and two suggestions to effectively mitigate significant impacts on fisheries and harvesting.

8.4. Measures and suggestions

8.4.1. Integrated Fisheries Management Plan

The Review Board agrees with the WRRB that an integrated fisheries management plan is required to prevent likely significant adverse impacts from the Project because of increased access leading to increased fishing pressure. Although parties have agreed to work together on a plan or strategy, the Review Board concludes that mitigation is crucial to preventing likely significant impacts and is therefore recommending it as a measure.

The intent of the measure below is to require parties to work together on a plan that will improve understanding of fisheries in the area and support appropriate mitigation, monitoring and adaptive management.

The Review Board considers managing fisheries essential to prevent significant adverse effects on fisheries and harvesting. This includes effective monitoring to inform mitigation of impacts to fisheries, including managing fishing pressure. Rivers and small lakes that are easily accessible from the road are more vulnerable to impacts from increased access and fishing pressure.

Measure 8-1: Integrated Fisheries Management Plan

Fisheries and Oceans Canada and the Tłıchǵ Government, with the support of the developer, will develop and implement an Integrated Fisheries Management Plan for fisheries in the project area. This will prevent significant adverse impacts from additional fishing pressure that will likely result from increased access via the Project. In designing the plan, Fisheries and Oceans Canada and the Tłıchǵ Government will engage the Wek'èezhì Renewable Resources Board, the Community of Whatì and other affected Aboriginal groups. Fisheries and Oceans Canada and the Tłıchǵ Government will submit the plan to the Wek'èezhì Renewable Resources Board for review under section 12.5.1 of the Tłıchǵ Agreement.

As part of this plan, Fisheries and Oceans Canada and the Tłıchǵ Government, along with the above organizations, will complete the following work:

- a) Complete work to understand baseline fishery and harvest conditions. This work will include, at a minimum:
 - i. assessing yield and harvest;
 - ii. identifying management issues;
 - iii. establishing fisheries objectives; and,
 - iv. clarifying management and stewardship arrangements.
- b) Design and implement, with support of the developer, mitigation to prevent or manage project impacts (which may include a regulatory and compliance plan).
- c) Design and implement monitoring plans, meeting the requirements of Appendix C.
- d) Design and implement an adaptive management plan (following guidance in Appendix B).

Fisheries and Oceans Canada and the Tłıchǵ Government will provide opportunity for the working group (required by Measure 14-3) and other interested parties to review and comment on this plan.

8.4.2. Examples of mitigation on similar projects

Other roads in the Northwest Territories have dealt with management issues related to increased access. Most recently, the Inuvik to Tuktoyaktuk highway in the Inuvialuit Settlement Region had to contend with similar concerns related to the proximity of a road

to an important traditional subsistence fishery. This suggestion is intended to encourage fisheries management authorities to consider experience from other similar situations.

Suggestion 8-1: Examples of mitigation on similar projects

Fisheries and Oceans Canada and its fisheries co-management partners should review the mitigation and management strategies applied to similar projects, such as those recently applied along the Inuvik to Tuktoyaktuk highway, to determine if there are relevant mitigations or lessons learned that could be incorporated or applied proactively to this Project.

9. Cultural well-being

9.1. Summary of findings

The Review Board finds that the construction and operation of the Tłıchǵ All-Season Road (the Project) is likely to cause significant adverse impacts to the cultural well-being of residents of Whatì. The Project is predicted to reduce harvesting success of wildlife for residents of Whatì due to increased hunting pressures from outside hunters and harvesters once road access is opened. In the Review Board's view, these adverse impacts to harvesting are significant impacts to the cultural well-being of the Aboriginal residents of Whatì. The Review Board's reasoning for this determination is summarized as follows:

- Use of the road and increased human use of the Project area will increase disturbance and displacement of wildlife, resulting in fewer animals to harvest and reduced harvesting success rates.
- Sustainable harvest levels are unknown due to a lack of baseline information.
- Traditional Knowledge information from the Yellowknives Dene First Nation (YKDFN) and the North Slave Metis Alliance (NSMA) was not considered, which increases the uncertainty of predictions of Project impacts to cultural well-being and way of life.
- The perception of the land and water as a healthy area for traditional activities may change when the area is divided by a highway and open to outsiders.
- In addition to numerous other existing and modern influences, Tłıchǵ language use is likely to further decrease because of the Project as it will create permanent access to Yellowknife and other non-Tłıchǵ destinations.
- The effectiveness of commitments to mitigate impacts to cultural values by the P3 operator is uncertain.
- The road is permanent and adverse impacts to cultural well-being will be ongoing for future generations.

The combined effect of a likely reduction in harvest success, lack of consideration of YKDFN and NSMA Traditional Knowledge, possible change in perception of the land, a potential reduction in language skills and the permanent nature of these changes is likely to have a significant adverse impact on the cultural well-being of Whatì residents.

9.2. Evidence from parties and the developer

This section examines evidence regarding potential impacts from the Project on cultural well-being, with a particular focus on traditional harvesting. The developer's *Project Description Report* and project scoping activities conducted by the Review Board identified potential concerns and impacts to traditional land and resource uses in the project area (PR#7 p5-1 and PR#19 pp5-6). These concerns and impacts focused on hunting and fishing pressure on traditionally used subsistence fisheries (such as Lac La Martre) and wildlife (including furbearers), general damage to the land and related impacts on heritage resources and culture.

Impacts on wildlife from increased mortality due to changes to harvesting and hunting are discussed in the respective wildlife chapters (see Chapters 6, 7 and 8). Impacts on harvesters from changes in wildlife are included in this chapter, as are other impacts of the Project on cultural well-being. This chapter includes a discussion of potential project-related impacts from disturbances to the land and changes in the perception of the land in the project area.

[Note: In this report, the terms "hunters" and "hunting" refer to the pursuit of wildlife by non-Aboriginal people, while the terms "harvesters" and "harvesting" refer to the pursuit of wildlife by Aboriginal people. This has not been changed in quotations].

9.2.1. Traditional way of life and harvesting

The developer's *Project Description Report* identified the concerns of Whatı residents that increased access from the Project would result in more time away from the community and less time spent engaged in traditional activities (PR#7 pp8-33; PR#7 Appendix B p72). This concern was reiterated by Whatı residents during the Review Board's issues scoping sessions in the community in August of 2016 (PR#19 p6). In its *Adequacy Statement Response*, the developer assessed the potential impacts of the Project on traditional use and way of life of people in Whatı by considering impacts from the Project on the following indicators:

- the practice of traditional activities and culture;
- the quantity or quality of traditionally harvested resources; and,
- perception of the land by traditional users (PR#110 p5-21).

The developer predicted that the Project would result in enhanced year-round access to hunting, trapping and fishing areas for Whatì harvesters and therefore be a positive pathway for maintaining the traditional way of life. On the other hand, the developer also predicted that increased mobility of Whatì residents and time spent away from the community may result in changes to traditional way of life and culture. Traffic on the road was predicted to disturb and displace wildlife, resulting in reduced harvest success for Whatì residents. In addition, direct mortality of wildlife from harvesters and hunters accessing the area was predicted to change the availability of wildlife for harvesting opportunities for Whatì residents. These impacts may also change traditional perceptions of the land (PR#110 p5-21).

The developer's proposed mitigation to reduce these predicted impacts focused primarily on initiatives by the Whatì Inter-Agency Committee to prepare for the Project. Mitigation for disturbance and displacement of traditionally harvested wildlife were described in the specific wildlife sections in the *Adequacy Statement Response* (PR#110 p5-21).

Impacts from the Project on the human environment are the responsibility of the developer to identify and assess. However, the developer said in its response to an information request that it would be irresponsible for it to speculate on issues of cultural or traditional well-being and advised the Review Board that the community of Whatì would be in a better position to address the topic (PR#76 p22). This approach was supported by both the Tłchq Government and Community Government of Whatì in their responses to information requests (PR#76 p58). Evidence used for assessing cultural well-being therefore comes primarily from Aboriginal governments and resource management authorities with interests in the Project area.

During early engagement between the developer and residents of Whatì on the potential for an all-season road, community members identified concerns about increased wildlife harvesting in the Project area due to increased public access (PR#7 p8-30). In its *Project Description Report*, the developer proposed several mitigations that would address project-related effects to harvested species (PR#7 p5-2). The need for effective mitigations was a prime consideration in the Review Board's *Reasons for Decision* to refer the Project to environmental assessment (PR#2 p1). Potential impacts to harvesters and wildlife species from construction and operation of the Tłchq All-Season Road was a key topic throughout the environmental assessment.

Fish, boreal caribou (tǝdzı), barren-ground caribou (zekwǝ), and moose are important wildlife species for the peoples of Whatı, Tłıchǵ citizens, Yellowknives Dene, and North Slave Métis. Evidence on how the Project will affect those species is presented in Chapters 6, 7, 8 and 10. Those chapters additionally discuss the use of the species by harvesters and how the road is likely to affect their harvesting success. Those conclusions are presented here to help frame the potential impact that the Project is likely to have on harvesters.

Harvesting is an important part of the non-wage economy (see Sections 5.3.10 and 5.4.10). In its response to Review Board information requests, the Tłıchǵ Government identified the following cultural benefits from harvesting (PR#96 p 66):

- developing functional skills and key Tłıchǵ personality traits (for example, patience, acute observation, adaptability);
- self-sufficiency and pride;
- insurance against wage economic fluctuations and the high cost of store-bought food, especially for food security;
- strengthening cultural identity and continuity, practicing the same mode of life as prior generations and passing that on to future generations;
- inter-generational relations, especially between Elders and youth;
- getting out on the land as often as possible, which promotes physical and mental health in boundless ways;
- eating healthier;
- promoting Traditional Knowledge of animals, their habitat, and the Tłıchǵ cultural landscape;
- creating spiritual relationships with animals and the natural world;
- having “eyes on the land” and identifying changes that need to be reported to decision-makers;
- communal sharing of food, which strengthens family and community bonds; and,
- sharing knowledge and cultural practices and ceremonies, among many other values.

According to the Tłıchǵ Government, Tłıchǵ families are the most reliant on country foods of any Aboriginal Group in the Northwest Territories (PR#96 p66).

The Tłıchǵ Government submitted a comprehensive Traditional Knowledge Study for the Proposed All-Season Road to Whatı (PR#28). The K’agǝǝ tılu Deè *Traditional Knowledge Study for the proposed all-season road to Whatı* (TK Study) was conducted in the Tłıchǵ

communities of Whatì and Behchokò between November 2013 and August 2014. The report contained a comprehensive section on harvesting. The Traditional Knowledge from that report on harvesting impacts is summarized below for each of the main harvest species preferred by Whatì residents.

Figure 9-1 (below) shows Whatì Elder Pierre Beaverho speaking to the Review Board at the public hearings.



Figure 9-1. Whatì Elder Pierre Beaverho speaking to the Review Board before a mural of traditional drumming and hand games at the public hearing.
(Review Board photo)

In its technical report, the Tłıchǵ Government stated that the Project will improve access to Tłıchǵ lands for Tłıchǵ citizens, and that the new access road will support the practice of Tłıchǵ culture and way of life (PR#216 p3).

9.2.2. Harvesting of fish important to residents of Whatì

The TK Study described the importance of fish and fish harvesting in the Project area to the people of Whatì (PR#28). Figure 9-2 shows fish harvesting as presented during the public hearing in Whatì (PR#253 p2). The TK Study focused on fish harvesting along the La Martre River (*Tsotid'èè*) and in particular at the proposed Project crossing (*T'ooheèhoteè*). The TK Study states (PR#28 p21-22):

The river Tsotid'èè and its many small lakes are of central importance for land use activities such as fishing and hunting for ducks, moose, muskrat, and beavers. Fishing is one of the main cultural and economic activities for people in Whatì. Harvesting fish is conducted all year round. At times when meat has not been obtainable, fish has always been a secure and easily accessible food source.



Figure 9-2. Fish preparation from Tłıchǫ Government presentation at Whatì hearing.
(Source: PR#253 p2)

Chapter 8 of this Report describes the importance of fish and fish harvesting to the community of Whatì. The chapter presents likely Project impacts to fish and fish harvesting and proposes mitigation for those impacts. From the evidence presented in that chapter,

the Review Board found that fishing is critically important to the traditional diet and cultural well-being of people from Whatì.

9.2.3. Impacts from Project on wildlife and harvesting

During the environmental assessment, multiple parties—including Aboriginal groups—submitted information that the proposed Project may have an adverse effect on harvesting (PR#214, PR#215, PR#216, PR#28). In its *Adequacy Statement Response*, the developer predicted that due to existing hunting regulations and harvesting restrictions, residual impacts on harvesting due to increased competition from outside hunters and harvesters accessing the new road would not be significant (PR#110 p5-51). In its closing arguments, the developer stated that the road will facilitate Aboriginal use of the Project area (PR#285 p4).

The *Recovery Strategy for the Boreal Caribou in the Northwest Territories* was submitted by the developer as part of the Species at Risk (NWT) Act Management Plan and Recovery Strategy Series 2017. This Northwest Territories (NWT) Recovery Strategy states that increased access to boreal caribou habitat via rivers, seismic lines and roads has added to existing concerns regarding overharvesting (PR#106 p17). One NWT Recovery Strategy objective focusses on maintaining a sustainable harvest (PR#106 pviii). Figure 9-3 shows harvesting of boreal caribou. To achieve this objective, the NWT Recovery Strategy suggests that sustainability can be accomplished by educating people about the importance of harvest reporting and developing systems for reporting harvest and measuring harvest levels (PR#106 pviii).

In its response to a July 2017 information request from the Review Board, the developer stated that it predicts local effects to boreal caribou from the Project, and that this would affect harvesting. However, the developer concluded that these effects are not significant when considered at the regional scale (PR#141 PDF p19).

In its *Adequacy Statement Response*, the developer asserted that its analysis of effects from the Project to wildlife considered harvesting and hunting impacts on caribou, as well as the ability of people to harvest and hunt. The developer's assessment concluded that the impacts from the Project to caribou, specifically, when compared to the territory-wide range were not significant and would not affect the self-sustaining and ecologically effective status of boreal caribou. Based on this determination, the developer stated that Aboriginal harvesting would therefore not be significantly affected.

In the opinion of the developer, the residual impacts from the Project on wildlife and fish due to overharvesting by non-Tłıchǫ residents will not have a significantly adverse effect on the ability of wildlife and fish in the Project area to be self-sustaining. The developer further stated that because fish and wildlife will remain self-sustaining, it does not anticipate significant adverse impacts on the ability of Tłıchǫ, NSMA and Yellowknives Dene First Nation members to continue harvesting (PR#110 p4-3, PR#110 p5-58).

The Aboriginal group that will likely experience the largest effects of the road are the Tłıchǫ citizens. In its response to information requests from the Review Board, the Tłıchǫ Government stated that it expects the road to lead to increased harvest pressures on boreal caribou. The Tłıchǫ Government acknowledged there would likely be a balance between net gain and net loss of harvesting opportunities due to the road providing an increase in access to both Tłıchǫ and non-Tłıchǫ harvesters in the area (PR#126 p19-20).



Figure 9-3. Harvesting boreal caribou

(Source: WRRB presentation at Whatı public hearing, PR#256 p9)

In its response to information requests the Tłıchǫ Government stated that the Project provides Tłıchǫ harvesters with greater access to previously inaccessible hunting areas. Figure 9-4 shows a caribou harvesting activity. The new access is likely to present an

opportunity to Tłıchǵ harvesters for caribou hunting. When asked about mitigation options for potential over-harvesting of wildlife, the Tłıchǵ Government stated “non-Tłıchǵ coming into the Project area to harvest wildlife in the future will be subject to joint governance, monitoring and enforcement between the Tłıchǵ Government and GNWT” (PR#126 p19-20).

In its response to an information request regarding monitoring and mitigating effects of increased harvesting, the developer informed the Review Board (PR#141 PDF page 19):

the ongoing monitoring of caribou populations, movement patterns and harvesting, and adaptive management by the GNWT in collaboration with Indigenous governments and co-management boards will play a large role in determining continued Indigenous harvesting success.

In response to questioning at the public hearing in Whatı, the developer stated that it has not identified any additional mitigations for the likely increase in harvesting due to the Project (PR#274 p82). However, the developer noted that it has (PR#274 p82):

proposed a number of monitoring programs to try and detect a change, if there is one, and if there are problems that we think need to be addressed, then we'll look at implementing mitigations at that time.

The WRRB and Yellowknives Dene First Nation highlighted in their closing arguments the concern that with the current severe harvest restrictions on barren ground caribou, boreal caribou has become all the more important as a source of country food. This causes greater pressure on boreal caribou (PR#283 p3, PR#284 p6). The NSMA stated in its closing argument that members' rights to harvest could be adversely affected by the road (PR#281 p3). The Yellowknives Dene First Nation also raised concerns that the road could cause a negative effect to boreal caribou and in turn, cause an adverse effect to members' ability to harvest boreal caribou (PR#276 p4).

In its closing argument, the WRRB pointed out that because of the lack of baseline information, there are no population estimates for boreal caribou in the Project area. While the developer has proposed boreal caribou surveys to estimate whether the population is increasing or decreasing, the WRRB questions how the GNWT will detect whether harvesting is increasing due to new access (PR#284 p7).

Harvest monitoring and management was considered as a mitigation option in the developer's draft Wildlife Management and Monitoring Plan (WMMP) (PR#192 p35). In the WMMP, the developer advised that it is limited in the actions it can take to restrict hunters

and harvesters along a public road unless it can identify a public safety or conservation concern (PR#192 p35). The developer acknowledged that in order to determine if there is a conservation concern to wildlife due to increased hunting, monitoring of hunting is required (PR#192 p35).

The Tłıchǫ Government's TK Study describes the potential impacts from the Project to wildlife and potential impacts to harvesters who rely on the ability to hunt wildlife in the Project area. The TK Study states that Elders and harvesters are concerned that the Project will have adverse impacts on wildlife they hunt and on habitat that wildlife require. The TK Study stresses that impacts to wildlife from the Project "would affect both the local hunting economy and the cultural practices related to being on the land" (PR#28 p37).



Figure 9-4. Preparing boreal caribou traditionally

(Source: WRRB presentation at Whatì public hearing PR#256 p9)

In the TK Study, Elders related their experiences with the construction of Highway 3 from Behchokǝ to Yellowknife as an example of the adverse impacts from road development on wildlife and harvesting (PR#28 p37-38):

Prior to the construction of the highway the elders often observed and hunted animals in the area. After the construction of the road, the elders hardly ever observed animals along the highway.

The TK Study notes that the area surrounding the proposed Tłıchǵ All-Season Road has existing populations of moose, boreal caribou (tǫdzı) and barren-ground caribou (ʔekwǫ). These animals would be scared away by the noise, dust, smell, and pollution from the road construction and by the continuous traffic on the road during road operations (PR#28 p38). A Whatı harvester stated that (PR#28 p38):

If the road is constructed, this is what I think: if things are being transported by trucks, gravel and dust will be spread out all over the place. Hunting and trapping will disappear. Those of us who are elders don't want that to happen.

Boreal caribou (see Chapter 6)

Chapter 6 reviews likely Project effects to boreal caribou and discusses how harvesting might be affected. From the evidence presented in that chapter, the Review Board found that boreal caribou are likely to be significantly adversely affected by the Project.

Barren-ground caribou (see Chapter 7)

Chapter 7 reviews likely Project effects to barren-ground caribou and discusses how harvesting might be affected. From the evidence presented in that chapter, the Review Board found significant adverse impacts to barren-ground caribou are anticipated due to increased access and direct mortality from harvesting. This includes the prospect of disrespectful harvesting from non-Aboriginal harvesters. Figure 9-5 (below) shows harvesting of barren-ground caribou.

9.2.4. Impacts of more bison on harvesting of caribou and moose

In its TK Study, Elders expressed concern that the Project right-of-way would create a new type of habitat and open the Project area up to new wildlife. Experience with Highway 3 suggests to the Elders that bison will likely follow the new road right-of-way north to Whatı. Elders are concerned that bison conflict with moose and caribou for habitat and that both moose and caribou avoid bison because of their smell. Elders predict that moose and caribou currently in the Project area will move away because of the noise, dust and pollution during road construction and operation as well as from the introduction of new wildlife species such as bison (PR#28 p38).

In its *Adequacy Statement Response*, the developer identified the entire Project route as having medium to high bison habitat and that bison are attracted to roads for use as travel corridors during winter months when snow may impede movement (PR#110 p4-61 to 4-64). Bison are already present in the Project area and are anticipated to expand their range northwards as a result of the Project (PR#110 p130, PR#274 p108). Information in the TK Study expressed concern that bison compete with and scare away the preferred harvested species, such as moose and woodland caribou (PR#28 p41). The Project is expected to enable more bison to move into the area, which would push moose and boreal caribou out of the Project area. This would have an adverse impact on harvesters (PR#28 p38).



Figure 9-5. Barren-ground caribou harvesting
(Source: Tłıchǫ Government hearing presentation, PR#252 p4)

9.2.5. Impacts to furbearers and trapping

The impact of the Project on trapping was discussed as a possible adverse Project effect. The Tłchq Government's TK Study (PR#28) identified numerous traplines bisecting the all-season road alignment. The developer's *Adequacy Statement Response* (PR#110 p5-44) noted there are several winter trapping areas that cross the Project area. The developer has committed to maintaining access to winter routes during construction and operations and anticipates that the Project will not impact winter trapping (PR#110 p5-43). The developer also notes that individuals with active traplines in the area were compensated by the GNWT to relocate the traplines destroyed in the 2014 fire season, concluding that traplines intersecting the Project are therefore not expected to be affected by Project construction (PR#110 p5-44).

The Tłchq Government reported on the risk of increased predation because of an all-season road, and how that could extend to more predation by marten, lynx and wolverine. This was cited as a "concern for Tłchq trappers who rely on these species for traditional and economic purposes" (PR#97 pp13-14).

The Tłchq Government's *Traditional Knowledge Study Report* stated that prior to the construction of Highway 3 from Behchokò to Yellowknife, there was a sustainable population of furbearing animals in the area. The TK Study also reported that many families lived and earned a livelihood from trapping and hunting along that route. After Highway 3 was constructed, the Elders concluded that animal populations along the road had scattered and declined (PR#28 p33-34). In the TK Study, Elders predict (PR#28 p33):

similar impacts will occur to the existing animal populations along K'àgòò tìlì, stating that an all-season road will cause negative impacts on furbearing animals and their habitat along the road. Specifically, they note that noise, dust, and smells from an all-season road will scare away furbearing animals such as marten, lynx and wolverine.

The TK Study concluded that the combined effects of the road disturbance and increased predation will have an adverse impact on furbearers and their habitat along the road (PR#28 pp33-34). One Whatì harvester predicted that hunting and trapping will disappear (PR#28 p38). The conclusion from harvesters and Elders interviewed in the study was that they "did not foresee any positive impacts from an all-season road on furbearing animals and their habitat, nor to trapping and its way of life" (PR#28 p34).

The TK Study further stated that negative impacts from the Project will indirectly impact the people who depend on the animals and that a decline in the furbearing population will

have adverse effects on the maintenance of successful traplines in the area. One of the trappers interviewed in the TK Study asked how he would be compensated if his trapline became worthless because the animals were scared away. A harvester from Whatı stated that (PR#28 pp33-34):

The young men still go hunting and trapping and practice the traditional way of life. With a road, animals will go, then what will happen? There will be traffic day and night. Buffalo will come in, and moose and woodland caribou are very disturbed by buffalo. The traffic will scare away the animals, and we cannot continue to trap in that area.

At the technical session, the Tłıchǵ Government was asked to describe how an all-season road might affect trappers. Elder Francis Simpson acknowledged the long history of using the land in the Project area (PR#162 p140):

And so in that area where the road is to be constructed is where our ancestors have hunting and have camped, and lived in all those areas. And so today some of the young people who are hunters and trappers still continue to work the land, and take care of the wildlife and water. And so we have to also be aware of what's happening from the past to today so that we take care of everything.

9.2.6. How Traditional Knowledge was incorporated into the EA

The developer funded the Tłıchǵ Government 's TK Study, which was submitted alongside the original *Project Description Report* (PR#7 p5-1; PR#28). The TK Study provides a comprehensive assessment of how the Project will affect the traditional values and cultural well-being of the Tłıchǵ people. Table 9-1 below, summarizes the main concerns identified by Tłıchǵ harvesters in the TK Study (PR#28 pp40-41). Recommended mitigation measures to address those concerns from the TK Study are shown below in Table 9-2 (PR#28 pp42-43).

Table 9-1. Cultural concerns of an all-season road, as described from the 2014 Tłıchǵ Traditional Knowledge Study.

No.	Overview of concerns – TK Study
1	Noise, dust, and contamination from the proposed road will scare animal populations away from the area surrounding the road route, creating a potential decline/disappearance of animal populations.
2	A decline of furbearing animal populations will negatively impact the trapping economy and way of life.
3	Compensation must be made available to trappers if furbearing animals disappear from their traplines.

4	Construction of an all-season road will introduce new animals into the area.
5	New animal populations such as bison could scare away the existing animals such as moose and woodland caribou.
6	Concerns exist over a potential decline/disappearance of woodland caribou populations.
7	It may become increasingly difficult to hunt woodland caribou and moose, and bring meat home to one's family.
8	The road may bring increased pressure from outside hunters on local animal populations such as woodland caribou, barren ground caribou, and moose.
9	Increased pressure to the various fish populations may result from an increased number of outsiders fishing in Tsołıdeè and Whatì.
10	The construction of new cabins along the road will mean increased traffic by ATVs and snowmobiles on existing trails.
11	Concerns exist over who has authority over the road, as most of the current road route is outside of Tłıchǵ private lands: <ul style="list-style-type: none"> Who will have the authority to implement regulations and check stops on the road? Will the Tłıchǵ Government or the Government of Northwest Territories have authority over the road outside of Tłıchǵ private lands?
12	Fears exist about the contamination of the environment from potential spills on the road.
13	Concerns exist over increased exploration and the possibility of discovery of new mineral or oil and gas deposits: <ul style="list-style-type: none"> Concerns over the possibility of the establishment of new mines. Concerns over the possibility of more development in wildlife habitat and preferred harvesting areas.

(Source: PR#28 pp40-41)

In its closing argument, the Yellowknives Dene First Nation asked the developer to “directly support Traditional Knowledge research by the Yellowknives Dene First Nation into the project area” (PR#283 p5). The Yellowknives Dene First Nation stated that they have significant Traditional Knowledge in the Project area that needs to be documented prior to development of the road. The Yellowknives Dene argued that if the project negatively affects lands used by Yellowknives Dene First Nation members, their Traditional Knowledge of the area could be lost (PR#283 p5).

In its technical report, the NSMA reported that it had entered into a Contribution Agreement with the developer in June 2017 to conduct a Traditional Knowledge Study on the Tłıchǵ All-Season Road. The NSMA noted that it is still in the process of conducting the TK Study and that the final study will be ready in early 2018 (PR#214 p2). The NSMA observed that while the TK information from the study will not be completed prior to the

public hearings, it recommended that the developer should accept the NSMA TK Study once completed and consider it in future regulatory discussions and decisions including the Wildlife Management and Monitoring Plan and Land Use Permits (PR#214 p2).

In its response to the NSMA's technical report, the developer agreed to review the NSMA TK Study once completed, and to consider it in future regulatory discussions related to the Project (PR#239 PDF p44).

The Wek'èezhì Renewable Resources Board contributed Traditional Knowledge with respect to the Project in its technical report. The Wek'èezhì Renewable Resources Board explained that boreal caribou are particularly sensitive to noise and activities and are likely to be driven away by a road (PR#215 p87). The Wek'èezhì Renewable Resources Board also commented that over the last two years, boreal caribou have been seen moving into the region, probably due to the forest fires in the Sahtù (PR#215 p88).

Table 9-2. Mitigations proposed by Elders to address Project-related impacts, taken from the Tłıchǫ Government's 2014 Traditional Knowledge Study.

Categories	Mitigations
Environmental Monitoring	<ul style="list-style-type: none"> • Develop a systematic environmental monitoring program during construction and operation of the road. • Develop an environmental monitoring database. Data from the environmental monitors should feed into existing research on effects of roads on wildlife and environment. • Secure funding for the continuation and expansion of the community-based training program in Whatì for local young community members to be educated and hired as environmental monitors.
Response Plan	<ul style="list-style-type: none"> • Develop hunting and trapping regulations that minimize outsiders' access to and harvesting pressure on local animal populations. • Impose a no hunting and trapping zone in the immediate area along both sides of the road. • Develop fishing restrictions to minimize outsiders' access to and pressure on fish populations, especially at important fishing locations such as Tsotìdèè, T'ooheèhoteè and Whatì. • Develop regulations for construction of cabins, especially by non-Tłıchǫ persons. • Develop regulations for wood harvesting along the road.

	<ul style="list-style-type: none"> • Coordinate Tłıchǵ Government and GNWT efforts to develop land management regulations regarding hunting, fishing, trapping, cabins, and wood harvesting on the section of the road outside of Tłıchǵ lands. • Develop strategies to mitigate impacts from increased exploration and prospecting in the region for minerals and oil and gas deposits.
Cultural Programs	<ul style="list-style-type: none"> • Develop a response plan in case of spills or other environmental emergencies along the road, from Whatì and from Edzo, or closest facility. • Develop emergency plans in case of accidents on road, including a rest stop with a direct phone line to RCMP/ hospital/ search and rescue. • Implement programs to encourage and help finance trapping as a livelihood. • Provide consistent funding and implement cultural programs to teach young generations about hunting, trapping, and fishing. A focus should be on Elder – youth relationships and the passing of knowledge of the land and cultural practices.
Compensation	<ul style="list-style-type: none"> • Appropriate compensation should be given to trappers who use the area around K'ágòd tı́ ı́. Some trappers have individual traplines in the area that they use every season; these trappers will have to cut new traplines in other areas.
Trail Network	<ul style="list-style-type: none"> • The road design needs to take into consideration the network of existing overland trails and water routes. Special designs must be in place where skidoo trails cross the road and by the river crossings so that boaters and canoeists may safely cross the road.
Other Mitigations	<ul style="list-style-type: none"> • Integrate available mitigations to reduce impacts on animals and animal habitat. Specific focus on reduction of noise and dust from traffic on animal habitat surrounding animal habitat.

(Source: PR#28 p42)

9.2.7. Perception of the land is changing for Elders and harvesters

In its June 29, 2017 responses to information requests, the Tłıchǵ Government acknowledged that changes to Tłıchǵ peoples' perception of the land from the Project would be both positive and negative (PR#126 p32). The Tłıchǵ Government stated that overall, its citizens will be provided with better access to the Project area which many harvesters, as well as Tłıchǵ youth, have not accessed before. Potential positive outcomes from the new access road include opportunities to harvest fish and wildlife, gather plants

and berries, and teach Tłıchǵ youth how to live well and carry on the Tłıchǵ way of life (PR#126 p32).

The Tłıchǵ Government stated in its information request response that for harvesters who already actively use the area, access to existing harvesting areas will be easier. However, on the negative side, there will be increased competition for wildlife resources from non-Tłıchǵ harvesters and hunters, as well as changes to the wilderness characteristic of the Project area (PR#126 p32). The Tłıchǵ Government acknowledged that there will be physical changes in the landscape, which has the potential to alter Tłıchǵ citizen's perception of land. These changes are also opportunities from the new access to practice Tłıchǵ culture and connect youth more easily to the land, which can result in a positive perception of the landscape (PR#126 p32).

The TK Study described general opposition among the Tłıchǵ Elders and harvesters to the all-season road, due to the potential for negative impacts on animals and the environment (PR#28 pp38-39).

The TK Study concluded that asserts that Elders and harvesters (PR#28 p37-38):

are concerned about the potential impacts of the proposed all-season road on the animals they hunt and their habitat. Any impacts on the ungulates inhabiting the area along the proposed road route will subsequently have adverse effects on hunters' ability to hunt in the area. Consequently, impacts on animals would affect both the local hunting economy and the cultural practices related to being on the land.

Tłıchǵ Elders and harvesters further state that (PR#28 p37-38):

their words are true as they reflect what they have seen with their own eyes. The elders referred to Highway 3 from Behchokǵ to Yellowknife as an example of a development with impacts they have observed. Prior to the construction of the highway the elders often observed and hunted animals in the area. After the construction of the road, the elders hardly ever observed animals along the highway.

Figure 9-6 shows harvester Archie Nitsiza speaking to the Review Board at the public hearing.



Figure 9-6. Harvester Archie Nitsiza speaking to the Review Board at the public hearing.
(Review Board photo)

In its closing argument, the Yellowknives Dene stated that while the Project is not within Treaty 8 boundaries or part of the Akaitcho modern land claim negotiations, the Project is within the traditional use area of the Yellowknives (PR#283 p5). The Yellowknives Dene are concerned that increased traffic on the road as well as associated land uses from snowmobiles, squatters, resident hunters, anglers and tourists will erode the Yellowknives Dene's traditional uses in the area. The predicted decrease in land use by Yellowknives Dene First Nation in the Project area can result in adverse socio-economic impacts to the Yellowknives including loss of language and reduced tradition practices on the land (PR#283 p5).

To address these adverse cultural impacts resulting from construction and operation of the Project and avoid losing Traditional Knowledge of the area because of reduced time on the land, the Yellowknives Dene request that the Review Board (PR#283 p5):

create a measure requiring the proponent directly support Traditional Knowledge research by the Yellowknives Dene First Nation into the project area. The Yellowknives have significant Traditional Knowledge of the area in question.

During the November 15, 2017 public hearing in Whatì, the Tłıchǵ Government spoke to the Review Board about the importance of preserving specific activities on the land so that Tłıchǵ culture remains vibrant and functional (PR#272 p129). A Tłıchǵ Government representative stated that (PR#272 p129):

It is important that we continue to use the land for traditional use, such as berry picking, wood cutting, medicine harvesting, hunting, fishing, trapping, just being out on the land, in the environment. We know the land brings healing, and for our people this is really important. Culture and heritage resources, such as cabins, grave sites, and other sacred sites are also to stay protected along the Tłıchǵ all-season road.

In its closing argument, the Tłıchǵ Government identified positive impacts to Tłıchǵ culture from the Project. These include the potential to increase the connection between communities and to allow improved access to Tłıchǵ lands for Tłıchǵ citizens (PR#284 p11). The closing arguments further state that the new access from the proposed road will “increase the opportunity and accessibility for Tłıchǵ harvesters, especially youth, to practice Tłıchǵ culture and connect more easily with the land” (PR#284 p11).

In its closing argument, the developer restated its opinion that the Project will facilitate rather than deter traditional land uses in the Project area and permanent access will serve to retain and convey Traditional Knowledge to future generations (PR#285 p9).

9.2.8. Language loss likely with year-round access

In its technical report, the Tłıchǵ Government described its language and cultural preservation as being “currently in a state of crisis” (PR#216 p14). The Tłıchǵ Government predicted that “the Project will become another stressor on retention of culture, resulting in reduced knowledge and use of Tłıchǵ language” (PR#216 p14). In its technical report, the Tłıchǵ Government observed that the road to Behchokǵ contributed to a reduction in the strength of the Tłıchǵ language and it expects the all-season road to Whatì will weaken Tłıchǵ language use further (PR#216 p14).

Tłıchǵ language instructors and staff in Whatì predict that there is a high likelihood of continued language loss in Whatì due to many factors, including the construction and operation of the Project. The Tłıchǵ Government also predicted that there would be a high likelihood of continued loss of the language as a result of the Project (PR#96 p16; PR#216 p14).

There are existing language programs by the Tłıchǫ Government that target schools (with a kindergarten to grade 12 language program in Whatì) and homes. This requires a continued investment by the Tłıchǫ Government. In its technical report, the Tłıchǫ Government stressed that the key to maintaining the language, is to have leaders and language champions. Examples include (PR#216 pp14-15):

... for youth, having a radio show or video channel for expressing themselves and communicating in Tłıchǫ could assist. School doesn't run all year, but people talk and make videos of themselves and each other all the time. In the academic literature, having a motivated leader is really essential to language maintenance. There is a K-12 language program in Whatì now, as well as a language teacher.

In its technical report, the Tłıchǫ Government describes ways that it intends to mitigate the potential for the reduced use of the Tłıchǫ language caused by the Project (PR#216 pp21-22). The Tłıchǫ Government cites the role of Tłıchǫ Community Services Agency in planning for these predicted impacts and implementing programs to address them. For example, the Tłıchǫ Community Services Agency has hired an additional school counsellor to work with youth at the Whatì school. The Tłıchǫ Government is offering Community Aboriginal Language Revitalization courses in 2018 in partnership with the University of Victoria (PR#272 p130). The Tłıchǫ Government stated that it is committed to renewing use of its language through a variety of community activities such as talent shows, Elders partnering with youth for specific tasks, transcribing Elder biographies, Tłıchǫ language radio shows and community language classes (PR#272 pp131-132).

The focus on language is part of the Tłıchǫ culture and way of life and is also (PR#272 p132):

[a]n integral part of canoe trips around the lake, grave site upkeep in town and out on the land, harvesting, including woodcutting, berry picking, hunting, fishing, and trapping. [This is] what we've always done in the past, [and] we will continue to support [it].

The Tłıchǫ Government stressed that language survival is intimately linked to maintaining traditional practices, which require keeping people on the land living and learning the Tłıchǫ way of life (PR#216 p16). The Tłıchǫ Government pointed out that along with the communities, it (PR#216 p16):

Invest[s] significant resources into programming that brings people to the land with elders, learning culture and learning language and way of life. These types of programs will help mitigate the general, and project specific, ongoing impacts to language use.

9.2.9. Positive and negative impacts on young people in Whatì

The Tłıchǵ Government described potential adverse impacts from the Project on youth in Whatì in response to Review Board information request. Interagency meetings from 2013-2015 between the Tłıchǵ Government, Tłıchǵ Community Services Agency and the Community Government of Whatì identified strategies to address these impacts as well as potential benefits from the road (PR#96 p58). The inter-agency meetings outlined that youth worry about the “ease with which they can leave the area” (PR#96 p58) as well as:

... how a road could change the ability to know their language and culture. They sensed that youth would not do as much hand games and drumming, not be involved in culture activities and gatherings, speak the language less, and that there would be a loss of Tłıchǵ culture because of the influence of outside cultures.

Strategies identified by the Interagency Committee to allow youth to overcome adverse impacts from the Project included:

- expanding courses being offered at the school to start preparing youth for the jobs and opportunities that could come from an earlier age;
- offering more programs in the community so the young people can get training in the community instead of having to leave;
- improving communication between agencies about funding, resources and support to increase opportunities for students;
- start mentoring youth for the type of positions that will need to be filled in the community, such as nursing;
- increase recreational activities for youth; and,
- develop a plan to prepare for potential drop in attendance at school with an all-season road (PR#96 p58).

Potential benefits to youth in Whatì from the permanent Tłıchǵ All-Season Road identified during the Interagency meetings from 2013-2015 included:

- easier access to attend sporting and cultural events in other communities;
- easier access to health services, including dental and speech therapy;
- reduced cost of food to help address childhood nutritional concerns;
- increased jobs in community will provide incentive for youth to finish Grade 12;
- less isolation and more connectedness to other ideas and cultures; and,
- ability to learn about the world through travel (PR#96 p58).

During the November 15, 2017 public hearing in Whatì, the Review Board heard from young people in the community who were not in support of the road. Several young people who spoke during the hearing told Board members (PR#273 pp130-132):

We would have to strongly disagree on building the all-season road only because we already have winter road each year for a month or two, and it's good enough for us all. People already take advantage of it so what will happen if the all-season road was to be built? Will the lands, water, animals, tradition and culture be the same?

We, as youth, are trying our best to keep our language and culture strong like two people. If we actually do go on with this project, then you people who are agreeing to build the road will destroy how far we've come to make this community strong. ... It's important for our habitat that we keep our land and air clean and fresh as much as possible. Half of our lands ... have already been burnt and destroyed by wildfires. We have an option either to destroy our community or try our best to fix this before it's too late.

9.2.10. Heritage and cultural resources

In its *Project Description Report*, the developer identified concerns among community members in Whatì about landscape disturbances reducing their connection to the cultural landscape of the Project area (PR#7 p8-31). To address this concern, the developer proposed a number of mitigations. Specifically, the Tłıchǫ Government or Community Government of Whatì will erect signage to prevent damage to culturally-significant areas (such as the La Martre Falls). Road construction (routing) will avoid cultural sites identified in the Traditional Knowledge study submitted by the Tłıchǫ Government (PR#7 p5-2, p7-2, p8-31, and p8-34). However, the *Project Description Report* made no references to any potential or known cultural sites from the Yellowknives Dene First Nation or the NSMA. See Section 9.2.6 regarding how TK was incorporated by the developer, as well as the concerns raised by the Yellowknives Dene First Nation and NSMA regarding this process (PR#283; PR#214).

In its response to a Review Board information request regarding the location and potential mitigation of heritage resources and culturally important sites, the Tłıchǫ Government listed all cultural or heritage sites identified within five kilometers of the Project (PR#97 pp22-28). The Tłıchǫ Government advised that any potential impacts could be mitigated either in the design of the road, or by other mechanisms such as signage or pullouts in the case of trails, to ensure safe crossing of the road (PR#97 pp22-28).

In its final commitments table, (Appendix D) the developer committed to implementing the Archaeological Site Find Protocol to provide guidance to employees and contractors conducting ground disturbing operations (PR#285 PDF p42).

9.2.11. Trail crossing points along the Project

In its technical report, the Tłıchǫ Government observed that the Project route follows an existing tractor trail that has been used by Tłıchǫ citizens for many years. Numerous trails in the area that are relied on for travel and access cross the Project route. Some of these trails are identified in the TK Study (PR#28) but other trails used by Tłıchǫ harvesters that cross the Project are not marked (PR#216 p15).

The Tłıchǫ Government and Tłıchǫ Elders feel it is important to document all trails in the Project region to minimize potential impacts to the trail networks themselves and reduce impacts to Tłıchǫ citizens' ability to use the trail network (PR#216 p15). To accomplish this, the Tłıchǫ Government commits to "ground-truthing the traditional trails and trapping routes from the Traditional Knowledge study and will be providing that information to the GNWT" (PR#216 p17).

In its technical report, the Tłıchǫ Government requested that the developer ensure proper signage is posted at all trail crossings, once they have been documented (PR#216 p15). The Tłıchǫ Government stated this requirement is necessary for Tłıchǫ citizen's ability to use and enjoy the land safely. While year-round access along the Project route creates opportunities for better access to the land for Tłıchǫ citizens, users of trails may be at potentially higher risk for collisions with vehicles. To address this adverse impact on harvesters and other trail users the developer has committed (commitment 22 permitting table) to (PR#216 p17):

consult with the Tłıchǫ Government and Project Co. from a highway safety perspective to ensure that there is a cohesive plan for access points or rest stops on the highway including appropriate signage where necessary.

9.3. Review Board analysis and conclusions

The Review Board finds that the construction and operation of the Project is likely to cause significant adverse impacts to the cultural well-being of residents of Whatì. The project is predicted to reduce harvesting success of fish and wildlife for residents of Whatì due to increased hunting and fishing pressures from outside hunters and harvesters once road

access is opened. In the Review Board's view, adverse impacts to harvesting for Aboriginal people are significant impacts to cultural well-being. The Review Board's reasoning for this determination is as follows:

- The use of the road and increased human use of the Project area will increase disturbance and displacement of wildlife, resulting in fewer animals to harvest and reduced harvester success rates.
- Sustainable harvest levels are unknown due to a lack of baseline information.
- Traditional Knowledge information from Yellowknives Dene First Nation and NSMA was not adequately considered, and this increases the uncertainty of predictions on the extent of impacts to cultural well-being and way of life.
- The perception of the land and water as a healthy area for traditional activities may change when the area is divided by a highway and open to outsiders.
- In addition to numerous other existing and modern influences, Tłıchǵ language use is likely to further decrease as the Project creates permanent access to Yellowknife and other non-Tłıchǵ destinations.
- The effectiveness of commitments to mitigate impacts to cultural values by the project P3 operator is uncertain.
- The road is permanent and adverse impacts to cultural well-being will be ongoing for future generations.

The Review Board finds that the combined impact of reduced harvest success, a reduction in language skills, less time pursuing traditional activities by youth, and a decreased value of the affected land is likely to have a significant adverse impact on the cultural well-being of Whatı residents.

9.3.1. Harvesting success is likely to be reduced

The Review Board considers the weight of Traditional Knowledge (TK) on par with western scientific information. In this environmental assessment, evidence based on Traditional Knowledge was received by the Tłıchǵ Government from Elders. The main body of TK evidence came from the comprehensive *K'agòò tılı Deè Traditional Knowledge Study for the Proposed All-Season Road to Whatı* prepared by the Tłıchǵ Government (PR#28). This document identified many serious concerns and anticipated adverse impacts to harvesting and traditional activities associated with an all-season road.

The Review Board notes that despite the TK Study's findings of adverse impacts from the Project to Tłıchǵ culture and harvesting, little discussion of these findings was raised by the developer or the Tłıchǵ Government during the environmental assessment process.

The Tłıchǵ Government concluded that the improved accessibility resulting from the road will increase the ability of harvesters to get out and access the land, and therefore will be a benefit to harvesting. The Review Board notes, however, that this argument is not reflected in the TK Study. The Traditional Knowledge on record says that animals will be displaced and disturbed by the road and will move away from it. There was additional observation by the WRRB that increased hunting and disrespectful hunting practices would further reduce the availability and productivity of harvested mammals in the Project area (PR#215 p37-38).¹

The WRRB's technical report conclusions on Traditional Knowledge were that the Project would have unpredictable impacts on most animals and required more oversight and monitoring (PR#215 p35). The Traditional Knowledge findings that the road would likely have an adverse impact on mammals were supported by the scientific findings of the WRRB and NSMA. The Review Board finds that the Tłıchǵ Government's conclusion is a departure from other Traditional Knowledge evidence, which clearly indicates a likely reduction in animals available for harvesting and trapping. It is the Review Board's view that this reduction in animals is likely to reduce harvesting and trapping success to some degree in the Project area.

The Review Board understands that the Project will provide some positive effects for harvesting because of improved access to the land. This may include berry picking, harvesting of medicinal plants, trapping, harvesting of wildlife, and harvesting of firewood. Improved access along the Project should have the desired effect of increasing harvest opportunities for these activities. It is also likely to facilitate access of people in Behchokǵ to the Project area.

The Review Board heard from parties that local population, distribution and availability of harvested species near the road are likely to be reduced by increased disturbance and

¹ Disrespectful hunting refers to practices such as wasteful hunting by outside hunters who lack knowledge of respectful harvesting practices (PR#215 p38).

increased human use of the area. Fewer animals to harvest in the Project area is likely to lead harvesters to work harder to find animals and lead to less successful harvests

Increased predation on furbearers as a result of the Project is likely to affect trapping success and the maintenance of traplines in the Project area. The Review Board heard evidence during the public hearing and from the Tłıchǫ Government that harvesting is fundamental to the culture of the Tłıchǫ people. The Review Board finds that reducing the ability of residents of Whatì to harvest is a significant adverse impact to the conservation of a traditional way of life to the Tłıchǫ people and other Aboriginal groups that may use the area.

The Review Board accepts the viewpoint of the developer and Tłıchǫ Government that wildlife harvesting in the Project area may be more successful due to improved access, particularly in the short term. In the longer term, however, improved access from the Project may result in potential over-harvest of wildlife in the Project area. Based on the evidence regarding opening up new areas to wildlife harvesters, the Review Board concludes that improving access to a new area is likely to result in less wildlife due to direct mortality from harvesting and hunting. For this reason, the Review Board finds that significant adverse impacts to the harvesting of wildlife from the construction and operation of the Project are likely.

9.3.2. Sustainable wildlife harvesting levels are not known

Based on evidence on the public record, the Review Board understands that the Project will likely lead to increased hunting and harvesting pressures on caribou, moose and other wildlife in the Project area. The Review Board also understands that sustainable harvest levels for wildlife, and particularly caribou, are currently not known within the Project area.

Increased harvesting and hunting pressures are particularly concerning for boreal caribou (tǫdzı). As described in Chapter 6, there is evidence that boreal caribou (tǫdzı) may not be self-sustaining in the area of the road and have been declining. It is therefore not clear to the Review Board what sustainable harvesting of wildlife, including boreal caribou (tǫdzı), would be once the Project is operating. Without a sustainable harvest, the Review Board is concerned that wildlife species may decline in the Project area and cause adverse impacts to Aboriginal harvesting.

The developer's closing arguments provided evidence about the levels of hunting in the area of the road specifically for boreal caribou (tǫdzı) (PR#285 pp12-14). The Review Board heard the developer's view that population monitoring and harvest monitoring actions outlined in the WMMP will help to inform wildlife managers as to what local scale harvest management options are needed (PR#285 p13).

The Review Board understands the developer predicted there will be effects to wildlife in the area of the Project, though in the developer's view, these effects are small at the territorial range scale. The developer acknowledged effects to boreal caribou (tǫdzı) in the vicinity of the road and that this will likely decrease wildlife in preferred harvesting areas; the developer has not provided any mitigations for these predicted effects. The developer focused on using monitoring to identify effects, but pointed out that data on Aboriginal harvesting is not collected and for hunting, is limited to hunter surveys (PR#145 PDF p4). The developer did provide evidence that there is currently very low non-Aboriginal hunting pressure in the area (PR#142 PDF p4). However, it did not provide compelling evidence that hunting levels would not increase substantially.

In response to a Review Board information request, the developer stated (PR#141 PDF p19):

[t]he ongoing monitoring of caribou populations, movement patterns and harvesting, and adaptive management by the developer in collaboration with Indigenous governments and co-management boards will play a large role in determining continued Indigenous harvesting success.

The Review Board notes the developer's optimism regarding continued Aboriginal harvesting success but points out the "large role" applies to many parties, with many responsibilities, including the implementation of the recovery strategy and range plans. The Review Board notes that Objective #2 of the 2017 *Recovery Strategy for the Boreal Caribou in the Northwest Territories* is to ensure that the harvest of boreal caribou is sustainable (PR#106 pviii). The Recovery Strategy goes on to state that this can be accomplished by (PR#106 pviii):

educating people about the importance of harvest reporting, and working with local harvesting committees, First Nations and other groups to develop systems for reporting harvest and measuring harvest levels.

With regards to limiting impacts from harvesting, the Review Board observes that the TK Study recommended increased harvest management in order to reduce impacts from

potential over harvesting of wildlife as well as a no hunting zone along both sides of the road (PR#28 p42).

As a result of a lack of baseline monitoring for wildlife and unknown resident hunting and Aboriginal harvest levels within the Project area, the Review Board is uncertain whether harvest and hunting levels are currently sustainable. Evidence from parties and the developer indicates that harvesting and hunting pressures will likely increase during Project operations.

The Review Board questions the ability of wildlife managers to ensure wildlife is sustainably harvested and hunted in the Project area once the Project is constructed, because the current wildlife management regime lacks monitoring and reporting of resident hunters and from Aboriginal harvesters. In the opinion of the Review Board, this is a large information gap that creates uncertainty for wildlife co-managers. In the Review Board's view, managing the sustainable harvest and hunting of wildlife requires monitoring and reporting information from resident (non-Aboriginal) hunters and Aboriginal harvesters.

9.3.3. TK from Yellowknives Dene First Nation and NSMA not used

In its closing arguments, the developer said that Traditional Knowledge was “used to select the Project routing, define study areas and wildlife habitat preferences for the effects assessment, inform mitigation and monitoring, and to assess impacts (PR#285 p8)”. How TK influenced decisions for Project design and support is less well known.

The Review Board heard concerns from NSMA and Yellowknives Dene First Nation that they were not consulted for their Traditional Knowledge about the Project area. Both groups have members that actively harvest in the study area. These members have Traditional Knowledge that might improve or contribute to the understanding of Project effects.

The Review Board acknowledges the ongoing TK study by the NSMA. This study was funded by the developer late in the environmental assessment process and will not be finalized until after the Review Board's environmental assessment decision. The Review Board is disappointed that the developer and federal government were unwilling to assist parties to the environmental assessment in providing timely information to the Review

Board for its decision. In the opinion of the Review Board, the outstanding TK may be important for the developer and regulators to consider prior to the Project commencing.

The developer stated in its closing arguments that it would consider incorporating the findings and recommendations from the NSMA TK study into the Project's final Wildlife Management and Monitoring Plan (WMMP), and it would discuss NSMA's participation in TK monitoring programs associated with the WMMP (PR#285 p8).

The Review Board recognizes that Yellowknives Dene First Nation asked the developer to support Traditional Knowledge research by the Yellowknives Dene in the project area (PR#283 p5). The Review Board accepts the Yellowknives Dene argument that it is necessary to document its Traditional Knowledge prior to the development of the road because "[i]f the project negatively affects lands use[d] by members we risk losing that knowledge" (PR#283 p5). Since wildlife move back and forth between traditional use areas of the Tłıchǫ and Yellowknives Dene, which partially overlap, the Review Board accepts that Traditional Knowledge from the Yellowknives Dene First Nation can contribute useful information on impacts from the project to wildlife and harvesting.

In the opinion of the Review Board, Traditional Knowledge from all Aboriginal organizations potentially affected by the Project must be considered in the design, construction and operations of the Project. The Review Board concludes that this Traditional Knowledge needs to be incorporated into designing mitigation to reduce impacts to fish and wildlife, implementing monitoring and ongoing adaptive management throughout all project phases.

9.3.4. A permanent road will change perceptions of the land

In the opinion of the Review Board, the nature of harvesting and perception of the land is likely to change once all-season access from Highway 3 to Whatì is in place. The Review Board heard concerns from Whatì residents that harvesters from outside the region may compete with Whatì harvesters for food. With the new all-season road, there will be more people from outside the Project area hunting without leaving the road or travelling the road and harvesting opportunistically if an animal appears on the road right-of-way.

This harvesting technique is currently limited to a part of the route because portions of the existing trail are not passable. However, once the Project is in operation, vehicle use in the area will increase, and opportunistic harvesting and hunting will result in direct mortality

to wildlife. As a result, perceptions of harvesting and land use in the Project area will change. In addition, harvesting and hunting wildlife along the new road right-of-way will cause many animals to avoid the road corridor due to disturbance from road use. The Review Board therefore finds that the Project is likely to adversely affect Aboriginal culture and harvesting.

The Review Board agrees with the developer and the Tłıchǵ Government that the Project may assist some harvesters in accessing existing trails off the Project faster and more easily. These harvesting trips along trails off the main road may be successful in the initial years after the new road is built. However, the Review Board believes that wildlife is likely to be displaced from the Project area due to disturbances from increased human activities in the area, such as mine traffic and recreational non-Aboriginal users of the area, and the proliferation of harvesting activities along existing trails and potentially harvesting from the creation of new trails. Over time, the decreased productivity of the land for harvesting wildlife in the Project area may change the perception of the land for Whatı residents.

The Review Board also heard from Elders and harvesters who are concerned about the influx of new people using the Project to access fishing areas that were previously difficult to get to. Impacts from the new all-season road on fish harvesting are discussed in Chapter 8.

In the opinion of the Review Board, the perception of the land and water as a healthy area for traditional activities may change when the Project area is divided by a highway and open to people from outside the region. The new access road changes perception of the land, alters harvesting methods, introduces increased competition from non-Aboriginal hunters and fishers, and displaces wildlife from area around the road. Taken together, these changes are likely to adversely affect the Aboriginal way of life and traditional harvesting culture in the Project area significantly. For these reasons, the Review Board finds that impacts from the Project to Tłıchǵ culture, harvesting activities, and to perception of the land are significant.

9.3.5. Diminished use of Tłıchǵ language in Whatı

The Review Board accepts evidence from the Tłıchǵ Government that the construction of new permanent access to Whatı may add to the declining trend in the knowledge and use of the Tłıchǵ language in Whatı (PR#216 p14). The Tłıchǵ Government points out that the construction of Highway 3 to Behchokǵ decades ago contributed to a reduction in the

strength of the language in that community. Similarly, the Tłıchǵ Government expects that the use of language in Whatì will be weakened because of the Project and predicts a high likelihood of continued loss of language in Whatì (PR#216 p14). The Review Board agrees with this prediction and concludes that the Project may contribute to the continued loss of knowledge and loss of use of the Tłıchǵ language in Whatì.

The Review Board is aware that the Tłıchǵ Government has made efforts to retain the Tłıchǵ language particularly through school programs. The Review Board commends the Tłıchǵ Government and its communities on their investment into programming that brings people together on the land with Elders to learn the language, retain culture and maintain traditional practices (PR#216 p16). While potential adverse impacts to retention of language due to the Project are acknowledged, the Review Board is optimistic that the community of Whatì is prepared to meet these challenges.

However, given the long-term nature of the Project, the Review Board considers the road likely to be an additional stressor on the Tłıchǵ language. In the Review Board's opinion, it is important that the private sector contractor works with the Tłıchǵ Government to see how it can assist with language preservation for Tłıchǵ employees and operate in a culturally sensitive manner. This is of particular importance given that the highway maintenance contractor is expected to work in the area for twenty-five years after the four-year construction period. The private sector operator of the Project will be an important employer for Tłıchǵ citizens throughout construction, operations and maintenance of the road. In the opinion of the Review Board, the private sector partner needs to conduct its relationship with Tłıchǵ employees in a culturally appropriate way that includes the consideration of the Tłıchǵ language. In this way, the Project may contribute to a positive long-term legacy for the Tłıchǵ people.

The Review Board agrees with the evidence provided by the Tłıchǵ Government that the permanent connection of Whatì via an all-season road will result increased exposure to the English language and non-Tłıchǵ culture. The Review Board finds that the construction and operation of the Project may contribute to the downward trend in the use and knowledge of the Tłıchǵ language in Whatì.

9.3.6. Delegating mitigation of cultural impacts to P3 partner

The Review Board is apprehensive regarding how the private sector partner will implement developer commitments and mitigations to reduce impacts from the Project on

Tłıchǫ culture during the construction and operation of the Project. Section 4.2 in Chapter 4 of this report describes issues related to the P3 approach for the Project in detail. The Review Board is particularly concerned for the potential of the public project to result in adverse cultural impacts that relate to the long-term well-being of Tłıchǫ citizens.

As a public project and with the government as the developer, the Review Board is of the view that the Project must have special regard to the overall long-term health and well-being of residents of the Mackenzie Valley. The Review Board is concerned that transferring the construction and maintenance of the project to a private sector company could have the result in delegating most of the responsibility of the project to the private sector without the corresponding government accountability or mandate for the well-being of residents of the Mackenzie Valley. The successful contractor will operate in the area for four years of construction and 25 years of road operations and maintenance. The contractor will therefore have a significant ability to influence local employees and communities, either deliberately or inadvertently, through its policies and actions.

The Review Board heard from the public during the EA that the preservation and continuance of Whati's cultural identity represents a legitimate concern, especially for the community's youth. The Review Board is also familiar with the potential impacts associated with large work camps operating close to isolated and remote Aboriginal communities. The potential for racial and gender discrimination at the worksite is real. The presence of non-Tłıchǫ workers and outsiders in the community once the road becomes operational represents a further risk to young women and vulnerable people in Whati.¹

The Review Board found the report submitted by the Tłıchǫ Government on *Indigenous Communities and Industrial Camps* (PR#269) to be very informative on the dangers and risks represented by industrial work camps. The report had many practical and valuable suggestions and recommendations on preventative actions to reduce impacts from work camps near communities. Key components that the Review Board would like to highlight are the establishment of cultural familiarity for outside workers, and the ability of local workers and residents to operate in a safe environment. The Review Board builds on some of these recommendations in its measures.

¹ This is described in detail in Sections 5.3.6 and 5.4.3 above, and partly mitigated by measures described in Section 5.5.

9.3.7. Ongoing impacts to Whatì culture for future generations

The Project will result in a permanent change to the culture and way of life of the residents of Whatì. The Review Board accepts that the Tłıchǵ Government has planned for this change and acknowledges the support programs that the Tłıchǵ Community Services Agency, community of Whatì and Tłıchǵ Government have put in place to address impacts to culture in Whatì. The Review Board commends the Tłıchǵ Government and other Tłıchǵ agencies for these initiatives.

However, changes to the cultural fabric of Whatì resulting from the Project cannot be easily reversed once the Project is in operation. Adverse impacts and changes to the way of life for Whatì residents will be felt by the current generation once the access is built, and the impacts will be ongoing for future generations. The road will also serve as a catalyst for future resource and economic development in the region, which brings benefits and risks. The Review Board recognizes the risks associated with cumulative impacts and resource development. Likely future increases in stress on the land and animals will have a corresponding impact on the conservation of cultural well-being. Such cumulative impacts are likely to take a toll on the traditional way of life.

Despite the programs put in place to mitigate these impacts described in the previous section, the Review Board finds that these impacts are significant because they are permanent.

9.3.8. Conclusions

Based on the evidence on the public record, Review Board concludes that the construction and operation of the Project is likely to result in significant adverse impacts on the ability of Whatì residents to harvest wildlife and maintain their culture and traditional way of life.

The Review Board heard during this environmental assessment, and in recently completed environmental assessments, how important language and perception of a healthy land are to cultural preservation. The Review Board concludes that:

- some reduction in Tłıchǵ language use is likely to result from the increased ability of Whatì residents to leave the community and from increased outside influence;
- there is likely to be some reduction in harvesting success in the vicinity of the road;

- the conservation of traditional well-being and way of life to Whatı youth is at increased risk from more time spent away from the community and less time pursuing traditional activities; and,
- the permanent nature of the road will constantly challenge the conservation of cultural well-being and way of life for Whatı residents.

These are important aspects of culture. The combined likely effects of the Project as proposed on Tłıchǫ culture in Whatı are significant. The following measures are prescribed by the Review Board to reduce these potential adverse impacts to culture and harvesting that are otherwise likely.

9.4. Measures and suggestions

This report contains several measures that will collectively help maintain Aboriginal harvest, including those directed towards conserving harvested wildlife species in Chapters 6, 7, 8. In particular, Measures 5-1 and 5-2 in Chapter 5 require monitoring of changes harvest success rates and adaptive management. Measure 6-2 requires a temporary no-hunting corridor where non-Aboriginal hunting of boreal caribou (tǫdzı) will be prohibited, reducing competition for Aboriginal harvesters from outside hunters with new access to the area.

In addition, the measure below requires a framework for harvest monitoring and reporting along with actions that can be implemented through adaptive management to address impacts from the Project on harvester success.

9.4.1. Harvest monitoring and reporting

This measure builds on commitments in the developer's Wildlife Management and Monitoring Plan for monitoring the Project-specific mortality of wildlife from harvesting associated with the Project (PR#192 pp35-37). The purpose of this measure is to protect the sustainable harvest of wildlife for Aboriginal people. It builds on recommendations from the Wek'èezhıı Renewable Resources Board (PR#215 p24).

The Review Board is confident that if GNWT-ENR fulfills the requirements of this measure to consider wildlife management actions and mitigations, in collaboration with the Tłıchǫ Government and Wek'èezhıı Renewable Resources Board, based in part on the results of the harvest monitoring required below, then it will act on monitoring results appropriately to manage wildlife and help ensure sustainable Aboriginal harvesting.

The TASR corridor working group required by Measure 14-3 provides additional Aboriginal involvement to that described in this measure.

Measure 9-1: Monitoring harvest and managing wildlife to maintain successful harvest

9-1, Part 1: Aboriginal harvest monitoring and reporting program

To mitigate impacts on Aboriginal harvesters and to effectively inform management of wildlife populations in the area of the Project, GNWT-ENR will work together with the Tłıchǵ Government and Wek'èezhì Renewable Resources Board to develop and implement an Aboriginal harvest monitoring and reporting program.

The harvest monitoring and reporting program will:

- a) focus on boreal caribou, barren-ground caribou and moose population trends in areas accessed by winter roads and trails from the Project;
- b) be community-based and involve collaboration between Tłıchǵ Government and the developer;
- c) involve Traditional Knowledge holders and harvesters in monitoring wildlife harvesting trends; and,
- d) report on wildlife harvesting numbers and trends from monitoring checkpoints and/or other harvest monitoring methods annually to the Tłıchǵ Government, Wek'èezhì Renewable Resources Board, GNWT-ENR and other wildlife co-management partners.

The developer will fund this harvest monitoring and reporting related to the project. The harvest monitoring will meet the requirements of Appendix C.

9-1, Part 2: Use monitoring to inform management

GNWT-ENR, in collaboration with the Tłıchǵ Government and Wek'èezhì Renewable Resources Board, will consider wildlife management actions and mitigations based on the results of the monitoring above and the information collected by the GNWT's existing Resident Hunting Reporting Program, to help ensure sustainable Aboriginal harvesting of wildlife and report on monitoring results and management actions in the annual reviews of the Wildlife Management and Monitoring Plan.

9.4.2. Cultural sensitivity in work camps and communities

The following measure is intended to address concerns related to having an independent contractor construct and maintain a major infrastructure project in the Tłıchǵ region for up to 29 years. The measure addresses issues of cultural sensitivity and awareness; it is linked with measure 5-3 (Employee awareness training and policies) in Section 5.5.3 of Chapter 5 (Community Well-being). Through this measure, the successful contractor will ensure a culturally sensitive place of employment with strict anti-harassment policies. The developer and contractor will strive to make this Project a healthy contributor to the well-being of Tłıchǵ citizens.

Measure 9-2: Cultural sensitivity in work camps and communities

To mitigate the Project's impact on Tłıchǵ culture and well-being of Tłıchǵ residents, the developer will require that the P3 operator has culturally appropriate and specific policies in accordance with those set out by the Tłıchǵ Government, GNWT departments and federal government. The P3 operator will have policies and programs in place for employee cultural orientation, developed by the Tłıchǵ Government, for all non-Tłıchǵ residents, including awareness of special cultural norms and practices.

9.4.3. Preserving culture for Whatì youth

The Review Board recognizes that the Tłıchǵ Government and Community Government of Whatì have existing programs designed to increase the amount of time youth are engaged in traditional activities on the land. The Review Board encourages the continuation of these programs, particularly those involving the participation of Elders. The Review Board offers the following suggestion to support the continuation these activities.

Suggestion 9-1: Preserving culture for Whatì youth

The Tłıchǵ Government and Community Government of Whatì are encouraged to continue to facilitate activities that pair youth and Elders together in culturally based activities, with preference given to on-the-land experiences and interactions.

The Review Board suggests that the Tłıchǵ Government track, over the long-term, the impact of the road on youth mobility and time spent on the land. Information from these studies may be useful to inform the frequency and extent of its youth cultural programming. This information should also be used by the Tłıchǵ Government when assessing the effectiveness of its actions to promote and conserve the Tłıchǵ way of life.

9.4.4. Including Traditional Knowledge from all relevant Aboriginal Groups

The Review Board recognizes that developer has funded a TK Study by the NSMA and will consider incorporating its findings during the regulatory phase. The following measure builds on that commitment, strengthens the language of “consider” to “will” and requires the consideration of all available TK about wildlife and harvesting, including YKDFN Traditional Knowledge. The Review Board acknowledges the efforts of the developer to incorporate Traditional Knowledge from the Tłıchǫ Government and encourages the developer to continue to do so.

Measure 9-3: Include Traditional Knowledge from all relevant groups

To mitigate impacts from the Project to culture and harvesting, the developer will incorporate Traditional Knowledge into the Project design and management from all Aboriginal groups that traditionally use the area. The developer will:

- a) support the collection of Traditional Knowledge related to traditional use, and compile it with information already acquired;
- b) thoroughly consider any Traditional Knowledge that is made available, and, where applicable, incorporate Traditional Knowledge into Project design, mitigations, monitoring and adaptive management; and,
- c) do this in a culturally-appropriate way that respects applicable Traditional Knowledge policies and protocols.

The GNWT-ENR and Wek’èezhì Land and Water Board will consider these findings in the *Wildlife Management and Monitoring Plan* and in permitting.

9.4.5. Retaining the Tłıchǫ language

The Tłıchǫ Government and the Community Government of Whatì have described their ongoing efforts in the Northwest Territories on language preservation and revitalization. The Review Board offers the following suggestion to the developer to use best practice initiatives to encourage Aboriginal language in the construction and maintenance camps.

Suggestion 9-2: Retaining the Tłıchǫ language

The developer should require the P3 operator to implement recent initiatives and best practices from the diamond mines for maintaining Aboriginal language use in the workplace, where applicable.

10. Species at risk and wildlife, other than caribou

10.1. Summary of findings

The Review Board finds that the Tłıchǫ All-Season Road (the Project) is likely to cause significant adverse impacts to bird species at risk and their habitat. The Review Board's reasons for this determination are summarized as follows:

- bird species at risk and their critical habitat, including nesting sites, are predicted to be present along the Project right-of-way and at quarry sites;
- adverse impacts to bird species at risk, including abandonment of nests, eggs and young from noise and disturbance, are predicted within the Project right-of-way and at quarries;
- impacts to species at risk are ongoing, because the road will exist indefinitely; and,
- any adverse impact to a federally or territorially listed wildlife species at risk or its critical habitat is a significant impact.

The Review Board recommends measures to protect bird species at risk to ensure predicted adverse impacts are mitigated so they are no longer significant. Impacts to wildlife other than caribou are not predicted to be significant provided mitigations in the Wildlife Management and Monitoring Plan (WMMP) and the developer's commitments to mitigate predicted impacts are implemented.

10.2. Evidence from parties and the developer

This section summarizes evidence from parties and the developer on wildlife and wildlife habitat submitted during the analytical phase and hearing phase of the environmental assessment. The section focuses on bird species at risk, bison and moose. It describes project activities and project components that have the potential to impact these species. Mitigations to reduce or eliminate these impacts suggested by parties, along with responses to these recommendations from the developer, are presented.

10.2.1. Impacts to bird species at risk

Potential impacts to bird species at risk from the project include habitat loss, habitat alteration, habitat fragmentation, disturbance and mortality. Specific project activities and impacts to bird species at risk include destruction of bird nesting sites during clearing of

the 60 metre (m) right-of-way for the Project and clearing at quarry sites during the construction phase. The developer predicted the potential for adverse impacts to nesting sites for bird species at risk along the right-of-way, at quarry stockpiles and on construction and maintenance camp structures (PR#110 p4-111 to p4-127).

Legal requirements to address impacts in Species at Risk Act

In its technical report, Environment and Climate Change Canada (ECCC) referenced its responsibilities as a Regulatory Authority under the federal *Species at Risk Act* (SARA) Subsection 79(2). ECCC pointed out that this subsection of the federal SARA requires that adverse impacts from the Project on a listed species or its critical habitat must be identified, and measures must be taken to avoid or lessen those impacts. In addition, the federal SARA requires monitoring of those impacts (PR#218 p15).

In its draft WMMP and during the public hearing, the developer provided a list of species of concern that may be affected by the Project (PR#274 p102, PR#192 pp10-11). Eight species of concern identified in the effects assessment for the Project are bird species at risk that are listed under the federal SARA.

At the November 16, 2017 public hearing in Whatì, ECCC advised the Review Board that the bank swallow had just been listed under Schedule 1 of the federal SARA earlier that same month (PR#274 p244). ECCC noted that the listing of the bank swallow to Schedule 1 of the federal SARA further strengthens the rationale for ECCC's recommendations (PR#279 p3).

During the November 16, 2017, public hearing in Whatì, Review Board counsel questioned ECCC on whether implementation of its technical report recommendations is required for the Review Board to meet its federal SARA obligations. ECCC affirmed that the recommendations from its technical report was advice directed to the Review Board to help the Review Board meet the Review Board's legal obligations (PR# 274 p252).

Baseline information gaps for bird species at risk along road route

The Review Board's *Terms of Reference* required the developer to identifying whether a species is present in the Project area as part of the effects assessment methodology (PR#69 p18). In its *Adequacy Statement Response*, the developer described existing conditions (base case) for bird species at risk based on habitat types (PR#110 PDF pp142-149). Field surveys to determine species presence were not done (PR#140 PDF p12). During the analytical phase of this environmental assessment, the developer and ECCC held multiple

meetings to discuss the merits of a habitat suitability methodology in determining the presence of bird species at risk along the Project route as a replacement for collecting information directly from field surveys (PR#132, PR#158, PR#161).

In its habitat suitability analysis, the developer determined that the Project would not lead to significant adverse impacts to bird species at risk (PR#110 PDF pp229-237). In its response to the ECCC request for baseline information for bird species at risk to verify that prediction, the developer argued that an effects assessment can be completed without baseline data collection using habitat suitability indices instead (PR#175 pp1-4). ECCC and the developer discussed the use of surrogate data to be used in place of field-based programs, but both parties noted challenges with the applicability of this method (PR#218 p17). By applying conservatism in its effects assessment, the developer believes its predictions have not been underestimated and is confident in its conclusions using the habitat suitability methods (PR#17 p3).

ECCC stated in its technical report that the habitat suitability indices used by the developer, in the absence of baseline field data, do not give it confidence in the developer's effects assessment conclusions for impacts from the project to bird species at risk (PR# 218 p16). ECCC's rationale is that habitat suitability indices based on literature and expert opinion are less reliable than empirical field-based data collection. In its technical report and during the public hearing, ECCC recommended that the developer complete baseline monitoring for bird species at risk prior to construction to inform and add sufficient confidence to its impact assessment. The information is also required to verify the effectiveness of proposed mitigation measures designed to avoid or lessen the potential impacts (PR#218 p17, PR#274 p243). ECCC's reasoning for this recommendation is that (PR#218 p17, PR#274 p243):

- the new all-season road is permanent and the adverse impacts to species at risk are irreversible;
- there are knowledge gaps in presence and abundance for species at risk in the Project area which are described in the SARA recovery strategy documents including for olive-sided fly catcher (Figure 10-1) (PR#41), common nighthawk (Figure 10-2) (PR#39), rusty blackbird (PR#35) and little brown myotis (a bat species) (PR#340);
- baseline information can be used to verify that mitigations are effective; and,
- baseline monitoring for species at risk can be accomplished prior to road construction in the spring of 2018 without altering the construction schedule.

In its technical report, ECCC made the following recommendation to address irreversible and permanent impacts to bird species at risk, address knowledge gaps, and ensure proposed mitigations can be verified (PR#281 p19; recommendation 4.2 1-1):

That in the absence of surrogate data, the Proponent complete baseline monitoring of avian species at risk prior to Project construction to inform and add sufficient confidence to the avian species at risk impact assessment.



Figure 10-1. Olive-sided fly catcher, *Species at Risk Act Recovery Strategy*, 2016.
(Source: PR#41)

In its response to the ECCC technical report, the developer noted that its effects assessment assumed that each of the species at risk were present in the absence of information to suggest otherwise. In its opinion, the effects assessment in its *Adequacy Statement Response* is therefore conservative, since baseline field studies may have indicated that some species at risk were in fact not present. As a project design mitigation, the developer noted that impacts to nesting sites from clearing will be reduced by integrating most of the existing cleared trail into the design. In its response to technical reports, the developer pointed out other mitigation examples including “favoring vegetation clearing outside of the migratory bird nesting season and completing pre-clearing nest sweeps if this is not feasible” (PR#239 PDF pp18-19).

The developer concluded that while baseline studies would have confirmed the presence of species at risk and migratory birds in the project area, in its view, its effects assessment is precautionary because it assumes the presence of these species. Project impacts may therefore have been over-estimated, in the developer’s view, if some species at risk were not identified during field surveys. The developer remains confident that the Project will

not cause significant adverse impacts to bird species at risk or migratory birds once proposed mitigation is implemented (PR#239 PDF pp18-19).

During the public hearing in Whatı, ECCC reported that they met with the developer on November 3, 2017 to discuss their difference of opinion on the need for additional baseline data collection for bird species at risk. A meeting report was submitted to the public record (PR#274 p244, PR#260). ECCC stated at the hearing that while the discussion at the meeting was beneficial, the developer did not commit to ECCC's technical report recommendation for baseline data collection described above. In ECCC's view, the issue therefore remains unresolved (PR#274 p244).

During the November 16, 2017 public hearing, Review Board counsel asked ECCC whether there was a realistic chance of adverse effects to species at risk listed under the federal SARA if the developer continued to make no efforts to collect field-based information. ECCC responded that in the scenario described, there is no doubt that the Project as proposed by the developer would result in adverse effects to listed species at risk and reiterated its legal responsibilities under section 79 of the federal SARA (PR#274 pp254-255).



Figure 10-2. Common nighthawk, from *Species at Risk Act* Recovery Strategy, 2016.
(Source: PR#39)

In its December 15, 2017 closing argument, ECCC re-stated its reasoning for why baseline information is required for bird species at risk and that the issue remains outstanding since the developer has not committed to its recommendation, 4.2.1-1, quoted above (PR#279 p2).

In its closing argument, the developer maintained that impacts from the Project to bird species at risk are not significant. In addition, the developer stated that baseline surveys prior to construction will not reduce adverse impacts to those species (PR#285 pp17-18). In the developer's opinion, it has met the requirements of section 79(2) of the federal SARA that the Review Board must fulfill by:

- identifying the adverse effects of the Project on the listed wildlife species and their critical habitat (ASR section 4.3 [PR#110], response to ECCC information request#10 [PR#135] and WMMP section 3 [PR#192]);
- taking measures to avoid or lessen those effects (ASR section 4.3 and WMMP section 4.0); and,
- monitoring those effects (WMMP Table 5 and section 5) (PR#285 p18).

In its closing argument, the developer re-states key mitigation to reduce impacts to bird species at risk and nesting sites which in its view satisfies the ECCC recommendation 4.2.2-1, including (PR#285 p18):

- surveys for avian species at risk will be completed weekly at least, which includes the quarries and borrow sources; and,
- the frequency of monitoring would increase if the Bird Nest Monitoring (WMMP section 5.1.4) indicates a potential for nesting.

The developer further stated that, if unplanned vegetation clearing is required during the migratory bird nesting season, it will report any nests to ECCC and protect the nests with a buffer zone. The WMMP will be also updated to include ECCC in all species at risk incident reporting. In the opinion of the developer, these specific mitigation actions satisfy ECCC's recommendation 4.2.2-1 (PR#285 p18).

Impacts to nesting bird species at risk at quarries during construction and operations phase

In its technical report, ECCC stated that quarry activities during the construction and operations phase of the road may harm bird species at risk. ECCC specifically advised that bank swallows, nighthawks and other migratory birds are known to nest on stockpiles in quarries (PR#218 p20). ECCC provided evidence that noise and other disturbances at quarries leads to a high risk of nest abandonment for bird species at risk. In response to information requests, the developer pointed out that it has developed mitigations together with ECCC to reduce impacts to nesting birds at quarries, particularly bank swallows (Figure 10-3) and nighthawks, and will apply these mitigations during the construction and operations phases (PR#128 pp16-19).

In its draft WMMP, the developer described specific monitoring actions to detect bird nesting activity at quarries and to mitigate impacts to active nests (PR#192 pp74-78). The monitoring described in this section of the WMMP will be used during the construction phase of the Project for the right-of-way and for both construction and operation of quarries. Monitoring is proposed at quarry stockpiles with mitigation to prevent bird species at risk from using the quarry stockpiles as nesting habitat and to monitor the highway maintenance camp for nesting sites (PR#192 pp74-78). Appendix F of the WMMP includes a brochure specific to mitigating adverse impacts to bank swallows that may nest in quarry stockpiles (PR#192 p115). The WMMP also describes a camp surveillance monitoring program at quarry sites during the nesting season to detect early nesting activity on project infrastructure to avoid conflicts with nesting birds. Systematic monitoring described in the WMMP would be done by environmental monitors and if monitors observe bird species at risk they “...will contact ENR to determine an appropriate course of action” (PR#192 pp31, 74-79).

In its technical report, ECCC agreed with many of the developer’s mitigation techniques to minimize impacts to nesting birds, but nevertheless identified outstanding concerns with the proposed mitigation and monitoring of nesting sites proposed by the developer (PR#218 pp19-23).

Despite mitigations proposed by the developer in its response to technical reports, ECCC is still concerned with disturbance to bird species at risk at quarries and borrow sources along the Project (PR#274 p246). During the public hearing, ECCC stated that it is specifically concerned with nest abandonment and destruction of nests and eggs for both

bank swallows and the common nighthawk, both of which are migratory birds and species at risk (PR#274 p244). In addition, ECCC observed that the wording of mitigation actions in the WMMP lacked the clarity and detail necessary to adequately address residual impacts. In the opinion of ECCC, clear wording is particularly important for mitigation described in the WMMP so that the staff and the contractors who are on the ground on site can implement the mitigations effectively and with certainty (PR#274 pp246-247).



Figure 10-3: Bank swallow colony at Northwest Territories quarry along Hwy 3
(Source: ECCC hearing presentation, PR#246 p7)

The developer submitted answers to ECCC recommendations to mitigate impacts to bird species at risk at quarries and camps in its response to technical reports (PR#239). The developer referred to mitigation described in its WMMP that, in its view, addresses the recommendations from ECCC (PR#192; PR#239 pp19-23). During the public hearing in Whatı, ECCC provided examples of ambiguous or unclear wording for mitigation related to the timing of pre-clearing bird surveys, timing of monitoring for bird nesting on camp structures, and reporting (PR#274 p247).

The developer contested the recommendation by ECCC to compensate for quarry stockpiles that are colonized by migratory birds and species at risk (for example, bank swallow) but are needed for ongoing operations. In its response to technical reports, the developer stated it will not commit to compensate or offset loss of bird species at risk nesting habitat in Project quarries that have been colonized. If alternative nesting sites are considered, the developer prefers that ECCC provide design criteria for artificial nesting colony habitat and promote the use of these structures through a Species at Risk Action Plan. The developer does not support the concept of offsetting in this situation when nesting habitat was originally created by the quarry itself (PR#239 PDF p21-22).

In its closing argument, ECCC pointed out that prohibiting the destruction of individuals and residences of bank swallow colonies applies on federal and non-federal lands and that “...colonized stockpiles may be considered as critical habitat if they are required for survival and recovery of the species” (PR#279 p3). ECCC acknowledged that a recovery strategy for the bank swallow will determine if human constructed quarry stockpiles are critical habitat or if there is sufficient natural habitat. ECCC further notes that its recommendations for baseline information along the road and at quarry sites could assist in determining critical habitat for bank swallow. ECCC restated its outstanding recommendations for monitoring and mitigation of birds at quarry sites because the developer has not committed to them. These outstanding recommendations relate to:

- monitoring at quarry sites during the nesting period (recommendation 4.2.2-1);
- consider creating suitable habitat in inactive areas prior to breeding season (recommendation 4.2.2-4); and,
- providing an alternate nesting site the following year if a recently used quarry stockpile needs to be excavated after it has been colonized and the birds have left (recommendation 4.2.2-5) (PR#279 p3-4).

In its closing argument, the developer re-stated its position that it does not support pre-development creation of bank swallow nesting habitat, or that compensatory habitat should be created if a colonized quarry or borrow source is used after the birds have left (PR#285 p18). The developer’s reasoning is that it cannot ensure that created habitat with slopes of at least 70 degrees will be stable. This raises safety concerns for a bird nesting colony because if the slopes settled and destroyed the nests, the developer would be contravening *Migratory Birds Convention Act* and the *Species at Risk Act*. The developer instead commits to avoiding the creation of habitat in quarries and borrow sources in the first place and managing issues as they arise, in consultation with ECCC (PR#285 p18).

ECCC maintained in its closing argument that the mitigations in the developer's draft WMMP need to be revised for clarity and consistency to protect migratory birds, their nests and their eggs. Specific examples relate to buffer zones from nesting sites, monitoring the effectiveness of mitigation and revising as necessary, and reporting of nesting on infrastructure. ECCC does not have certainty that its recommended mitigations will be incorporated into the final WMMP because the finalized WMMP has been deferred to the regulatory phase (PR#279 p4). ECCC contended that the following recommendations to mitigate impacts to bird species at risk and migratory birds have not been addressed by the developer, remain outstanding and should be included in the next revision of the WMMP. Their recommendations are summarized as follows:

- non-intrusive pre-clearing surveys (recommendation 4.2.3-1);
- buffer zones if nests with eggs or young (recommendation 4.2.3-2); and
- reporting migratory bird and bird species at risk incidents (recommendation 4.2.3-3) (PR#279 p4-5).

10.2.2. Impacts to bison and moose

In its *Adequacy Statement Response*, the developer concluded that despite some additional moose habitat fragmentation caused by the Project right-of-way, borrow sites and maintenance camps, moderate and highly suitable moose habitat will remain abundant and connected after construction (PR#110 p4-184). With respect to direct mortality, the developer acknowledges that vehicle access will be improved by the Project, which will result in the death of moose from harvesters (PR#110 p4-187). In the developer's opinion, changes to moose survival from harvesting because of improved access is predicted to be negligible because the Project right-of-way follows an existing linear feature that is currently used by hunters to harvest moose (PR#110 p4-187).

The September 2017 draft WMMP describes mitigation to reduce impacts to moose from sensory disturbance and direct mortality during Project construction (PR#192 pp22-25). During the operations phase, mitigations for moose in the WMMP focus on signs and speed limits to alert drivers to the risk of collisions. With respect to mitigations for increased access and harvesting, mitigation is limited to enforcing the Northwest Territories hunting regulations, "...which are in place to ensure that wildlife is conserved for future generations and that hunting is done safely" (PR#192 p26). During the public hearing in Whatı, the developer outlined programs in the WMMP that can contribute to information on moose harvesting (PR#274 p80). The developer stated that in addition to the regular North Slave

region moose population surveys, it is proposing more focused surveys along the Project road corridor. In its WMMP, the developer commits to one moose survey prior to construction, one during the road construction phase, and two surveys during the five-year operations phase. The purpose of these surveys is to identify how the distribution of moose and bison along the road corridor is changing through construction and into early operations of the project (PR#274 p80).

During the November 16, 2017 hearings in Whatı, the developer advised that there is currently evidence from both ground and aerial surveys of bison using the old winter road corridor that the Project will follow (PR#274 p108). The developer stated that bison harvesting is currently closed for the Mackenzie bison herd due to population declines after the 2012 anthrax outbreak (PR#80 p4; PR#274 p109). The developer submitted a draft Mackenzie Bison Management Plan dated July 2016 (PR#80). The goal of the Bison Management Plan is “...to manage the Mackenzie bison population to sustain its long-term viability while providing for social, economic and cultural connections to people”. Specific Bison Management Plan objectives related to the Project include managing a sustainable bison harvest and reducing bison-human conflicts on highways (PR#80 piii).

During the public hearings in Whatı, the Tłıchǵ Government noted that the Wek’èezhì Renewable Resources Board and the North Slave Metis Alliance have asked for longer dates for the sensitive seasons for calving for bison from March 1st to July 15th. The purpose in extending the sensitive period is so that mitigations to protect bison remain in force longer to protect bison cows and calves. The Tłıchǵ Government supports this and recognized that there are both moose and bison in the area (PR#274 p125). Tłıchǵ Government stated that the developer should apply adaptive management to modify mitigations when changes in the effectiveness of mitigation is observed (PR#274 p125).

In its response to technical reports, the developer agreed to expanded monitoring of boreal caribou, moose and bison and described the proposed monitoring for these species in its WMMP (PR#239 p48; PR#192 p33). The wildlife monitoring proposed in the WMMP will allow the tracking of direct and indirect loss of wildlife habitat, potential range expansion of bison, and increased wildlife mortality due to increased harvest pressure and traffic-related mortality along the highway.

The developer responded to technical report recommendations to protect bison during road construction, by noting that bison were regularly near work activities and maintenance areas during the construction of the Deh Cho bridge (Figure 10-4). The

developer reported that bison, in that instance, did not appear troubled by the construction activity around them. The developer explained that for this reason, it will not deter bison from construction activities along the Project (PR#239 PDF p60). The developer stated that as standard mitigation to minimize conflict, wildlife will always have the right-of-way on all roads during construction and work will stop if there is a risk of injury to bison or safety of workers. The developer noted that its WMMP commits to adaptive management where environmental monitors will be present at the work sites and reported incidents will trigger a review of mitigation actions (PR#239 PDF p61).



Figure 10-4. Bison at Deh Cho bridge during construction, 2011.

(Source: PR#239 p61)

10.2.3. ENR determines WMMP required under the *Wildlife Act*

In a letter dated October 16, 2017, the Minister of GNWT Department of Environment and Natural Resources (GNWT-ENR), advised the Minister of GNWT-INF (the lead department of the developer) that it had reviewed the potential impacts of the Project to wildlife and wildlife habitat based on information submitted to the public registry (PR#225). In its letter, the Minister of GNWT-ENR determined that, in accordance with the *Wildlife Act*, the

Project is likely to satisfy the criteria requiring a Wildlife Management and Monitoring Plan. The Minister of ENR's reasons for this determination were that the Project is likely to satisfy criteria (a), (b) and (c) of section 95(1) of the *Wildlife Act* which states (PR#225 p1):

A developer or other person or body may be required, in accordance with the regulations, to prepare a wildlife management and monitoring plan for approval by the Minister, and to adhere to the approved plan, if the Minister is satisfied that a development proposed development, or other activity is likely to:

- (a) result in a significant disturbance to big game or other prescribed wildlife;*
- (b) substantially alter, damage or destroy habitat;*
- (c) pose a threat of serious harm to wildlife or habitat; or*
- (d) significantly contribute to cumulative impacts on a large number of big game or other prescribed wildlife, or on habitat¹*

Because of this determination, the Minister of GNWT-ENR requires the developer to submit a WMMP for the GNWT-ENR Minister's approval at least 60 calendar days prior to construction of the Project. In its letter the GNWT-ENR Minister states that this time is necessary to allow sufficient opportunity for a public review, and the approval process (PR#225 p2).

The GNWT-ENR's letter stated that in accordance with section 95(2) of the *Wildlife Act*, the WMMP submitted to GNWT-ENR for approval must include (PR#225 p2):

- (a) a description of potential disturbance to big game and other wildlife included in the regulations, potential harm to wildlife and potential impacts on habitat;*
- (b) a description of measures to be implemented for the mitigation of potential impacts;*
- (c) the process for monitoring impacts and assessin⁹ whether mitigative measures are effective; and*
- (d) other requirements that are outlined in the regulations.*

¹ Wildlife General Regulations, Schedule A, November 28, 2014 p12. "Big game" in the Regulations includes buffalo and bison, coyote and wolf, cougar, wolverine, mountain goat, Dall's sheep, muskox, bear, moose, caribou, deer, and, elk. "Prescribed wildlife" in the regulations includes upland game birds, and, migratory game birds, as defined in the Migratory Birds Convention Act, 1994 (Canada).

The letter advises the developer that the WMMP it submits to GNWT-ENR for approval will address the developer commitments to mitigate impacts as well as any wildlife-related measures directed towards the developer that may be contained in the Review Board's Report of Environmental Assessment (PR#225 p2).

GNWT-ENR further advised the developer in its letter that it will post the revised WMMP for public review for 30 calendar days, and based on the outcome of that review, GNWT-ENR may require further revisions to the WMMP. Finally, GNWT-ENR advised the developer that once it receives the final WMMP, it will provide the developer a written notice of approval, conditional approval or rejection of the WMMP within 30 calendar days (PR#225 p2).

In its closing argument, the developer stated that it has committed to completing the WMMP for GNWT-ENR approval along with a review process. The closing argument also stated that developer will monitor and manage impacts to wildlife and wildlife habitat associated with the Project through its mandate within the Department of Environment and Natural Resources (PR#285 p7-8). The developer also committed to considering opportunities for collaboration and data sharing with the Fortune Minerals Ltd.'s NICO Project in the next revision of the WMMP (PR#285 pp11-12).

10.3. Review Board analysis and conclusions

The Review Board finds that the Tłıchǫ All-season Road is likely to cause significant adverse impacts to bird species at risk. The Review Board's reasons for this determination are summarized as follows:

- bird species at risk and their critical habitat, including nesting sites, are predicted to potentially be present along the Project right-of-way and at quarry sites;
- adverse impacts to bird species at risk, including abandonment of nests, eggs and young from noise and disturbance, are predicted within the Project right-of-way and at quarries;
- impacts to species at risk are irreversible and permanent because the road will exist indefinitely; and,
- any adverse impact to a federally or territorially listed wildlife species at risk or its critical habitat is a significant impact.

The Review Board has recommended measures to ensure predicted adverse impacts are mitigated so they are no longer significant. Impacts to wildlife other than caribou are not

predicted to be significant provided mitigations in the WMMP and the developer's commitments are implemented.

10.3.1. Bird species at risk and nesting sites are predicted to be present

The Review Board accepts that both the developer and ECCC predict the potential for the presence of bird species at risk within the 60 m right-of-way of the Project and within areas cleared for quarries and quarry access.

In the opinion of the Review Board, the lack of baseline information for bird species at risk along the Project results in uncertainties related to the predicted impacts on bird species at risk from clearing the road right-of-way, clearing of quarries and sensory disturbance to nesting. The Review Board agrees with ECCC that a lack of baseline data also creates uncertainties in the type of mitigation to implement and whether that mitigation will be effective. In the Review Board's opinion, the developer's impact predictions and views on significance are questionable as it has not determined presence or absence of bird species at risk and has therefore not met its burden of proof. In the opinion of the Review Board, the developer's desktop habitat baseline studies to predict wildlife presence are not an acceptable replacement for pre-disturbance field surveys for species at risk.

The Review Board agrees with ECCC that there are important knowledge gaps related to the distribution and habitat associations for breeding birds, including bird species at risk in the Northwest Territories. The Review Board heard that many bird species are at the northern extent of their breeding range in the Project area and few studies have been conducted over this large area to document that range.

Vegetation shifts resulting from a changing climate may alter the currently known range of bird species at risk in the Project area. In the Board's view, these uncertainties around climate change are a very good reason for conducting field-based surveys prior to construction rather than relying on desk-top studies. The Review Board strongly supports field-based baseline surveys, particularly for species at risk.

The Review Board agrees with the recommendation from ECCC to conduct an industry standard, pre-construction baseline survey for bird species at risk. The Board understands that this survey can be completed by the developer prior to construction in the spring and summer of 2018 with no project delay as construction is proposed to begin in the fall of 2018 (PR#110 Appendix B PDF p461).

10.3.2. Adverse impacts to nesting sites

The Review Board heard evidence from parties and the developer that road right-of-way and quarry clearing may destroy or disturb nesting sites for bird species at risk during the construction phase of the Project. The Review Board also heard that ongoing operations along the road and at quarry sites can potentially disturb nesting sites throughout the operations phase (PR#218 p20).

In the opinion of the Review Board, clearing a 97 km long, 60 metre right-of-way, as well as clearing quarries, is a significant impact on habitat for bird species at risk. The Review Board does not accept the developer's reasoning that following the existing winter trail is an effective mitigation measure for the required clearing disturbance. The old existing right-of-way clearing is a narrow, unmaintained trail of about five metres in width, while the clearing required for the right-of-way for the Project (60 metres) is many times that amount.

The developer's spatial boundary for predicting impacts and determining significance from the Project to bird species at risk is a 2.5 km buffer around the Project footprint. The total area of disturbance to bird species at risk from the Tłıchǫ All-season road is therefore 55,572 ha or 555.7 km² (PR#110 p4-7). In the opinion of the Review Board, this amount of disturbance and displacement to bird species that are listed as threatened under the federal SARA is a significant impact, particularly to bird nesting sites.

10.3.3. Impacts are irreversible and permanent

The Review Board accepts that the Project right of way is a permanent feature of the Project and will permanently remove habitat for bird species at risk. Since the road is gravel, some quarry sites and associated access roads will also leave a permanent footprint on the landscape.

An important criterion in determining the significance of impacts from the Project to species at risk is whether those impacts are reversible or permanent. The developer acknowledges in its effects assessment that potential impacts to bird species at risk from clearing are not reversible because the Project footprint will be in place indefinitely. The Review Board agrees with the developer that impacts to bird species at risk from clearing of the road right of way and clearing at quarries cannot be reversed because the road is permanent.

Once the Project is constructed, the habitat cleared for the Project is lost to birds forever. In the opinion of the Review Board, the potential impacts from the Tłıchǫ All-season Road to bird species at risk are significant because they cannot be reversed, and the habitat cannot be replaced.

10.3.4. Any adverse impact to a species at risk is a significant impact

The Review Board is concerned that the developer is not giving sufficient weight to the importance of wildlife, including bird species at risk. The Review Board recognizes that the developer has the mandate to maintain the road system in the Northwest Territories. However, the Review Board is aware that the territorial government also has a legal mandate to protect species at risk and other wildlife through its Department of Environment and Natural Resources. While the Review Board acknowledges that this inherent conflict requires a compromise within the territorial government, it is disappointed in the developer's apparent disregard for the threats to bird species at risk. The Review Board refers to the preamble to the Northwest Territories Species at Risk Act, which states that "*...the conservation of species at risk is part of a larger commitment to maintain the biological diversity of the Northwest Territories, and all residents have a shared responsibility for the protection and conservation of species*".¹ In the opinion of the Review Board, this promise to the people of the Northwest Territories needs to be upheld.

The Review Board is concerned that the fate of some bird species at risk may be extirpation if nothing is done to reverse the declining population trend for those species. In the opinion of the Review Board, it is important that a higher level of care is taken to protect bird species at risk. For these reasons, the Review Board views any potentially adverse impact from the Project to a bird species at risk as a significant impact.

10.3.5. GNWT-ENR requires the developer prepare a WMMP

The Review Board acknowledges that, in the view of GNWT-ENR, the Project meets the requirements for a WMMP. Further, the Review Board is aware that GNWT-ENR requires the developer of the Project to submit the WMMP for approval by GNWT-ENR (PR#225). The Review Board agrees with the GNWT-ENR conclusions that the Project requires a WMMP because the Project is likely to:

¹ [NWT Species at Risk Act](#).

- a) result in a significant disturbance to big game or other prescribed wildlife;
- b) substantially alter, damage or destroy habitat; and,
- c) pose a threat of serious harm to wildlife or habitat.

The Review Board understands that GNWT-ENR will ensure that developer's commitments to mitigate impacts to wildlife and any wildlife-related measures in this Report of EA will be contained within the WMMP. The Review Board acknowledges the public review and approval process for the WMMP as administered by GNWT-ENR.

10.3.6. Conclusions

Based on the evidence on the public record, the Review Board concludes that the Tłıchǫ All-season Road will likely cause significant adverse impacts to bird species at risk. The Review Board recognizes and supports the developer's commitments to reduce impacts to bird species at risk outlined in its Commitments Table (Appendix D) and in *Wildlife Management and Monitoring Plan*.

In the opinion of the Review Board, the predicted impacts are significant because of size of the right-of-way footprint to be cleared, the on-going impacts at quarry sites and the permanent and irreversible nature of the impacts.

The Review Board agrees with the developer that baseline monitoring needs to be linked with mitigation to avoid and reduce adverse impacts. The Review Board has therefore set out measures that build on existing developer commitments for baseline surveys, mitigation and monitoring of Project impacts. These measures are intended to prevent or reduce adverse impacts to bird species at risk from the Project so that they are no longer significant and to ensure that the Review Board meets its obligations under s. 79 of the federal *Species at Risk Act*.

10.4. Measures and suggestions

The Review Board finds that without the following measures, construction and operation of the Project is likely to cause significant adverse impacts to bird species at risk. These measures build on the developer's commitments to mitigate impacts to bird species at risk and strengthen the WMMP.

10.4.1. Mitigating impacts to bird species at risk and migratory birds

This measure requires a survey prior to construction, methods for monitoring nesting sites and ways of reducing conflicts with bird species at risk at quarries. This measure is intended to enable the developer to:

- mitigate impacts to bird species at risk and migratory birds;
- address knowledge gaps on bird species at risk and migratory birds;
- ensure confidence that proposed mitigations are relevant for species at risk and migratory birds that are likely present in the Project area; and,
- verify the effectiveness of mitigations.

Measure 10-1: Bird species at risk and migratory bird data, mitigation, monitoring and adaptive management

10-1, Part 1: Pre-construction bird surveys

The developer will conduct pre-construction field surveys of bird species at risk and migratory birds prior to disturbing potential habitat, including any clearing of the right-of way, quarry sites, camps, access routes, or other project infrastructure. The developer will consult with Environment and Climate Change Canada (ECCC) and GNWT-ENR about methods and timing for a field survey(s). The developer will conduct the survey using methods derived from peer-reviewed scientific literature and best practices.

10-1, Part 2: Mitigation

The developer will use the results from surveys in 10-1 Part 1 to inform mitigations. The mitigations will help protect bird species at risk and migratory birds and ensure habitats and nesting sites are protected. For all project-related infrastructure and activities during the construction and operations phase, the developer will:

- a) use the information from the survey(s) to inform and adjust proposed mitigations;
- b) implement mitigations as described in its commitments table and its *Wildlife Management and Monitoring Plan*;
- c) implement additional mitigations to eliminate or reduce impacts, if warranted based on surveys;

- d) halt all disruptive activities, in consultation with ECCC, in an area if nests or young are discovered; and;
- e) determine and implement, in consultation with ECCC and GNWT-ENR, appropriate species-specific buffer zones or setbacks, until the young have naturally and permanently left the vicinity of the nest taking into consideration the intensity of the disturbance and the surrounding habitat.

10-1, Part 3: Monitoring and reporting

The developer will:

- a) implement monitoring in section 5 and Appendix C of the *Wildlife Management and Monitoring Plan* and Chapter 14 of this report;
- b) monitor nests using non-intrusive search methods at quarry sites immediately prior to commencing any disruptive activities during the nesting period; and,
- c) report weekly and annually as described in section 6 of the *Wildlife Management and Monitoring Plan*, including findings of baseline surveys in 10-1 Part 1.

Monitoring will meet the requirement of Appendix C of this report.

10-1, Part 4: Adaptive management

The developer will implement adaptive management as described in section 6 of the *Wildlife Management and Monitoring Plan* and following guidance in Appendix B of this report.

10.4.2. Wildlife Management and Monitoring Plan

The developer committed to finalize its WMMP during the regulatory phase, and to implement the WMMP during the construction of the road and for at least 5 years of road operations. Since mitigations to reduce impacts to wildlife are primarily contained in the WMMP, the Review Board concludes that a measure for its approval and implementation is necessary. This measure applies to all wildlife. This requirement is necessary particularly given that the P3 operator of the road is unknown at the time of writing this Report and may not have experience with project development and operation in the Mackenzie Valley.

Measure 10-2: Wildlife Management and Monitoring Plan approval, annual review and reporting

10-2, Part 1: Wildlife Management and Monitoring Plan update prior to permitting

The developer will update its Wildlife Management and Monitoring Plan prior to permitting to include the developer's commitments and Review Board's measures from this Report of Environmental Assessment.

Prior to permitting, the developer will, where appropriate, include Traditional Knowledge from all Aboriginal groups that harvest in the area on ways to mitigate, monitor and adaptively manage impacts from the Project to wildlife.

10-2, Part 2: Wildlife Management and Monitoring Plan update during permitting

During permitting, the developer will involve Environment and Climate Change Canada, GNWT-ENR, Wek'èezhì Renewable Resources Board, Tłchq Government and Aboriginal groups that harvest in the area, in developing an updated *Wildlife Management and Monitoring Plan*. Monitoring will meet the requirements of Appendix C of this report.

When updating the *Wildlife Management and Monitoring Plan*, the developer will, where appropriate, include Traditional Knowledge from all Aboriginal groups that harvest in the area on ways to mitigate, monitor, and adaptively manage impacts from the Project to wildlife. The *Wildlife Management and Monitoring Plan* will be updated based on the results of available surveys and monitoring, such as caribou, bird (Measure 10-1), and moose surveys.

The *Wildlife Management and Monitoring Plan* will require that construction activities, including clearing, consider sensitive wildlife periods, for example nesting periods of migratory birds.

10-2, Part 3: Annual review of the Wildlife Management and Monitoring Plan during construction and operations

GNWT-ENR will require annual public review of the *Wildlife Management and Monitoring Plan* and make publicly viewable:

- recommendations from parties;
- responses on how recommendations were incorporated; and,

- reasons for recommendations which were not incorporated.

10.4.3. Nesting habitat in quarries

The Board provides the following suggestion to consult with Environment and Climate Change Canada to lessen impacts for bird species at risk that colonize stockpiles. The suggestion supports a recommendation from ECCC.

Suggestion 10-1: Create suitable nesting in inactive area of quarry

To mitigate impacts to bird species at risk that may nest in quarry stockpiles created for the Project, the developer should consult Environment and Climate Change Canada on suitable mitigations, such as any applicable guidance described in the Wildlife Management and Monitoring Plan and *Best Management Practices for the Protection, Creation and Maintenance of Bank Swallow Habitat in Ontario*.¹

¹ Ontario Ministry of Natural Resources and Forestry. *Best Management Practices for the Protection, Creation and Maintenance of Bank Swallow Habitat in Ontario*. Queen's Printer for Ontario, 2017.

11. Permafrost

11.1. Summary of findings

The Review Board finds that there is insufficient mitigation to effectively mitigate and manage permafrost issues. The Review Board's reasons for the above determinations are summarized as follows:

- permafrost considerations are critical to safely and effectively constructing roads in the north;
- climate change is anticipated to exacerbate permafrost thaw in the future; and,
- the Project is in an area of discontinuous permafrost and yet developer has not provided any site-specific permafrost data for the road corridor.

The consequence of potential impacts is high because impacts to permafrost can lead to both impacts on the surrounding environment (in terms of water quality and increased granular resources demands) and road infrastructure problems that can affect the safety of road users.

11.2. Evidence from developer and parties

The developer initially looked at several different routing options for the road to Whati (PR#7 p4-3). The final route that was assessed in this Environmental Assessment (EA) was selected in part because it is expected to cross less discontinuous permafrost and therefore have lower maintenance costs, compared to alternatives (PR#7 p4-8).

In its *Project Description Report* (PDR), the developer stated that the Project crosses extensive discontinuous permafrost, where 50-90% of the area may have permafrost (PR#7 p6-5). Permafrost is particularly anticipated where there are fine-textured sediments (PR#7 p6-5). The PDR also pointed out that climate change can cause permafrost thaw which may affect the road infrastructure, leading to loss of habitat, erosion, or structural failure. In addition, construction and operation of the road can cause permafrost thaw (PR#7 p8-6). The developer stated it will do geotechnical and thermal analyses during final Project design to identify permafrost areas (PR#7 p6-5).

The developer proposed the following mitigations in its PDR related to permafrost (PR#7 p8-7):

- ice-rich permafrost will be avoided if possible;
- geotextiles will be used in sensitive areas;
- ground disturbance will be minimized to the existing alignment;
- sufficient cross drainage will be installed;
- erosion and drainage patterns will be monitored and more cross drainage installed if necessary;
- disturbance to the active layer will be minimized;
- areas at higher risk of permafrost thaw (like forest fire areas) will be monitored;
- steep grades that can lead to permafrost slumps will be avoided where possible; and,
- cleared brush will be used in ditches for erosion control and to insulate permafrost.

Following the implementation of the above mitigations, the developer predicted that there may be some residual impacts to permafrost, such as from deepening the active layer (above permafrost) and thawing of ground ice (PR#7 p8-9).

Natural Resources Canada (NRCan) submitted information requests about the developer's intentions and construction methods in permafrost areas, (PR#169). Permafrost was mentioned in passing at the technical sessions (PR#159; PR#162). NRCan was the only party that raised permafrost as an issue in its technical report, indicating it believes more work may be required (PR#222). NRCan made recommendations in its technical report, summarized below (PR#222):

- complete detailed geotechnical investigations for the whole roadway;
- monitor embankment and thermal and hydrologic regimes;
- complete further investigations for permafrost and subsurface conditions;
- only remove permafrost/ice after confirming extent of material;
- deeper geotechnical boreholes, temperature cables, geophysical surveys would be helpful; and,
- provide a final assessment of quality & quantity of borrow material.



Figure 11-1. Location of proposed bedrock and granular quarries.

Proposed bedrock quarries are indicated by pink dots and proposed granular resource quarries are indicated by yellow dots (Source: PR#200 PDF p79)

The developer responded that it generally agrees with these recommendations and will pass them on to the contractor it hires for its consideration (PR#239 PDF p31-35; Appendix D).

At the public hearing, NRCan emphasized that (PR#273 p152):

Permafrost is an important consideration in the design of roads in northern Canada since changes in permafrost conditions can adversely impact infrastructure, integrity and performance. In addition, climate change can also play an important role and... can also impact the road integrity.

Although the geotechnical investigations for the road alignment were not available during the effects assessment, the developer did provide the geotechnical investigation for quarries (PR#200). The developer visited 13 potential locations and identified two with permafrost (Figure 11-1) (PR#200).

In its closing arguments, NRCan indicated that it believes the developer has done a reasonable job for this stage of the Project but reiterated that its technical report recommendations should be applied for future work and information (PR#277).

11.3. Review Board analysis and conclusions

The Review Board is aware of how critical permafrost considerations often are for the development of roads in the north. The many dips and bumps on Highway 3 from Behchokǫ to Yellowknife, including on relatively new stretches of highway, show the effects of not planning appropriately for permafrost. The Tuktoyaktuk to Inuvik Highway is an example of the considerable time and expense required to build a suitable road to prevent impacts to and from permafrost. There are undoubtedly many lessons learned for the developer from the construction of other roads in the north, including Highway #3 to Behchokǫ and the Inuvik to Tuktoyaktuk road. The Review Board believes that the inclusion of these lessons learned is integral to the proper mitigation of impacts to permafrost from the Project as well as to the Project from permafrost.

As the developer pointed out in its PDR, there are several pathways by which the Project could affect permafrost, or by which changes to permafrost could affect other valued components. The Review Board notes that climate change raises additional concerns about permafrost as future climatic conditions are unknown; this was identified by NRCan at the hearing. In Chapter 13, the evidence from the developer on climate change predictions suggests that over the next several decades, ground temperature is going to increase and the percentage of ground that has permafrost will fall. However, the extent to which this will occur, including subsequent effects, is uncertain.

The Review Board heard that the Project is in an area of discontinuous permafrost, where 50-90% of the terrain is expected to have underlying permafrost. During investigations at quarries, the developer identified permafrost at 2 of the 13 sites. Considering the importance of understanding permafrost for the proper construction of roads in the north, the Review Board is concerned that the developer did not complete any permafrost work on the Project alignment for consideration in this environmental assessment or provide sufficient mitigation for expected permafrost issues. This makes it challenging to understand, assess and effectively mitigate impacts on permafrost and thereby impacts to other aspects of the environment because of the Project.

During past environmental assessments, the GNWT has understood and valued permafrost as a regulator. For a project similar to this one, the GNWT asked developers for additional information such as road construction methods in ice-rich areas, details on permafrost distribution, and details on proposed mitigation measures.¹ In that case, even though a developer had committed to permafrost monitoring and management plans and additional permafrost investigations, the GNWT stated that without information on permafrost distribution and ice content, there was insufficient information to assess the magnitude or significance of permafrost degradation. The Review Board is frustrated that despite this understanding of the importance of permafrost in the past, as the developer the GNWT has not provided the information required to understand impacts on permafrost.

NRCan, whose mandate includes consideration of permafrost, has provided six recommendations to the developer for future work it believes is required to prevent impacts to permafrost. The Review Board considers the developer's response that it will pass NRCan's recommendations on to its P3 operator for consideration insufficient.² The Review Board understands that many permafrost related decisions must be made in conjunction with engineering decisions and using site-specific information but emphasizes that the developer is ultimately responsible for preventing and mitigating effects from the Project regardless of the P3 operator's efforts.

The developer has not persuaded the Review Board that the Project is unlikely to cause significant adverse impacts to permafrost; in other words, the developer has not met its burden of proof. The Review Board considers the mitigations proposed by the developer

¹ *Report of Environmental Assessment and Reasons for Decision; Canadian Zinc Corp., Prairie Creek All Season Road Project EA1415-01* (http://reviewboard.ca/upload/project_document/Report%20of%20Environmental%20Assessment%20-%20Sept%2012%202017.pdf).

² See Chapter 4 for more discussion on P3 considerations.

for the effects of permafrost insufficient. The Review Board concludes that additional mitigation is required to effectively mitigate and manage impacts to and from permafrost, as well as prevent significant adverse impacts that are otherwise likely and costly. The measure below requires the developer to complete and implement a permafrost management plan.

11.4. Measures and suggestions

11.4.1. Permafrost management plan

The Review Board believes that this measure will prevent significant adverse impacts to, and from, permafrost. It requires the developer to take a proactive approach to address permafrost issues along the Project route, enabling more effective avoidance or management of Project impacts to and from permafrost.

Measure 11-1: Permafrost Management Plan
<p>To minimize permafrost degradation and prevent associated significant adverse impacts on the environment from the Project during construction and operation of the Project, the developer will develop and implement a permafrost management plan for construction and maintenance of the Project. The plan will be submitted for review and approval to the Wek'èezhì Land and Water Board prior to construction.</p> <p>This plan will include monitoring (following the requirements in Appendix C) and adaptive management (following the requirements in Appendix B). It will incorporate the recommendations made by Natural Resources Canada during the environmental assessment process as well as recommendations from the working group (Measure 14-3).</p> <p>The developer will incorporate any relevant information from the permafrost management plan into ongoing monitoring and adaptive management during Project operations.</p>

11.4.2. Lessons learned

This suggestion encourages the developer to share information and consider lessons learned about permafrost from other road construction projects in the north.

Suggestion 11-1: Lessons Learned
The developer should share information, techniques and lessons learned from other road construction projects in the north with its P3 operator, such as the Inuvik to Tuktoyaktuk highway and Highway 3.

12. Climate change

The unknown effects of climate change have underpinned the discussion of issues raised throughout this environmental assessment. At the public hearing, the developer described climate change as a “wildcard” in relationship to caribou (PR#274 p50). This is the fundamental challenge of climate change in environmental assessment—the uncertainty of the impacts of climate change and the uncertainty this creates in environmental assessment. This chapter combines the evidence the Review Board heard, as well as the Review Board’s analysis of the issue.

12.1. Review Board analysis

12.1.1. Climate change as the impetus for the project

As an isolated community, Whatì depends on the winter ice road season for the bulk of its resupply. Rising temperatures will make building and maintaining these winter road systems costlier and unpredictable, dangerous to travel on, and reduce the number of days the winter road is open. As the northern climate has warmed over the past 30 years, many of these risks have already been observed; the developer has only been able to maintain the winter road for a reasonable amount of time through the use of modern technology (PR#7 Appendix B p48). According to the developer, “it is becoming harder and harder—and substantially more expensive, to build a long functioning Whatì winter road over time” (ibid).

At the public hearing in Whatì, the Review Board heard from Elder Sophie Williah, “... everything's different now. Sometimes it doesn't freeze up, it's climate change. ... It's not really cold like before. Everything is changing now” (PR#273 p211).

The developer has stated that the road is a way of mitigating infrastructure vulnerabilities by adapting to climate change (PR#272 p21). The developer expects that in the future it may not be possible to maintain the current length of the winter road season, even with new technologies, which will cause difficulties for communities and industry (PR#7 p4-2). An increase in the cost of building the winter road has already been observed (PR#7 p4-2):

In warmer winters, as have been more frequent recently, greater operations and maintenance costs have incurred in order to deliver the same operating season for the public by utilizing costly new technology and equipment that enables construction to begin while the ice is still too thin for standard methods.

12.1.2. Climate Change and the effects assessment

In the *Adequacy Statement Response*, the developer included climate change in its reasonably foreseeable developments case that it assessed for all primary pathways (PR#110 p2-3). The developer anticipates that fire frequency and severity will increase because of climate change (PR#110 p4-28). This has implications for species like caribou, which rely on older growth forests for habitat.

Longer summer seasons may also lead to more deciduous species and fewer evergreens or conifers (PR#110 p4-28). Additionally, other plants could move north, which could lead to wildlife expanding their ranges to the north (PR#110 p4-51). The North Slave Métis Alliance pointed out at the hearing that as climate changes and growing seasons get longer, this may result in the spread of invasive species along disturbed areas (PR#273 p212).

Assessment of impacts from climate change was limited to the developer in this environmental assessment. At the public hearings, the Review Board heard that Environment and Climate Change Canada did not consider the cumulative impacts of climate change in its review and assessment of the Project (PR#273 p186). This appears to disregard an important part of the mandate (and name) of Environment and Climate Change Canada. During this conversation, the Department of Fisheries and Oceans Canada discussed some of the water temperature monitoring it does and how this can be used to understand impacts on fish. However, it is unclear to the Review Board if any such information was assessed for the Tłıchǫ All-Season Road Project (PR#273 p189).

12.1.3. Climate change could affect the Project and surrounding environment

The developer indicated that it expects climate change could affect the road (PR#7 p8-4). The Review Board notes that this could affect safety, increase maintenance costs, or result in impacts on the environment.

The developer emphasized that planning for impacts from climate change and identifying appropriate mitigation will be important to avoid impacts from the predicted outcomes of climate change, such as permafrost thaw or increased precipitation (PR#7 p8-5). The developer cited climate change predictions for Highway 3, south of the Project, that predict ground temperatures will increase and the percentage of the ground that is frozen will fall from 74.9% now to 68.1% by 2055 (PR#7 p6-4).

In its technical report, Natural Resources Canada agreed that effects of climate change must be mitigated to prevent impacts on road stability (PR#222 p6). In an information request, Natural Resources Canada pointed out that information on ground thermal regimes will be required to understand the impacts of climate change on the Project (PR#169 PDF p7). The Review Board notes that this information was not provided by the developer during the environmental impact assessment. This increases the challenge of understanding and assessing the impacts of the Project on the surrounding environment.

12.1.4. Impacts of the Project on climate change

The developer also considered the potential impact of the project on climate change. The developer characterized the volume of traffic expected on the Project as low, or around 20-40 vehicles per day (PR#7 p8-4). The developer determined that contributions of greenhouse gases are expected to be low and as a result, concluded that the project will not influence climate change (PR#7 p8-4).

12.1.5. Uncertainty created by climate change

The Review Board is concerned by the uncertainties climate change presents in this environmental assessment. Climate change has the potential to act cumulatively with the Project and thus increase the magnitude of impacts on valued components.

The Review Board's primary concerns related to climate change are about caribou and permafrost. The Review Board has already identified extensive concerns related to impacts of the Project on caribou (see Chapters 6 and 7). If climate change results in greater fire frequency or other species moving north, this could lead to even greater impacts on caribou in addition to the impact of the Project that the Review Board has already identified. This creates uncertainty for the Review Board as to the extent of measures that are required to mitigate cumulative impacts on caribou and justifies the Board's decision to employ a precautionary approach in its assessment of Project impacts on caribou.

If climate change results in more permafrost thaw than the developer anticipates, this could lead to safety risks on the road, increased maintenance costs, or effects on the environment, such as water quality. This raises questions about the developer's ability to construct the road for future conditions, and about the relationship with the P3 partner that will be responsible for managing and maintaining the road (discussed further in Chapter 4).

12.2. Conclusion

The Review Board recognizes that the Project is partly intended as a form of climate change adaptation. The winter road to Whatì has become more difficult and expensive to maintain as warming temperatures have reduced its season over time. The operating periods of the winter roads from Whatì to Gamètì and Wekweètì depend on the operating period of the winter road to Whatì. By providing year-round access to Whatì, the Project will likely extend the operating seasons of the winter roads from Whatì to Gamètì and Wekweètì, and a potential impact of climate change on their operating seasons will be reduced.

Even though the project is partly intended as a climate change adaptation, it will also be affected itself by climate change, as melting permafrost typically requires more intensive road maintenance.¹ The project will also contribute impacts to certain valued components that will likely add to the impacts resulting from climate change. For example, the impacts of increased disturbance from habitat fragmentation or sensory disturbance on boreal caribou (described in Chapter 6) may add cumulatively to climate change effects, such as increased fires or insect harassment, for those same caribou. The impacts of climate change are broad. It likely affects many of the same valued components as the Project will. The Review Board respects that the developer included the effects of climate change in its cumulative effects assessment.

The Review Board agrees with the developer that the predicted traffic levels are low and that the emissions resulting directly and indirectly from this project are probably going to be a very small fraction of the total carbon dioxide emissions of the Northwest Territories. The Review Board recognizes the seriousness of climate change as a problem, but the Review Board does not believe that the project's contribution to climate change is likely significant. If the project's emissions were predicted to be a much larger portion of the Northwest Territories' total emissions, the Review Board may have reached other conclusions.

The Review Board observes that the Project may offer valuable opportunities for initiatives that reduce climate change emissions. At present, electricity in Whatì is mostly generated by diesel, which is transported there by truck during the winter season.² The Review Board

¹ Melting permafrost also releases carbon dioxide.

² The Review Board observes that the community has undertaken impressive alternative energy projects, such as its solar panels and its investigations into micro-hydro. Whatì is also involved in a wood stove project to reduce reliance on diesel for heating. (PR#273, p234)

heard from residents of Whatì that the current Whatì diesel power plant is noisy and dirty (PR#273 p232). The road may present opportunities to replace diesel with a renewable primary power source. If this is pursued, it might not only prevent the greenhouse gas emissions associated with current diesel generation but may result in reduced electrical costs for Whatì residents, providing a further socio-economic benefit. If the Project facilitates an alternative energy source to diesel power, the Project would help reduce Whatì's greenhouse gas emissions in a meaningful way, an indirect beneficial impact of the Project.

The Review Board is pleased to note that the GNWT's *Northwest Territories Energy Action Plan* identifies the benefits and interest in exploring this idea.¹ The current draft *2030 Energy Strategy* also raises the same point.²

¹ Government of the Northwest Territories, *Northwest Territories Energy Action Plan*. Dec. 2013. pp 33-34.

² Government of the Northwest Territories, *2030 Energy Strategy: A Path to More Affordable, Secure and Sustainable Energy in the Northwest Territories* August 2017. Draft for Public Comment. P.18

13. Sustainability

Introduction

Sections 1.1 and 3.18 of the Review Board's *Environmental Impact Assessment Guidelines*, prepared under the authority of section 120 of the *Mackenzie Valley Resource Management Act*, specify that promoting sustainability is a purpose of environmental impact assessment, and that supporting sustainable development is one of the ultimate results of the environmental assessment process. This section briefly describes the Review Board's considerations about the sustainability of the Project based on the evidence on the record and presented in the chapters above. The sustainability of the Project will be enhanced by action in response to the Review Board's conclusions about significant adverse impacts and the measures it has prescribed to mitigate these impacts.

The Review Board has considered matters of equity¹ between generations, between groups in the present generation, and the Project's potential to increase resilience of the land and people. Throughout this section, the Review Board uses the term "sustainable development" as defined by the United Nations World Commission on Environment and Development as "... development that meets the needs of present without compromising the ability of future generations to meet their own needs".²

Adequate protection of the environment

In terms of environmental stewardship, the Review Board is of the opinion that the environment is likely to be adequately protected through all phases of development, provided that the prescribed measures are fully implemented, and the commitments of the developer and Tłıchǫ Government are carried out. The measures, in combination with the mitigations proposed by the developer and the Tłıchǫ Government based on extensive consultation with the potentially affected public, make significant adverse impacts to people and the land unlikely. This is particularly so for social impacts because of the range of authorities and capabilities of the Tłıchǫ Government, many of which are derived from its self-government agreement. These authorities are based in the Tłıchǫ Land Claims and Self-Government Agreement, which took many years to negotiate and settle. This

¹ Equity deals with fairness and justice, in this case about who benefits and who experiences impacts.

² United Nation, 1991. "Our Common Future", Report of the World Commission on Environment and Development. (Brundtland Commission)

Agreement increases the resilience of Tłıchǵ people and institutions and reduces the likelihood of significant adverse social impacts from the Project, if the measures and suggestions in this EA are followed.

Net economic benefit

The Review Board's analysis indicates that the Project will provide net economic benefits to the residents of Whatı and Tłıchǵ citizens, and may benefit the people of the Mackenzie Valley and Canada.¹ These Tłıchǵ benefits will accrue in the short-term through employment in road construction, and better access later to employment elsewhere for Whatı residents. The road is necessary for the already permitted NICO Mine to proceed. The Project is likely to make future developments in the Wek'èezhıı Management Area more economically viable by decreasing transportation costs and increasing the likelihood that they will be developed. Regional economic development, and the employment it brings, is more likely over the long term with the Project, because of these factors described in more detail in Section 5.3.9.

Contribution to social well-being

The Review Board concludes that the Project will contribute to the community and social well-being of the majority of residents most affected by the Project, based on the evidence described in Chapter 5. The Project may adversely affect some vulnerable groups and adversely affect the long-term cultural well-being of the community, by increasing recreational access for non-Aboriginal hunting and fishing and displacing harvested wildlife. Measure 9-1 in Chapter 9 is included to monitor harvest and manage wildlife to help maintain successful harvest. Notwithstanding the conclusions and measures of the Review Board, the developer is liable for any impacts of the Project on traditional harvesters under subsection 11.2.1 of the *Tłıchǵ Agreement*.²

¹ Section 5.4.9 identifies issues with the net modelling of economic benefits.

² Subsection 11.2.1 of the *Tłıchǵ Agreement* states "A developer is liable absolutely, without proof of fault or negligence, for the following losses and damage, suffered by a Tłıchǵ Citizen or the Tłıchǵ First Nation as a result of a project wholly or partly in Monfwi Gogha De Niitlee (NWT) in which that developer is engaged:

- loss or damage to property or equipment used in wildlife harvesting under 10.1.1 or to wildlife harvested under 10.1.1;
- present and future loss of income from wildlife harvesting under 10.1.1; and
- present and future loss of wildlife harvested under 10.1.1."

Residents of Whatì and local governments were well-informed of the Project's risks and continued to plan, with broad participation and engagement, for future risk scenarios. Accordingly, local governments and residents remained mostly supportive of the Project. Increased well-being from additional access to cultural events in other communities, youth sports events, medical and mental health services, employment and education was deemed worth the trade-off for most community members the Review Board heard from.

With the implementation of the measures in Chapters 5 and 9 of this Report of EA, the overall impact of the Project on community and cultural well-being will be reduced and will remain at a level that most community members, and their governments, have indicated will be acceptable.

Equitable distribution of costs and benefits

The Review Board has considered the benefits and costs of this development among potentially affected people. Whatì residents that are candidates for employment are likely to benefit, and reduced costs of goods and services (including medical and mental health services) will be of general benefit. The additional measures in this report described in Chapter 5 will help protect the well-being of members of more vulnerable subgroups¹ in Whatì from adverse impacts from the Project.

With respect to future generations, the Project is expected to provide economic and social benefits. Some of the community's most challenging socio-economic issues stem from the limited seasonal access. The Project will soften the impacts currently experienced in the community during the brief winter road season by removing the timing pressure to use the road, establish more safeguards to keep issues in check, and create additional opportunities for employment and tourism. In the hearing, Elders expressed concern that without the economic development and social benefits of the Project, there will be little incentive for youth to stay in Whatì. The Project is partly supported because of its long-term benefits to Whatì for future generations.

Adverse effects from the Project on boreal caribou would be an impact to future generations. With the proposed measures described in Chapter 6, including range planning,

¹ See Section 5.3.1 for details about these more vulnerable subgroups.

the no-hunting corridor and caribou habitat offset, the Review Board has concluded that such Project impacts are not likely.

Future generations and current benefits

The all-season operation of the road will further contribute to a fair cost and consistent access to goods and services into the future. Climate change has already had an adverse impact on ice roads by reducing the freeze-up period and making ice roads more challenging to construct and less safe to travel. An all-season road therefore also represents a reliable form of community resupply in an era of warming climate, and a safer form of transportation for residents of Whatı. Based on these considerations, the Review Board concluded that the short-term benefits of the Project are not likely to compromise the long-term ability of future generations to benefit from the land and the natural resources in the vicinity of the Project.

In view of these considerations, the Review Board concludes the Project represents a positive contribution to the long-term sustainability of the Community of Whatı and the Wek'èezhı Management Area. It will deliver lasting benefits while avoiding significant adverse impacts. With the mitigations proposed by the developer and Tłıchǵ Government, and the measures and suggestions in this Report of EA, this project is likely to meet the needs of the current generation without compromising the ability of future generations to meet their own needs.

14. Adaptive management, follow-up, and monitoring

14.1. Summary of findings

The Review Board has determined that the measures set out in this Report of Environmental Assessment are necessary to prevent significant adverse impacts on the environment.¹ Monitoring and reporting are necessary to test environmental assessment predictions, assess the effectiveness of mitigation actions and inform adaptive management.² Monitoring and reporting are also needed to ensure that the Review Board's measures set out in this Report of EA are effectively implemented and significant adverse impacts on the environment are avoided.

The Review Board acknowledges that parties are concerned about how the Tłıchǫ All-Season Road will affect the environment and Aboriginal rights and want to remain engaged to ensure they are aware of changes in the environment and to help ensure responsible stewardship occurs. In the Review Board's view, monitoring and participation by parties from this EA in a working group is essential for identifying and mitigating potential impacts from the Project. This is particularly important considering that the use of a P3 operator to construct and operate the road will distance the developer from its responsibility to ensure the mitigations outlined in the Report of EA are implemented to reduce or prevent significant adverse impacts.³

14.2. Review Board analysis

14.2.1. Adaptive management

Although the developer mentioned adaptive management in the *Project Description Report* and *Adequacy Statement Response* (PR#7; PR#110), it did not define adaptive management

¹ These are listed in Appendix A.

² The term "adaptive management" here does not refer to deliberate experimentation intended to find the best management solution. Instead, it refers more generally to an early warning system where the results of monitoring are used to adjust mitigation measures to minimize adverse effects and continuously improve environmental management practices.

³ As discussed in Chapter 4, even if the P3 project agreement is intended to exhaustively require the operator to implement all applicable measures and commitments, oversights and differences of interpretation may occur. This introduces an additional layer of uncertainty that does not exist where the developer is also the project operator. This strengthens the need for careful adaptive management of the Project.

until it submitted the draft *Wildlife Monitoring and Management Plan* (WMMP). The WMMP defines adaptive management as follows (PR#192 piv):

Adaptive management is a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs. The term is commonly thought of as “learning by doing”. Active adaptive management typically involves active experimentation to simultaneously test a range of alternative management actions, whereas passive adaptive management may involve selecting only the “best” management option and evaluating the results to see if further adjustments are needed.

Although the developer indicates that it understands the importance of adaptive management, a description of the concept as “learning by doing” falls short of the clarity required in setting out the systematic approach to monitoring and feedback necessary for adaptive management. The Review Board’s approach is to use adaptive management to support the specific mitigation measures committed to by the developer and those required in the measures in this Report of EA by monitoring and adapting to: (1) ensure mitigations are effective; and (2) protect the environment in unforeseen circumstances. From previous experience, the Review Board’s view is that for adaptive management to be effective, it needs the following characteristics:

- 1) a systematic framework of action levels or thresholds within a monitoring program (that identifies when to act);
- 2) proposed mitigation options, policies, and practices linked to the action levels (which describe what actions to take); and,
- 3) a reporting mechanism to update monitoring programs, mitigations, and the adaptive management framework itself.

Planning for adaptive management allows flexibility that can lead to more effective monitoring programs and improved mitigation. Directly linking adaptive management frameworks to regulatory instruments provides certainty that timely and meaningful actions will be taken to adjust mitigations and protect the environment.

The Review Board recognizes that the developer’s approach to adaptive management may vary in relation to its specific impact predictions and in each of the applicable management and monitoring plans and programs. However, the developer has not proposed an approach that will link monitoring results to adaptive actions in a systematic way that would satisfy the requirements for effective adaptive management outlined above.

For these reasons, the Review Board has included requirements for adaptive management frameworks to be developed and implemented as part of several of the recommended measures in this Report of EA.¹ In the Review Board's view, these adaptive management frameworks, in addition to the mitigations proposed by the developer and additional mitigations required in the recommended measures, are necessary and should, in combination, be sufficient to prevent adverse impacts that would otherwise be significant.

Building on the developer's commitments, the adaptive management frameworks required by the Review Board are intended to provide a systematic process for responding to changes observed in the environment, through monitoring programs, and adjusting mitigation actions appropriately. As changes are observed, increasingly urgent and substantial management actions will be taken to protect the environment and prevent significant adverse impacts. The approach leaves some flexibility available to the developer (and regulators) to fit the response to the problem that needs to be managed, while ensuring the environment is adequately protected.

Where it is relied upon as part of the mitigation strategy required by the Review Board, the need for and contribution of adaptive management to the prevention of significant adverse impacts is discussed in Chapters 5 through 12 of this Report of EA. Where applicable, adaptive management frameworks are specifically required as part of the Review Board's recommended measures in these chapters. The structure and essential parts of an adaptive management framework are set out in Appendix B.

The Review Board has determined that robust and systematic monitoring and adaptive management are required to test impact predictions, monitor impacts on the environment, and adjust mitigations to protect the environment if unforeseen circumstances arise or if the impacts differ from those predicted in the EA.

14.2.2. Follow-up monitoring and reporting to inform adaptive management

The Review Board has prescribed measures in this Report of EA to mitigate significant adverse impacts. Monitoring and reporting are key parts of the adaptive management aspects of these measures; adaptive management is necessary to facilitate adjustment of

¹ An explanation of why adaptive management is needed and appropriate for a particular issue is provided in each chapter leading up to a measure that includes an adaptive management requirement.

mitigation to improve it and respond to unforeseen circumstances. Without adequate monitoring to inform environmental management, efforts can be unreliable and unlikely to result in effective mitigation. Monitoring may come from a variety of different programs or mechanisms, such as community-based monitoring, the developer's own monitoring programs, and others.

Several chapters in this report discuss a lack of baseline and project-specific information, and how this creates uncertainty in impact predictions and proposed mitigations. This is exacerbated by concerns about the increased management complexity of a project with a P3 operator, the role of the Tłıchǵ Government, and uncertainties inherent to climate change. This complexity makes monitoring and reporting to inform adaptive management especially important as part of the Review Board's mitigation strategy in this EA.

The Review Board therefore requires follow-up monitoring, reporting, and adaptive management for the measures set out in the Chapters of this Report of EA. Where applicable, monitoring is specifically required as part of the Review Board's recommended measures in these chapters. The monitoring requirements are described in Appendix C. These objectives could have been included within each measure in the Chapters above but have instead been set in an appendix for clarity and consistency.

Subsection 111(1) of the *Mackenzie Valley Resource Management Act* defines 'follow-up program' as:

a program for evaluating

- a. the soundness of an environmental assessment or environmental impact review of a proposal for a development; and*
- b. the effectiveness of the mitigative or remedial measures imposed as conditions of approval of the proposal.*

Based on this definition, a follow-up program serves two key functions: to evaluate 'soundness' of an EA and the 'effectiveness' of mitigative measures. The first function evaluates whether the EA predictions are correct. It acknowledges that the EA process relies on predictions to analyze how the proposed development will affect the environment and inform the Review Board's determination of whether significant adverse impacts are likely. Unforeseen circumstances in the environment, the development, or how the two interact may result in effects that are different from those predicted. Monitoring and reporting to test EA predictions, including the effectiveness of environmental design

features and project mitigations, can inform adaptive management so that the environment is protected when unforeseen circumstances occur.

The second function of a follow-up program examines how well the EA measures are performing their intended function. Before their effectiveness can be evaluated, such measures must first be implemented according to their full intent and purpose. Monitoring and reporting can then be used to assess their effectiveness and inform adaptive improvements to environmental management.

As an additional benefit, the systematic evaluation and reporting required through the measures below will help the Review Board learn more about the practical implementation of EA measures, and thereby improve future EAs and EA measures. These reporting and follow-up measures may also help inform regulators, inspectors, responsible ministers, and parties as they carry out their respective roles in future EAs and in the integrated resource management system in the Mackenzie Valley.

14.2.3. Involvement in monitoring

The sections above outline the importance of follow-up monitoring and reporting. Another consideration is who should be involved in follow-up monitoring.

The Wek'èezhì Renewable Resources Board recommended developing an oversight committee or working group for wildlife management, which would include the establishment of mitigation thresholds and ensuring that monitoring and mitigation were highly protective of caribou (PR#215 pp3,21,26; PR#228 pp2,17). In response, the developer committed to establishing an overarching corridor working group like the one in place for the Inuvik to Tuktoyaktuk Highway (PR#237; PR#239; PR#285). At the public hearings, the Review Board heard from the developer that the proposed working group (PR#273 p20):

...will be a forum for parties to exchange information on the project. It will include regulatory agencies, interested stakeholders and community representatives. We anticipate that the group will meet twice per year and will provide advice on monitoring and mitigation that may contribute to adaptive management.

The Review Board heard from Environment and Climate Change Canada and Fisheries and Oceans Canada that both organizations were generally satisfied with how the Inuvik to Tuktoyaktuk Corridor Working Group has worked and how the GNWT addressed concerns that were raised (PR#274 p259; PR#273 p167).

The Review Board appreciates the commitment from the developer and finds that this method of continuing to involve parties, particularly Aboriginal groups¹, in the mitigation, monitoring, and adaptive management of Project impacts is an important component of successful follow-up monitoring.

14.3. Review Board conclusion

The Review Board has determined, under subparagraph 128 (1)(b)(ii) of the Act, that significant adverse impacts from the Project are likely. The Review Board has therefore set out mitigation measures in this Report of EA to prevent or otherwise reduce the significance of such impacts. To give full effect to, and derive the best environmental outcomes from, these measures, monitoring and reporting are needed to:

- verify that measures are being implemented and their effectiveness evaluated;
- confirm that significant adverse impacts are not occurring;
- test EA predictions; and,
- inform adaptive management.

The Review Board emphasizes the need for the developer and regulatory authorities to use adaptive management to prevent or minimize impacts on the environment. The developer must ensure it implements the requirements for monitoring, follow-up, and adaptive management, and the commitments it made during this EA (Appendix D). Within their jurisdiction, regulatory authorities and government must play their roles as well. The working group will assist in identifying and mitigating impacts.

14.4. Measures and suggestions

14.4.1. Adaptive management

Many measures in this Report of EA require the development and implementation of an adaptive management framework and refer to the requirements set out in Appendix B. The suggestion below encourages the developer and regulators to apply the adaptive

¹ Section 115 of the Act requires the EA process to have regard to the well-being and way of life of Aboriginal peoples. As described throughout this Report of EA, the Project area is important to and used by Aboriginal people. Throughout the EA process and its deliberations, the Review Board has, therefore, given due consideration to impacts on the rights, well-being, and way of life of Aboriginal peoples.

management principles in Appendix B to management and monitoring plans associated with the Project, even where such plans are not specifically addressed in the measures of this Report of EA.

Suggestion 14-1: Systematic adaptive management in all applicable plans

The developer should incorporate adaptive management principles (such as action levels and management responses), based on Appendix B of this report, into all relevant management plans and monitoring programs. The Review Board encourages regulators to consider these adaptive management principles when setting regulatory requirements and when reviewing and approving management plans and monitoring programs.

14.4.2. Follow-up monitoring

Paragraph 111(1) of the *Act* defines a “follow-up program” to mean a program for evaluating (a) the soundness of an environmental assessment or environmental impact review of a proposal for a development; and (b) the effectiveness of the mitigative or remedial measures imposed as conditions of approval of the proposal.

The Review Board has set out measures in this Report of EA that require, as a part of the measure, for the developer to complete monitoring activities. To fulfill their purpose, these measures must be fully implemented and their effectiveness monitored, to inform adaptive management and to protect the environment if unforeseen circumstances arise or if impacts differ from those predicted during the EA. Where applicable, monitoring described in measures refers to the monitoring requirements outlined in Appendix C. The suggestion below encourages the developer and regulators to apply the same monitoring requirements from Appendix C to monitoring associated with other aspects of the Project, even where such plans are not specifically identified in measures of this Report of EA.

Suggestion 14-2: Monitoring objectives for all monitoring programs

The developer should incorporate monitoring requirements based on Appendix C of this report into all relevant monitoring programs and activities. The Review Board encourages regulators to consider these monitoring objectives when setting regulatory requirements and when reviewing and approving monitoring programs or activities.

14.4.3. Annual reporting from developer

In addition to informing adaptive management, reporting is needed to demonstrate to the Review Board, parties and the public that the developer is implementing the EA measures it is responsible for, and that the measures are fulfilling their intended purpose.

The developer may coordinate the reporting requirements of this measure with other reporting that it carries out. This measure is not intended to duplicate regulatory requirements, but to report specifically on the implementation of EA measures, including adaptive management requirements. The report can reference and rely on more detailed information that may be found in regulatory reports. This report on measures should be concise and use plain language and must clearly satisfy the requirements listed below. The Review Board will receive the annual report required below and publish it to the Review Board's registry, so it is accessible to the parties and the public.¹

Measure 14-1: Annual reporting from the developer

To demonstrate how measures are being implemented and to evaluate the effectiveness of the developer's efforts to prevent or minimize impacts on the environment, the developer will, throughout all phases of the development, prepare an annual report on the implementation of measures. The report will address the measures that the developer is responsible for and will:

- | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">a. describe the actions, including actions implemented through adaptive management, being undertaken to implement the measures; and,b. evaluate how effective the implementation actions are in reducing or avoiding the impact (considering the results of monitoring programs and adaptive management frameworks). Where applicable, provide references to further information contained in other management plans or monitoring reports. |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The developer will provide its annual report to the Review Board one year from the date of the final approval of this <i>Report of Environmental Assessment</i> , and annually thereafter.

¹ In the Review Board's view, the systematic evaluation and reporting required through the measures below will help the Review Board learn more about the practical implementation of EA measures and thereby improve future EAs and EA measures. These reporting and follow-up measures may also help inform regulators, inspectors, responsible ministers and parties as they carry out their respective roles in future EAs and in the integrated resource management system in the Mackenzie Valley.

14.4.4. Annual reporting from government and regulatory authorities

Regular reporting is needed to demonstrate that the measures in this Report of EA are being implemented and are fulfilling their purposes. Given that this Report of EA includes some measures specifically directed to regulatory authorities or government and others which they are partly responsible for implementing (under subsection 130(5) of the Act), government and regulatory authorities must play a role in follow-up and reporting to ensure the measures are effective. This applies to regulatory authorities and government other than the developer, which is covered by a similar measure above.

The Review Board hopes that communication about what government and regulators are doing to make sure EA measures are implemented will help strengthen the linkages between the different parts of the integrated system of resource management in the Mackenzie Valley. This communication will better connect, for the public and all participants in the resource management system, the significance determinations and EA measures required for Project approval with the regulatory process throughout the life of Project operations.

Like Measure 14-1, this measure is not intended to be duplicative. Where applicable, governments and regulators can reference and rely on more detailed information that can be found in other reports. The Review Board will receive the reports required below and publish them to the Review Board's registry so they are accessible to the parties and the public. This will provide opportunities to learn from them to improve future EAs and EA measures.

Measure 14-2: Annual reporting from government and regulatory authorities
To help evaluate the effectiveness of mitigation measures for the protection of the environment, each regulatory authority or government that is wholly or partly responsible for implementation of any measure in this Report of Environmental Assessment will prepare an annual report on implementation of measures. The report will:
a) describe the actions being undertaken to implement the measures or the part(s) of the measures for which the regulatory authority or government is responsible; and,

b) explain how these actions, including those implemented through adaptive management, fulfill the intent of the EA measures, including consideration of the following questions:

- i. How are implementation actions addressing a likely significant adverse impact on the environment?
- ii. How effective are implementation actions at reducing or avoiding the impact or its likelihood?

Government and regulators are only responsible for reporting on the implementation actions they take, not actions taken by the developer. For example, if a regulator does not issue an authorization, provide direction to the developer, approve a management plan, or take other actions that relate to an EA measure(s) in a given year, the regulator will not need to submit a report for that year.

The governments and regulators will provide their annual reports to the Review Board one year from the date of the final approval of this *Report of Environmental Assessment*, and annually thereafter.

14.4.5. Working group

The Review Board has determined that a working group is required to assist in the monitoring, mitigation and adaptive management of impacts on the Project. The following measure formalizes and builds on the developer's commitment to establish the TASR Corridor Working Group. To mitigate significant adverse impacts from the Project to the environment and people, the developer will implement the TASR Corridor Working Group and incorporate actions of the group as described below. The intent is for a working group like the one formed for the Inuvik to Tuktoyaktuk Highway, which communicates on a wide variety of topics.¹ The information and discussion of the Working Group will help the developer improve its management of the Project, to adaptively reduce or avoid impacts that are otherwise likely.

¹ The Inuvik to Tuktoyaktuk Highway Corridor Working Group was established with key areas of interest including permafrost, granular resources, surface hydrology, vegetation, fish, wildlife and harvesting.

Measure 14-3: Project working group

The developer will establish the Tłıchǫ All-Season Road Corridor Working Group by:

- funding the Tłıchǫ Government, Wek'èezhì Renewable Resources Board, Yellowknives Dene First Nation and North Slave Métis Alliance to participate in twice annual working group meetings, one of which will annually take place in Whatì;
- requiring the participation of the P3 operator; and,
- inviting Tłıchǫ Elders to participate.

The developer will make meeting minutes publicly available.

The developer will maintain the working group throughout the Project construction phase and for five years of Project operations, unless an extended term is agreed to by parties.

14.4.6. P3 Operator

The Review Board is concerned about increased potential for impacts arising from uncertainties due to the use of a P3 operator to construct and operate the road.¹ The Review Board intends the following measure and suggestion to ensure the developer's commitments and the Board's measures are carried through from the EA into action during construction and operation of the Project by an unknown P3 operator. The Review Board emphasizes that it is the developer's responsibility to ensure all commitments and measures are followed.

Measure 14-4: P3 operator agreement

To ensure that all applicable and relevant commitments of the developer and measures directed at the developer are carried out during the construction and operation phases of the Project, the developer will formalize and include these commitments and measures in its final contract with the P3 operator.

As discussed in Chapter 4, the successful P3 operator will operate in the project area for approximately 29 years. There are other organizations with extensive experience in

¹ The P3 operator will be responsible for the construction and initial 25 years of operation. Please see Chapter 4 for the Review Board's discussion about the P3 operator.

managing contactors' environmental and social performance. Some of these organizations have produced guidance for implementing environmental and social commitments when working with third parties that are likely applicable to the Project. The Review Board intends this suggestion to assist the developer in selecting and managing an appropriate P3 operator.

Suggestion 14-3: Contractor good practices
The developer, in selecting and managing a P3 operator, should follow best practice guidelines from international organizations or other jurisdictions, such as the International Finance Commission's good practice note on <i>Managing Contractors' Environmental and Social Performance</i> .

15. Conclusions

Based on the evidence on the public record, the Review Board finds that the proposed Tłıchǵ All-Season Road Project is likely to cause significant adverse impacts on the environment. The Review Board has recommended measures, many of which will result in adaptive management, to mitigate these impacts so they are no longer significant. Specifically, it requires the GNWT and others to do the following:

- Track and manage project-related changes to well-being of Whatı residents, including harmful behaviours associated with increased access to drugs and alcohol, traffic accidents, safety of young women and changes in harvest success.
- Require policies that increase the safety of young women in work camps and communities.
- For boreal caribou (tǵdzı) in the Project area, make a range plan with actions to reduce or avoid impacts and protect boreal caribou, offset habitat, and create a temporary no-hunting corridor where non-Aboriginal hunting of boreal caribou (tǵdzı) will be prohibited.
- Use Traditional Knowledge in barren-ground caribou (zekwǵ) habitat monitoring.
- Complete the *Bathurst Caribou Range Plan* as soon as possible.
- Create an Integrated Fisheries Management Plan that prevents significant impacts from additional fishing pressure resulting from increased access.
- Monitor harvest and manage wildlife to help maintain successful Aboriginal harvesting.
- Conduct, and take actions based on, a bird survey before construction.
- Include important details in the *Wildlife Management and Monitoring Plan*.
- Establish and fund the Tłıchǵ All-Season Road Corridor Working Group.

With these and other measures to reduce or avoid identified impacts, along with mitigations in the form of good project design and commitments from the developer and the Tłıchǵ government, Review Board has concluded that the Project may proceed to the regulatory phase for approvals. By addressing the significant adverse impacts in these and other ways, the Project will be improved, and meaningful actions will mitigate the significant impacts that would otherwise occur.

Appendix A: Review Board measures and suggestions

Community well-being measures and suggestions

Monitoring and managing adverse health and well-being impacts

The Review Board heard from the Tłıchǫ Government on how it, along with the Community Government of Whatì and the Whatì Interagency Committee, intends to respond to impacts to community well-being. The Review Board appreciates the information the Tłıchǫ Government has provided on the topic and considered it in the drafting of this measure.

The Review Board found that the Project is likely to adversely affect community well-being by adding stress to the local health and social services of the Community of Whatì during the construction phase of the Project and during the initial operation period of the road. The following two measures are intended to address the inherent uncertainties in the assumptions in the developer's and Tłıchǫ Government's predictions on how the Project will affect Tłıchǫ citizens. A timely understanding of how the road influences daily life and well-being in the communities is critical for developing an effective governance response to undesirable impacts. Developing this understanding requires deliberate focus on connections between the project and the people affected by it, as well as tracking these relationships over time. The following two related measures are intended to strengthen the adaptive management system described by the Tłıchǫ Government and provide more confidence that the road will not result in significant adverse long-term impacts to the Community of Whatì. Understanding how the road is influencing daily life and well-being in the communities in a timely fashion is critical for developing an effective governance response for any undesirable impact. Where the Project is likely to cause significant adverse impacts to community well-being, the Tłıchǫ Government and the Community Government of Whatì will be responsible for actions to reduce or avoid the impacts, and the developer will provide them with support and funding to do so.

The measures below are also intended to address concerns in the Community of Whatì about the nature of change the Project will have and increase confidence that sound management and governance actions are being taken. Parts of the measures are intended to address the Project's effects on harvesting success in the Project area and potential impacts for those dependent on a traditional diet for their health and way of life. They are intended to help ensure that people dependent on country foods for their subsistence, and

who rely on it to offset the costs of store-bought foods, are not adversely affected by the Project.

Measure 5-1: Developer's support of monitoring and adaptive management of adverse health and well-being impacts

5-1, Part 1: Monitoring adverse health and well-being impacts to the Community of Whatì

To inform mitigation of significant cumulative and project-specific adverse impacts on the health and well-being of the Community of Whatì, the developer will support the Tłıchǫ Government and Community Government of Whatì in the monitoring and evaluation of direct and indirect impacts of the Project on the health and well-being of the Community of Whatì. These will include:

- the anticipated initial spike in harmful behaviours associated with increased access to drugs and alcohol;
- traffic accidents on the road;
- change in safety of young women and other vulnerable groups; and,
- change in harvest success rates and availability of country foods in Whatì.

Monitoring will meet the requirements of Appendix C.

5-1, Part 2: Reporting

The developer will support the Tłıchǫ Government and Community Government of Whatì in preparing an annual progress report on their efforts to mitigate impacts on health and well-being to the Community of Whatì.

5-1 Part 3: Adaptive management and re-evaluation

The developer, in collaboration with the Tłıchǫ Government and Community Government of Whatì, will support the adaptive management of health and well-being impacts, following guidance in Appendix B.

The developer will support the Tłıchǫ Government and Community Government of Whatì, in the monitoring, engagement, reporting and adaptive management described in this measure for each year of construction and for a minimum of ten years of Project operations.

Measure 5-2: Tłıchǫ monitoring, engagement and reporting of adverse health and well-being impacts

5-2, Part 1: Tłıchǫ monitoring of adverse health and well-being impacts

The Tłıchǫ Government and Community Government of Whatì, with the support of the developer, and in collaboration with the Tłıchǫ Community Services Agency, will establish and implement a framework to monitor and evaluate health and well-being impacts associated with the road, and will adaptively manage health and well-being impacts as described in Measure 5-1 and following guidance in Appendices B and C, for each year of construction and for a minimum of ten years of operations.

Following ten years of Project operations, the Community Government of Whatì and Tłıchǫ Government in collaboration with the developer, will re-evaluate the need for, and frequency of, monitoring, engagement, reporting and adaptive management.

If the monitoring of harvest success rates and availability of country foods in Whatì (in Measure 5-1, Part 1, above) indicates a declining trend in harvest success and the consumption of country foods, the Tłıchǫ Government and the Community Government of Whatì will develop and implement a strategy to improve availability of country foods for those most affected.

5-2, Part 2: Public engagement

The Tłıchǫ Government and Community Government of Whatì, with the participation of the developer, the P3 operator and the Tłıchǫ Community Services Agency, will meet with the residents of Whatì at least once per year to discuss:

- d) priority health and well-being impacts at the individual, family and community level related to the Project;
- e) the effectiveness of programs or mitigations used to address these impacts; and,
- f) the need to adjust programs or implement additional mitigations.

5-2, Part 3: Reporting

The Tłıchǫ Government and Community Government of Whatì, with the support of the developer, will prepare and make publicly available an annual progress report on their efforts to mitigate impacts on health and well-being to the Community of Whatì. The

report will describe engagement, current management and plans for future adaptive management.

The findings of the report will be presented to the residents of Whatı, provided to the Whatı Inter-Agency Committee and provided to the Tłıchǵ All-Season Road Corridor Working Group (see Measure 14-3).

The Review Board provides the following suggestion of appropriate socio-economic indicators to track.

Suggestion 5-1: Socio-economic monitoring indicators

The socio-economic indicators monitored by the developer and Tłıchǵ Government should include:

- population changes and composition
- population mobility (especially youth mobility)
- perceived influence of outsiders on community well-being
- changes in substance dependency rates
- changes in employment, unemployment and participation rates
- changes in industry sectors (especially tourism)
- changes to the cost of living (such as food, housing, travel and recreation) including comparisons to Behchokǵ, Yellowknife and Edmonton
- change in physical safety of young women
- changes in role of traditional or non-wage economy
- changes in language use
- changes to the perception of the land
- changes in time spent pursuing traditional activities

When monitoring changes to the safety of young women (as required in Measure 5-1) monitoring should include impacts from construction camps and from the new road, and evaluate changes in rates of sexual harassment or abuse, STIs and teen pregnancy.

When monitoring changes in harvest success rates and availability of country foods in Whatı (as required by Measure 5-1) the Tłıchǵ Government should collaborate with harvesters and those in the community most dependent on harvested foods (such as

Elders who no longer hunt but depend on the food shared by others) about topics such as:

- How much of the harvester's diet came from harvesting prior to road?
- How much of the harvesters' diet came from Project-affected area prior to the road?
- How much of their current diet comes from harvesting?
- How much of their current harvest diet comes from Project-affected area?
- Individual observations on how road has changed harvesting

The Review Board suggests the developer, Tłıchǵ Government and Community Government of Whatì should look at the monitoring for the Inuvik to Tuk highway and the Inuvialuit regional monitoring indicators network as a possible source of relevant additional socio-economic indicators to monitor.

Work camps and safety of young women

This measure is intended to reduce likely significant cumulative impacts to the health and safety of young women by creating a safer workplace and culture for women. Drug and alcohol use and work culture are two leading factors responsible for sexual assaults and harassment. The measure aims to contribute to an overall reduction in drug and alcohol use, simultaneously making the work environment safer for women while promoting women's health and safety issues at work and in communities near work camps (Whatì and Behchokǵ).

This measure builds on the commitment from the developer and the Tłıchǵ Government to discuss work safe policies for women, and ensure that the successful P3 operator will have health and safety policies that match those of the Tłıchǵ Government, GNWT and industry best practices. The following measure is based on industry best-practices. The Review Board notes that the commitments by Fortune Minerals described on page 161 in the Report of EA for the NICO Mine, specifically with respect to women's safety, gender sensitivity and gender equity, are an example of good practice from the same region.¹

¹ Pages 142 and 143 of the same Report of EA includes good examples of developer's commitments regarding community cohesion and promoting language use.

Measure 5-3: Safety of young women in relation to work camps

To mitigate the Project's impact on the physical and mental health and safety of women, the developer will require that the successful P3 operator has gender appropriate and gender-specific policies in place that promote a safe, respectful and inclusive environment for women at work and in communities near work camps. The developer will consult with the Tłıchǫ Government and Community Government of Whatı in establishing core elements of these policies.

The developer and the Tłıchǫ Government have committed to work together to develop work safe policies for women. The Review Board found the report *Indigenous Communities and Industrial Camps: Promoting Healthy Communities in Settings of Industrial Change* (PR#269) submitted by the Tłıchǫ Government to be very informative on the dangers and risks posed by industrial work camps. The report had many practical and valuable suggestions and recommendations on preventative actions to reduce impacts from work camps near communities. The Review Board is of the view that a consideration and implementation of the report's applicable recommendations would reduce risks to women from the construction phase of the Project.

Suggestion 5-2: Work safe policies for women

The Tłıchǫ Government and the developer should include, to the extent feasible, the suggestions and recommendations put forward in the report *Indigenous Communities and Industrial Camps: promoting healthy communities in settings of industrial change* (PR#269) when developing work safe policies for women.

Safety and awareness training

The following measure requires the P3 operator to have employee awareness training and policies in place to reduce impacts from workcamps and impacts to the safety of young women.

Measure 5-4: Employee awareness training and policies

To promote a positive, safe and inclusive work environment, the developer will ensure that the P3 operator:

- establishes a workplace environment that prevents assault, harassment and racism;
- has a zero-tolerance harassment policy for racial or sexual discrimination; and,

- requires employees to take a training course designed to promote cultural and gender awareness.

The developer will develop appropriate training materials, in consultation with the Tłıchǫ Government and the Tłıchǫ Community Services Agency, that reflect the factors that increase risks of sexual assaults on Aboriginal women. The developer, the Tłıchǫ Government and the Tłıchǫ Community Services Agency will coordinate course delivery. The developer will fund the training course.

The following measure requires a grievance mechanism to improve the company's awareness and relationship with affected communities. This is to ensure the P3 operator is ready to be held accountable for grievances and to confront, acknowledge, solve and learn from problems. Timing and frequency of the public engagement sessions described in the measure below should be determined in consultation with the communities.

Measure 5-5: Community engagement and grievance mechanisms

The developer will hold public engagement sessions with the Communities of Whatì and Behchokò to discuss project-related community concerns.

The developer will have a camp grievance mechanism and a community grievance mechanism that allow individuals and communities to raise concerns in a timely and open manner. These will be in place before the start of Project construction.

The Review Board finds that the recommendations in *Indigenous Communities and Industrial Camps: promoting healthy communities in settings of industrial change* for reducing hitchhiking to minimize impacts to the safety of young women are useful and applicable to the Project (PR#269 p33).

Suggestion 5-4: Shuttle service for employees

To reduce the number of personal vehicles using the road and improve safety by deterring hitch-hiking between communities, the Tłıchǫ Government and developer should explore options for shuttle service between communities and the worksite for employees and ensure that the P3 operator implement any chosen option.

The Review Board suggests that improved cellular coverage would increase safety of road users on the Project.

Suggestion 5-5: Cellphone coverage for increased safety

To improve safety of road users, the developer and the Tłıchǫ Government should collaborate in efforts to extend cell coverage to include the length of the road prior to its operation.

Changes in Wekweètì and Gamètì

The Project will extend the winter ice road season to the communities of Wekweètì and Gamètì. The Review Board heard how the Community of Whatì suffers from significant increases in harmful behaviour during its winter ice road season, and that its health and social service agencies are stressed during that period beyond capacity. The Review Board has expressed concern that the extension of time for the ice road season to Wekweètì and Gamètì might result in an additional level of strain on the health and well-being of residents and service providers in those communities.

The Tłıchǫ Government has expressed confidence that the Inter-Agency Committees in Wekweètì and Gamètì are well equipped to detect and respond to any such change. The Review Board recommends that those Inter-Agency Committees explicitly monitor for adverse changes associated with an extended ice road season, and proactively prepare for such an eventuality. Timing and frequency of the public engagement sessions described in the suggestion below should be determined in consultation with the communities.

Suggestion 5-6: Evaluate changes to Wekweètì and Gamètì social service demands

The developer should work with the Tłıchǫ Government and the Inter-Agency Committees of Wekweètì and Gamètì to evaluate whether the extension of the ice road season to the communities of Gamètì and Wekweètì results in additional resource capacity issues for the health and social services supporting those communities. The developer should hold public engagement sessions in Wekweètì and Gamètì to discuss project-related community concerns.

Preparation of health authorities and offices

The recommendations of the report *Indigenous Communities and Industrial Camps: promoting healthy communities in settings of industrial change* regarding adequate resourcing of health and social service providers are applicable to the Project (PR#269 p42). The Review Board believes the following suggestion will complement the ongoing efforts of the Tłıchǫ Government, the Community Government of Whatì, TCSA and the RCMP to promote community health and safety.

Suggestion 5-7: Preparation of local health authorities

The Tłıchǵ Community Services Agency will make sure that its staff in the communities of Whatì and Behchokò have nursing policies in place to respond to sexual assault and harassment cases, mental health issues, increases in drugs and alcohol abuse and other impacts that may come from or be worsened by industrial camps. Nursing staff should be equipped with adequate equipment and materials to provide timely care, treatment, and investigation for assault cases. This includes rape kits or other tools necessary to address and treat cases of rape or sexual assault.

Emergency response services

The Project is likely to increase the frequency and severity of road-side accidents¹. The Review Board believes that emergency response capability in the communities of Whatì and Behchokò is necessary to reduce the response time of emergency vehicles to accidents along the road and to improve public safety along the road. The Government of the Northwest Territories is working towards the development of an effective ground ambulance and highway rescue with the Tłıchǵ Government, the Tłıchǵ Community Services Agency and the Community Government of Whatì. The Review Board concludes that the Community Government of Behchokò is a necessary partner in these initiatives to reduce the severity of roadside accidents on the southern portion of the all-season road.

Measure 5-6 Include Behchokò in accident response planning

The Government of the Northwest Territories will develop and implement an effective ground ambulance and highway rescue action plan along the road that will be designed in collaboration with the Tłıchǵ Government, Community Government of Whatì, and Community Government of Behchokò.

Public transportation to reduce vulnerability barriers

Allowing affordable and convenient access to Behchokò and Yellowknife would remove some of the impulse for hitchhiking by youth and reduce mobility barriers for those who have no access to a personal vehicle or money to afford a flight. To ensure all residents of Whatì can benefit from improved access to health and social services, family and less expensive goods in Behchokò or Yellowknife, the Community Government of Whatì should explore periodic public transportation or supply runs. This is one way the Community

¹ See section 5.4.7 for details.

Government of Whatì should look into reducing disparities created by the road that make it difficult for vulnerable people to benefit from the Project.

Suggestion 5-8: Exploration of public transportation to improve mobility to vulnerable groups

The Community Government of Whatì should explore public transportation or supply runs to allow affordable and convenient access to Behchokò and Yellowknife, to reduce hitchhiking and mobility barriers for those without access to a personal vehicle.

Prioritizing Northern hiring

Section 115 (1)(b) of the *Act* requires the Review Board to “have regard to... the protection of the social, cultural and economic well-being of residents and communities in the Mackenzie Valley”. Economics will likely be a primary factor in the developer’s selection of the P3 contractor for the Project, but the Review Board notes that the developer will also consider how local labour and businesses will be sourced in the developer’s selection. There is considerable uncertainty over the local economic opportunities that will result.

The measure below requires the developer to include Northern hiring requirements within its contract with the P3 operator. It is intended to mitigate the potential loss of employment opportunities of Northerners, and of Tłchq citizens in particular, who currently maintain the winter road. This measure will contribute to overall community well-being and is a part of mitigating the combined significant impacts of the Project.

Measure 5-7: Prioritize Northern hiring

The developer will prioritize Northern hiring, and Tłchq citizen hiring in particular, in its contract with the P3 operator.

Suggestion 5-9: Prioritize using local contracting, materials and equipment

The developer and P3 operator should prioritize the use of available local contracting, materials and equipment for the Project.

Training and education for the Project

The Review Board notes the developer’s work to develop training opportunities. The suggestion below encourages ongoing efforts in this area.

Suggestion 5-10: Project training and education initiatives for Tłchq citizens

The developer should build on and support training and education initiatives related to the Project for Tłchq citizens.

Boreal caribou (tqdzı) measures and suggestions

This species at risk is of the highest concern to the Review Board. For millennia, caribou have been vital to the survival of Aboriginal people in the area where the Project is now proposed. Now, the survival of caribou appears to be increasingly dependent on people. Boreal caribou matter to Aboriginal people as part of this profound relationship. The following measures and suggestions are made in this spirit.

Implement the NWT Recovery Strategy and range plans

Range plans are required by the *Recovery Strategy for Boreal Caribou in the Northwest Territories*. The Review Board is concerned that these range plans have not been implemented in the Northwest Territories. Mechanisms within the Recovery Strategy and regional range plans would not only help mitigate cumulative impacts on caribou, but would also mitigate Project-specific impacts to boreal caribou (tqdzı) in whatever region they are experienced.¹ Without the full implementation of the *Recovery Strategy for the Boreal Caribou in the NWT* and associated range plans, evidence provided during this EA suggests that boreal caribou (tqdzı) will not have adequate protection to ensure the population is self-sustaining over the short and long term, in either the Project area or at the NT1 scale.

Notwithstanding the Review Board's comments above about the habitat disturbance threshold, the *Recovery Strategy for Boreal Caribou in the Northwest Territories* requires many actions to help protect boreal caribou (tqdzı).

The following measure is focused on the area of the range plan(s) in which caribou are likely to experience effects of the Project, and ensures that the Project operations (specifically, public use of the road) does not proceed until range plans are implemented for boreal caribou (tqdzı) in the North Slave region and in any other region where boreal

¹ Although the Project is in the North Slave region, the caribou exposed to Project effects may also frequent other regions, such as the DehCho, which is only 65 km away approximately.

caribou (tǫdzı) may experience impacts related to the Project. This measure is required to mitigate significant adverse project-specific and cumulative impacts to boreal caribou (tǫdzı).

Measure 6-1: Implementation of the *Recovery Strategy for the Boreal Caribou in the NWT*, and required range plans, for boreal caribou affected by the Project

6-1, Part 1: Develop and implement range plans

The GNWT-ENR will develop and implement a range plan for boreal caribou (tǫdzı) in the North Slave region, as required by the *Recovery Strategy for the Boreal Caribou in the NWT*. The GNWT-ENR will also develop and implement a range plan for any other region where boreal caribou (tǫdzı) may experience impacts related to the Project.

The range plan(s) will be developed collaboratively with Aboriginal groups and co-management partners. The range plan(s) will be completed before the Project is opened for public use.

The GNWT-ENR will manage the amount of undisturbed habitat in the North Slave region to achieve the National Recovery Strategy recommended threshold for critical habitat, or a threshold proposed by the GNWT-ENR and approved by Environment and Climate Change Canada.

6-1, Part 2: Information and adaptive management requirements

For the area identified by the range plan(s) in measure 6-1, part 1 the following must be included in the development and implementation of the *Recovery Strategy for the Boreal Caribou in the NWT* and range plan(s):

- monitoring of population trends, abundance and distribution;
- determination of population thresholds and triggers to inform adaptive management;
- harvest monitoring and reporting including Aboriginal harvesting and non-Aboriginal hunting;
- determining sustainable harvest levels;
- identifying critical habitat;
- ongoing habitat disturbance monitoring;
- setting and meeting critical habitat objectives for each range; and,

- monitoring predator populations including densities, movements and predation rates.¹

Monitoring will meet the requirements of Appendix C. GNWT-ENR will work with the developer to adaptively manage Project impacts on boreal caribou (tǫdzı) (following guidance in Appendix B).

Fully implement the NWT boreal caribou Recovery Strategy

The Board observes that the *Recovery Strategy for the Boreal Caribou in the NWT* lists boreal caribou (tǫdzı) as threatened. This means “boreal caribou are likely to become endangered in the NWT if nothing is done to reverse the factors leading to its extirpation or extinction” (PR#106 piv). The Review Board also notes that Land Protection Directive 6.2.C of the Tłıchǫ Wenek’e / Tłıchǫ Land Use Plan states that “In partnership, the Tłıchǫ Government will work to implement the National Recovery Strategy for Boreal Woodland Caribou”.

The Review Board is concerned that the GNWT has made little progress on implementing the range plans required by the *Recovery Strategy for the Boreal Caribou in the NWT* and that the GNWT has missed deadlines for range plan implementation. The Review Board is unaware of any actions that the developer, or the GNWT, have taken to reverse the factors causing adverse effects to boreal caribou (tǫdzı) or their habitat. The evidence the Review Board is aware of points to additional and increased pressures on boreal caribou (tǫdzı), including those from the proposed Project.

The Review Board notes the developer’s position in its closing argument, which asserted that the NT1 range scale was the appropriate scale to determine whether boreal caribou (tǫdzı) are self-sustaining. The Review Board finds that additional information is required to accurately determine whether boreal caribou (tǫdzı) are likely self-sustaining throughout their current distribution in the NWT. At a minimum, information on caribou abundance, distribution, movements and population trends is required.

The NT1 range is the range used in the *Recovery Strategy for the Boreal Caribou in the NWT*. Considering the narrow margin of undisturbed habitat compared to the 65% threshold,¹ and the lack of information regarding boreal caribou (tǫdzı) population and trends at that scale, the Review Board finds that cumulative impacts on boreal caribou (tǫdzı) are likely already significant; this is demonstrated by their species-at-risk status in the NWT and nationally. The incremental additional pressure of the Project is likely to increase this significance. To mitigate this, the Review Board suggests that the *Recovery Strategy for the Boreal Caribou in the NWT* be fully implemented across the NWT. The actions required by the *Recovery Strategy* would increase the likelihood that boreal caribou (tǫdzı) are self-sustaining.

It is important that the *Recovery Strategy for Boreal Caribou in the Northwest Territories* is implemented as soon as possible. If numbers are indeed declining, there will be fewer boreal caribou (tǫdzı) left to protect with each passing day.

Suggestion 6-1: Implementation of the Recovery Strategy for the Boreal Caribou in the NWT

The GNWT-ENR should fully implement the <i>Recovery Strategy for Boreal Caribou in the Northwest Territories</i> as soon as possible.

Temporary no hunting corridor

Without additional mitigation, the Project is likely to result in significant adverse impacts to boreal caribou (tǫdzı) from increased non-Aboriginal hunting pressures along with the other impacts from the Project to boreal caribou (tǫdzı). Collectively, these adverse effects create a conservation concern that requires management of these effects, including hunting. The following measure is required to mitigate significant adverse impacts to caribou that the Board concludes are otherwise a likely result of increased non-Aboriginal hunting due to increased access to the Project area. This measure will be developed in consultation with the Tłıchǫ Government and WRRB. Details of the no-hunting corridor, such as its width, will be determined through the wildlife management

¹ particularly in the portion of the NT1 range south of Great Bear Lake

procedures set out in the *Tłıchǵ Agreement*.¹ This measure is not intended to interfere or limit Aboriginal harvesting rights protected under section 35 the *Constitution Act, 1982*.

The Board notes that a no-hunting corridor along a new road in the area was required by a Measure 11 in the NICO Mine Report of EA (p89).

Measure 6-2: Temporary no-hunting corridor for boreal caribou (tǫdzı)

To mitigate significant adverse impacts from the project on boreal caribou (tǫdzı), the GNWT-ENR and Tłıchǵ Government will submit a wildlife management proposal under section 12.5.1 of the Tłıchǵ Agreement to the Wek'èezhì Renewable Resources Board. The proposal will establish a temporary no-hunting corridor to reduce the take of boreal caribou (tǫdzı) along the Project route. Only individuals exercising section 35 rights will be allowed to harvest boreal caribou (tǫdzı) in this corridor.

The corridor will be established prior to the road being opened to the public. At a minimum, this hunting restriction will remain in place until the <i>Recovery Strategy for Boreal Caribou in the Northwest Territories</i> is fully implemented in the area of the range plan(s) required by measure 6-1, and sustainable harvest levels for the North Slave region are determined.

Habitat offset plan

The Board finds that the Project will likely have significant adverse impacts on boreal caribou habitat. These impacts include direct habitat disturbance and Project impacts that would cause a loss of effective habitat. The developer did not propose any mitigations or offsets for the Project related effects to boreal caribou habitat. The Review Board understands that the developer intends to implement a range plan for the area in which the Project is located, and that it will follow the boundary of the North Slave region. Less than 65% of the boreal caribou (tǫdzı) habitat in the North Slave region is currently undisturbed. The federal government's report on the recovery strategy implementation states, "[f]or ranges with less than 65% undisturbed habitat, identify in a range and/or action plan specific areas of existing undisturbed habitat, as well as those areas where

¹ Subsection 12.5.1 of the *Tłıchǵ Agreement* requires that any party "before taking any action for management of wildlife in Wek'èezhì, including such actions as set out in a management plan, submit its proposals to the Wek'èezhì Renewable Resources Board for review under 12.5.4". Subsection 12.5.4 describes the WRRB's review of proposals, and 12.5.5 describes its determinations.

future habitat is to be restored to an undisturbed condition over reasonable, gradual increments every five years” (PR#242 p20).

The Review Board accepts that the WRRB’s suggested 2500 m buffer on each side of the road’s right-of-way would likely capture the Project’s impacts on boreal caribou effective habitat more completely than the 500 m buffer proposed by the developer. The Board cautions that this buffer may not address the potential habitat fragmentation effects of the Project.

In light significant uncertainties with the current status of boreal caribou (tǫdzı) in the area of the Project, the existing high amount of habitat disturbance and the lack of any proposed habitat mitigations, the Review Board recommends that the developer provide a habitat offset plan for the buffered disturbance caused by the Project. This will offset Project impacts and help mitigate the contribution of the Project to cumulative impacts on caribou related to the net amount of disturbed boreal caribou (tǫdzı) habitat.

Measure 6-3: Habitat offset and restoration plan
<p>The developer will offset effective boreal caribou (tǫdzı) habitat lost because of disturbance from the Project. The offset calculation will, at a minimum, be based on the area of the right of way with a 2500 m buffer on each side.</p> <p>The developer, with the involvement of GNWT-ENR, will prepare and implement a habitat offset plan. This plan will describe how the required habitat offset area (calculated as set out above) will be achieved. In preparing the plan, the developer will collaborate with Tłıchǵ Government and the Wek’èezhì Renewable Resources Board, and consult with the following participants to this environmental assessment:</p> <ul style="list-style-type: none">• Environment and Climate Change Canada;• Yellowknives Dene First Nation; and,• North Slave Métis Alliance. <p>The developer will make funding available to the parties to support this consultation and collaboration. The developer will submit a draft and a final plan as described below. Once approved, the developer will operate in accordance with the plan.</p> <p>The developer will submit a draft plan to the Wek’èezhì Renewable Resources Board for review under section 12.5.1 of the Tłıchǵ Agreement, a minimum of 90 days prior to</p>

commencement of construction. The developer will submit the final habitat offset plan to the Wek'èezhì Renewable Resources Board for review under section 12.5.1 of the Tłıchǵ Agreement, as soon as possible, and no later than 90 days prior to public use of the road. This final plan will include, at a minimum:

- the goals and objectives of the plan;
- a discussion on the expected effectiveness of mitigations and offsets;
- a decision framework to prioritize restoration areas, mitigations, and offsets, including references to the research on which the decision framework was based;
- a discussion of how any proposed mitigations or offsets align with the Recovery Strategy for the Boreal Caribou in the NWT and range plans;
- details of proposed ways to offset habitat disturbance including restoration sites, mitigation measures, offsets, forest fire fighting policies, or habitat management approaches;
- a description of the spatial scale of the proposed offset, the habitat quality and type, site specific restoration activities, and any challenges;
- a timeline for offsetting;
- a quantitative and qualitative assessment of the total area of boreal caribou habitat proposed for restoration and the timeframe required for restoration;
- a summary of consultation feedback that was integrated into the draft and final plans;
- a description of any Traditional Knowledge that was considered in the development of the plan, and how it was incorporated; and,
- a description of any resources provided to Aboriginal groups to support their involvement in the drafting of the final plan, and for any involvement in the implementation of the plan.

Barren-ground caribou (ʔekwò) measures and suggestions

The primary measures to minimize significant adverse impacts to barren-ground caribou (ʔekwò) is the harvest monitoring measure (9-1) described in Chapter 9.

In addition to the harvest related measures in Chapter 6 and Chapter 9, the Board requires the developer and Tłıchǵ Government to implement the following measures to mitigate

significant adverse impacts to barren-ground caribou (ᑭᑭᑭᑭ) from increased harvest opportunities and pressure. This measure builds on a commitment made by the Tłıchǫ Government and the developer to reduce adverse impacts to caribou from increased access due to the operation of the Project.

Traditional knowledge and caribou monitoring

The developer has committed to support, subject to available funding, the Tłıchǫ Government in the design and implementation of a program that uses Tłıchǫ harvesters' Traditional Knowledge and methods to monitor the state of barren-ground caribou (ᑭᑭᑭᑭ) winter habitat, during and after the completion of the Project (PR#192 pp41-42).

The following measure builds on this commitment, which is a necessary part of mitigation, and is outlined in the WMMP (PR#192 pp41-42).¹ The Review Board notes, however, that the developer's commitment to incorporate Traditional Knowledge as described in this commitment is "subject to the availability additional resources" (PR#192 p41). This measure is required to ensure that funding is made available by the developer to implement the measure.

Measure 7-1: Incorporate Traditional Knowledge into monitoring of barren-ground caribou (ᑭᑭᑭᑭ)

To improve and inform mitigation of significant adverse impacts to barren-ground caribou (ᑭᑭᑭᑭ) resulting from increased access due to the Project, the developer will include Traditional Knowledge in barren-ground caribou (ᑭᑭᑭᑭ) monitoring and management. Prior to operations, the developer will:

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| <ul style="list-style-type: none">d) support the Tłıchǫ Government in the design and implementation of a program that uses Tłıchǫ harvesters' traditional knowledge and methods to monitor the state of barren-ground caribou (ᑭᑭᑭᑭ) winter habitat, during and after the construction of the Project;e) fund the implementation of the program in paragraph a); and,f) incorporate the findings of the program in paragraph a) into the <i>Wildlife Management and Monitoring Plan</i> while it is in place, and into any other barren- |
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¹ Please see Sections 10.2.3 and 10.3.5 for further details about the WMMP. A measure to enshrine the WMMP and all its commitments is described in Measure 10-2 (Section 10.4.2) of this Report.

ground caribou (ᚱᓃkwᓄ) management if the *Wildlife Management and Monitoring Plan* is not extended.

Implement mitigations from range plan initiatives

The developer's stated method to mitigate impacts to caribou as a result of improved access from the Project is through its existing mandate to manage wildlife and the implementation of its range planning initiatives. Since these planning initiatives are incomplete, the Review Board does not have confidence that effective mitigation or management will be in place. According to section 12.11.2 of the *Tłıchǵ Agreement*, a comprehensive proposal for the management of the Bathurst caribou herd was to have been prepared within three years after the effective date of the *Tłıchǵ Agreement*. The Review Board requires the implementation of key mitigation measures in the draft plans that are relevant to the Project.

Measure 7-2: Barren-ground caribou mitigation and policy changes

To manage significant adverse impacts to barren-ground caribou (ᚱᓃkwᓄ) resulting from the Project, GNWT-ENR and Tłıchǵ Government, along with their co-management partners in the Wek'èezhì area, will:

- c) complete the *Bathurst Caribou Range Plan* as soon as possible and prior to the expiry of the *Wildlife Management and Monitoring Plan*; and,
- d) consider protecting barren-ground caribou (ᚱᓃkwᓄ) historic winter habitat from fires when determining where and when fires are fought, to offset effective habitat loss from the Project.

Fish and water measures and suggestions

Integrated Fisheries Management Plan

The Review Board agrees with the WRRB that an integrated fisheries management plan is required to prevent likely significant adverse impacts from the Project because of increased access leading to increased fishing pressure. Although parties have agreed to work together on a plan or strategy, the Review Board concludes that mitigation is crucial to preventing likely significant impacts and is therefore recommending it as a measure.

The intent of the measure below is to require parties to work together on a plan that will improve understanding of fisheries in the area and support appropriate mitigation, monitoring and adaptive management.

The Review Board considers managing fisheries essential to prevent significant adverse effects on fisheries and harvesting. This includes effective monitoring to inform mitigation of impacts to fisheries, including managing fishing pressure. Rivers and small lakes that are easily accessible from the road are more vulnerable to impacts from increased access and fishing pressure.

Measure 8-1: Integrated Fisheries Management Plan

Fisheries and Oceans Canada and the Tłıchǵ Government, with the support of the developer, will develop and implement an Integrated Fisheries Management Plan for fisheries in the project area. This will prevent significant adverse impacts from additional fishing pressure that will likely result from increased access via the Project. In designing the plan, Fisheries and Oceans Canada and the Tłıchǵ Government will engage the Wek'èezhì Renewable Resources Board, the Community of Whatì and other affected Aboriginal groups. Fisheries and Oceans Canada and the Tłıchǵ Government will submit the plan to the Wek'èezhì Renewable Resources Board for review under section 12.5.1 of the Tłıchǵ Agreement.

As part of this plan, Fisheries and Oceans Canada and the Tłıchǵ Government, along with the above organizations, will complete the following work:

- e) Complete work to understand baseline fishery and harvest conditions. This work will include, at a minimum:
 - v. assessing yield and harvest;
 - vi. identifying management issues;
 - vii. establishing fisheries objectives; and,
 - viii. clarifying management and stewardship arrangements.
- f) Design and implement, with support of the developer, mitigation to prevent or manage project impacts (which may include a regulatory and compliance plan).
- g) Design and implement monitoring plans, meeting the requirements of Appendix C.

- h) Design and implement an adaptive management plan (following guidance in Appendix B).

Fisheries and Oceans Canada and the Tłchq Government will provide opportunity for the working group (required by Measure 14-3) and other interested parties to review and comment on this plan.

Examples of mitigation on similar projects

Other roads in the Northwest Territories have dealt with management issues related to increased access. Most recently, the Inuvik to Tuktoyaktuk highway in the Inuvialuit Settlement Region had to contend with similar concerns related to the proximity of a road to an important traditional subsistence fishery. This suggestion is intended to encourage fisheries management authorities to consider experience from other similar situations.

Suggestion 8-1: Examples of mitigation on similar projects

Fisheries and Oceans Canada and its fisheries co-management partners should review the mitigation and management strategies applied to similar projects, such as those recently applied along the Inuvik to Tuktoyaktuk highway, to determine if there are relevant mitigations or lessons learned that could be incorporated or applied proactively to this Project.

Cultural well-being measures and suggestions

This report contains several measures that will collectively help maintain Aboriginal harvest, including those directed towards conserving harvested wildlife species in Chapters 6, 7, 8. In particular, Measures 5-1 and 5-2 in Chapter 5 require monitoring of changes harvest success rates and adaptive management. Measure 6-2 requires a temporary no-hunting corridor where non-Aboriginal hunting of boreal caribou (tqdzı) will be prohibited, reducing competition for Aboriginal harvesters from outside hunters with new access to the area.

In addition, the measure below requires a framework for harvest monitoring and reporting along with actions that can be implemented through adaptive management to address impacts from the Project on harvester success.

Harvest monitoring and reporting

This measure builds on commitments in the developer's Wildlife Management and Monitoring Plan for monitoring the Project-specific mortality of wildlife from harvesting associated with the Project (PR#192 pp35-37). The purpose of this measure is to protect the sustainable harvest of wildlife for Aboriginal people. It builds on recommendations from the Wek'èezhì Renewable Resources Board (PR#215 p24).

The Review Board is confident that if GNWT-ENR fulfills the requirements of this measure to consider wildlife management actions and mitigations, in collaboration with the Tłıchǫ Government and Wek'èezhì Renewable Resources Board, based in part on the results of the harvest monitoring required below, then it will act on monitoring results appropriately to manage wildlife and help ensure sustainable Aboriginal harvesting.

The TASR corridor working group required by Measure 14-3 provides additional Aboriginal involvement to that described in this measure.

Measure 9-1: Monitoring harvest and managing wildlife to maintain successful harvest

9-1, Part 1: Aboriginal harvest monitoring and reporting program

To mitigate impacts on Aboriginal harvesters and to effectively inform management of wildlife populations in the area of the Project, GNWT-ENR will work together with the Tłıchǫ Government and Wek'èezhì Renewable Resources Board to develop and implement an Aboriginal harvest monitoring and reporting program.

The harvest monitoring and reporting program will:

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| <ul style="list-style-type: none">e) focus on boreal caribou, barren-ground caribou and moose population trends in areas accessed by winter roads and trails from the Project;f) be community-based and involve collaboration between Tłıchǫ Government and the developer;g) involve Traditional Knowledge holders and harvesters in monitoring wildlife harvesting trends; and,h) report on wildlife harvesting numbers and trends from monitoring checkpoints and/or other harvest monitoring methods annually to the Tłıchǫ Government, |
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Wek'èezhì Renewable Resources Board, GNWT-ENR and other wildlife co-management partners.

The developer will fund this harvest monitoring and reporting related to the project. The harvest monitoring will meet the requirements of Appendix C.

9-1, Part 2: Use monitoring to inform management

GNWT-ENR, in collaboration with the Tłıchǵ Government and Wek'èezhì Renewable Resources Board, will consider wildlife management actions and mitigations based on the results of the monitoring above and the information collected by the GNWT's existing Resident Hunting Reporting Program, to help ensure sustainable Aboriginal harvesting of wildlife and report on monitoring results and management actions in the annual reviews of the Wildlife Management and Monitoring Plan.

Cultural sensitivity in work camps and communities

The following measure is intended to address concerns related to having an independent contractor construct and maintain a major infrastructure project in the Tłıchǵ region for up to 29 years. The measure addresses issues of cultural sensitivity and awareness; it is linked with measure 5-3 (Employee awareness training and policies) in Section 5.5.3 of Chapter 5 (Community Well-being). Through this measure, the successful contractor will ensure a culturally sensitive place of employment with strict anti-harassment policies. The developer and contractor will strive to make this Project a healthy contributor to the well-being of Tłıchǵ citizens.

Measure 9-2: Cultural sensitivity in work camps and communities

To mitigate the Project's impact on Tłıchǵ culture and well-being of Tłıchǵ residents, the developer will require that the P3 operator has culturally appropriate and specific policies in accordance with those set out by the Tłıchǵ Government, GNWT departments and federal government. The P3 operator will have policies and programs in place for employee cultural orientation, developed by the Tłıchǵ Government, for all non-Tłıchǵ residents, including awareness of special cultural norms and practices.

Preserving culture for Whatì youth

The Review Board recognizes that the Tłıchǵ Government and Community Government of Whatì have existing programs designed to increase the amount of time youth are engaged

in traditional activities on the land. The Review Board encourages the continuation of these programs, particularly those involving the participation of Elders. The Review Board offers the following suggestion to support the continuation these activities.

Suggestion 9-1: Preserving culture for Whatı youth

The Tłıchǫ Government and Community Government of Whatı are encouraged to continue to facilitate activities that pair youth and Elders together in culturally based activities, with preference given to on-the-land experiences and interactions.

The Review Board suggests that the Tłıchǫ Government track, over the long-term, the impact of the road on youth mobility and time spent on the land. Information from these studies may be useful to inform the frequency and extent of its youth cultural programming. This information should also be used by the Tłıchǫ Government when assessing the effectiveness of its actions to promote and conserve the Tłıchǫ way of life.

Including Traditional Knowledge from all relevant Aboriginal Groups

The Review Board recognizes that developer has funded a TK Study by the NSMA and will consider incorporating its findings during the regulatory phase. The following measure builds on that commitment, strengthens the language of “consider” to “will” and requires the consideration of all available TK about wildlife and harvesting, including YKDFN Traditional Knowledge. The Review Board acknowledges the efforts of the developer to incorporate Traditional Knowledge from the Tłıchǫ Government and encourages the developer to continue to do so.

Measure 9-3: Include Traditional Knowledge from all relevant groups

To mitigate impacts from the Project to culture and harvesting, the developer will incorporate Traditional Knowledge into the Project design and management from all Aboriginal groups that traditionally use the area. The developer will:

- d) support the collection of Traditional Knowledge related to traditional use, and compile it with information already acquired;
- e) thoroughly consider any Traditional Knowledge that is made available, and, where applicable, incorporate Traditional Knowledge into Project design, mitigations, monitoring and adaptive management; and,

- f) do this in a culturally-appropriate way that respects applicable Traditional Knowledge policies and protocols.

The GNWT-ENR and Wek'èezhì Land and Water Board will consider these findings in the *Wildlife Management and Monitoring Plan* and in permitting.

Retaining the Tłıchǵ language

The Tłıchǵ Government and the Community Government of Whatì have described their ongoing efforts in the Northwest Territories on language preservation and revitalization. The Review Board offers the following suggestion to the developer to use best practice initiatives to encourage Aboriginal language in the construction and maintenance camps.

Suggestion 9-2: Retaining the Tłıchǵ language

The developer should require the P3 operator to implement recent initiatives and best practices from the diamond mines for maintaining Aboriginal language use in the workplace, where applicable.

Species at risk and wildlife, other than caribou measures and suggestions

The Review Board finds that without the following measures, construction and operation of the Project is likely to cause significant adverse impacts to bird species at risk. These measures build on the developer's commitments to mitigate impacts to bird species at risk and strengthen the WMMP.

Mitigating impacts to bird species at risk and migratory birds

This measure requires a survey prior to construction, methods for monitoring nesting sites and ways of reducing conflicts with bird species at risk at quarries. This measure is intended to enable the developer to:

- mitigate impacts to bird species at risk and migratory birds;
 - address knowledge gaps on bird species at risk and migratory birds;
 - ensure confidence that proposed mitigations are relevant for species at risk and migratory birds that are likely present in the Project area; and,
 - verify the effectiveness of mitigations.
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Measure 10-1: Bird species at risk and migratory bird data, mitigation, monitoring and adaptive management

10-1, Part 1: Pre-construction bird surveys

The developer will conduct pre-construction field surveys of bird species at risk and migratory birds prior to disturbing potential habitat, including any clearing of the right-of way, quarry sites, camps, access routes, or other project infrastructure. The developer will consult with Environment and Climate Change Canada (ECCC) and GNWT-ENR about methods and timing for a field survey(s). The developer will conduct the survey using methods derived from peer-reviewed scientific literature and best practices.

10-1, Part 2: Mitigation

The developer will use the results from surveys in 10-1 Part 1 to inform mitigations. The mitigations will help protect bird species at risk and migratory birds and ensure habitats and nesting sites are protected. For all project-related infrastructure and activities during the construction and operations phase, the developer will:

- f) use the information from the survey(s) to inform and adjust proposed mitigations;
- g) implement mitigations as described in its commitments table and its *Wildlife Management and Monitoring Plan*;
- h) implement additional mitigations to eliminate or reduce impacts, if warranted based on surveys;
- i) halt all disruptive activities, in consultation with ECCC, in an area if nests or young are discovered; and;
- j) determine and implement, in consultation with ECCC and GNWT-ENR, appropriate species-specific buffer zones or setbacks, until the young have naturally and permanently left the vicinity of the nest taking into consideration the intensity of the disturbance and the surrounding habitat.

10-1, Part 3: Monitoring and reporting

The developer will:

- d) implement monitoring in section 5 and Appendix C of the *Wildlife Management and Monitoring Plan* and Chapter 14 of this report;

- e) monitor nests using non-intrusive search methods at quarry sites immediately prior to commencing any disruptive activities during the nesting period; and,
- f) report weekly and annually as described in section 6 of the *Wildlife Management and Monitoring Plan*, including findings of baseline surveys in 10-1 Part 1.

Monitoring will meet the requirements of Appendix C.

10-1, Part 4: Adaptive management

The developer will implement adaptive management as described in section 6 of the *Wildlife Management and Monitoring Plan* and following guidance in Appendix B of this report.

Wildlife Management and Monitoring Plan

The developer committed to finalize its WMMP during the regulatory phase, and to implement the WMMP during the construction of the road and for at least 5 years of road operations. Since mitigations to reduce impacts to wildlife are primarily contained in the WMMP, the Review Board concludes that a measure for its approval and implementation is necessary. This measure applies to all wildlife. This requirement is necessary particularly given that the P3 operator of the road is unknown at the time of writing this Report and may not have experience with project development and operation in the Mackenzie Valley.

Measure 10-2: *Wildlife Management and Monitoring Plan* approval, annual review and reporting

10-2, Part 1: *Wildlife Management and Monitoring Plan* update prior to permitting

The developer will update its Wildlife Management and Monitoring Plan prior to permitting to include the developer's commitments and Review Board's measures from this Report of Environmental Assessment.

Prior to permitting, the developer will, where appropriate, include Traditional Knowledge from all Aboriginal groups that harvest in the area on ways to mitigate, monitor and adaptively manage impacts from the Project to wildlife.

10-2, Part 2: *Wildlife Management and Monitoring Plan* update during permitting

During permitting, the developer will involve Environment and Climate Change Canada, GNWT-ENR, Wek'èezhì Renewable Resources Board, Tłchq Government and

Aboriginal groups that harvest in the area, in developing an updated *Wildlife Management and Monitoring Plan*. Monitoring will meet the requirements of Appendix C.

When updating the *Wildlife Management and Monitoring Plan*, the developer will, where appropriate, include Traditional Knowledge from all Aboriginal groups that harvest in the area on ways to mitigate, monitor, and adaptively manage impacts from the Project to wildlife. The *Wildlife Management and Monitoring Plan* will be updated based on the results of available surveys and monitoring, such as caribou, bird (Measure 10-1), and moose surveys.

The *Wildlife Management and Monitoring Plan* will require that construction activities, including clearing, consider sensitive wildlife periods, for example nesting periods of migratory birds.

10-2, Part 3: Annual review of the *Wildlife Management and Monitoring Plan* during construction and operations

GNWT-ENR will require annual public review of the *Wildlife Management and Monitoring Plan* and make publicly viewable:

- recommendations from parties;
- responses on how recommendations were incorporated; and,
- reasons for recommendations which were not incorporated.

Nesting habitat in quarries

The Board provides the following suggestion to consult with Environment and Climate Change Canada to lessen impacts for bird species at risk that colonize stockpiles. The suggestion supports a recommendation from ECCC.

Suggestion 10-1: Create suitable nesting in inactive area of quarry

To mitigate impacts to bird species at risk that may nest in quarry stockpiles created for the Project, the developer should consult Environment and Climate Change Canada on suitable mitigations, such as any applicable guidance described in the *Wildlife*

Management and Monitoring Plan and *Best Management Practices for the Protection, Creation and Maintenance of Bank Swallow Habitat in Ontario*.¹

Permafrost measures and suggestions

Permafrost management plan

The Review Board believes that this measure will prevent significant adverse impacts to, and from, permafrost. It requires the developer to take a proactive approach to address permafrost issues along the Project route, enabling more effective avoidance or management of Project impacts to and from permafrost.

Measure 11-1: Permafrost Management Plan

To minimize permafrost degradation and prevent associated significant adverse impacts on the environment from the Project during construction and operation of the Project, the developer will develop and implement a permafrost management plan for construction and maintenance of the Project. The plan will be submitted for review and approval to the Wek'èezhì Land and Water Board prior to construction.

This plan will include monitoring (following the requirements in Appendix C) and adaptive management (following the requirements in Appendix B). It will incorporate the recommendations made by Natural Resources Canada during the environmental assessment process as well as recommendations from the working group (Measure 14-3).

The developer will incorporate any relevant information from the permafrost management plan into ongoing monitoring and adaptive management during Project operations.

¹ Ontario Ministry of Natural Resources and Forestry. *Best Management Practices for the Protection, Creation and Maintenance of Bank Swallow Habitat in Ontario*. Queen's Printer for Ontario, 2017.

Lessons learned

This suggestion encourages the developer to share information and consider lessons learned about permafrost from other road construction projects in the north.

Suggestion 11-1: Lessons Learned
The developer should share information, techniques and lessons learned from other road construction projects in the north with its P3 operator, such as the Inuvik to Tuktoyaktuk highway and Highway 3.

Adaptive management, follow-up, and monitoring measures and suggestions

Adaptive management

Many measures in this Report of EA require the development and implementation of an adaptive management framework and refer to the requirements set out in Appendix B. The suggestion below encourages the developer and regulators to apply the adaptive management principles in Appendix B to management and monitoring plans associated with the Project, even where such plans are not specifically addressed in the measures of this Report of EA.

Suggestion 14-1: Systematic adaptive management in all applicable plans
The developer should incorporate adaptive management principles (such as action levels and management responses), based on Appendix B of this report, into all relevant management plans and monitoring programs. The Review Board encourages regulators to consider these adaptive management principles when setting regulatory requirements and when reviewing and approving management plans and monitoring programs.

Follow-up monitoring

Paragraph 111(1) of the *Act* defines a “follow-up program” to mean a program for evaluating (a) the soundness of an environmental assessment or environmental impact review of a proposal for a development; and (b) the effectiveness of the mitigative or remedial measures imposed as conditions of approval of the proposal.

The Review Board has set out measures in this Report of EA that require, as a part of the measure, for the developer to complete monitoring activities. To fulfill their purpose, these measures must be fully implemented and their effectiveness monitored, to inform adaptive management and to protect the environment if unforeseen circumstances arise or if impacts differ from those predicted during the EA. Where applicable, monitoring described in measures refers to the monitoring requirements outlined in Appendix C. The suggestion below encourages the developer and regulators to apply the same monitoring requirements from Appendix C to monitoring associated with other aspects of the Project, even where such plans are not specifically identified in measures of this Report of EA.

Suggestion 14-2: Monitoring objectives for all monitoring programs

The developer should incorporate monitoring requirements based on Appendix C of this report into all relevant monitoring programs and activities. The Review Board encourages regulators to consider these monitoring objectives when setting regulatory requirements and when reviewing and approving monitoring programs or activities.

Annual reporting from developer

In addition to informing adaptive management, reporting is needed to demonstrate to the Review Board, parties and the public that the developer is implementing the EA measures it is responsible for, and that the measures are fulfilling their intended purpose.

The developer may coordinate the reporting requirements of this measure with other reporting that it carries out. This measure is not intended to duplicate regulatory requirements, but to report specifically on the implementation of EA measures, including adaptive management requirements. The report can reference and rely on more detailed information that may be found in regulatory reports. This report on measures should be concise and use plain language and must clearly satisfy the requirements listed below. The Review Board will receive the annual report required below and publish it to the Review Board's registry, so it is accessible to the parties and the public.¹

¹ In the Review Board's view, the systematic evaluation and reporting required through the measures below will help the Review Board learn more about the practical implementation of EA measures and thereby improve future EAs and EA measures. These reporting and follow-up measures may also help inform regulators, inspectors, responsible ministers and parties as they carry out their respective roles in future EAs and in the integrated resource management system in the Mackenzie Valley.

Measure 14-1: Annual reporting from the developer

To demonstrate how measures are being implemented and to evaluate the effectiveness of the developer's efforts to prevent or minimize impacts on the environment, the developer will, throughout all phases of the development, prepare an annual report on the implementation of measures. The report will address the measures that the developer is responsible for and will:

- c. describe the actions, including actions implemented through adaptive management, being undertaken to implement the measures; and,
- d. evaluate how effective the implementation actions are in reducing or avoiding the impact (considering the results of monitoring programs and adaptive management frameworks). Where applicable, provide references to further information contained in other management plans or monitoring reports.

The developer will provide its annual report to the Review Board one year from the date of the final approval of this *Report of Environmental Assessment*, and annually thereafter.

Annual reporting from government and regulatory authorities

Regular reporting is needed to demonstrate that the measures in this Report of EA are being implemented and are fulfilling their purposes. Given that this Report of EA includes some measures specifically directed to regulatory authorities or government and others which they are partly responsible for implementing (under subsection 130(5) of the Act), government and regulatory authorities must play a role in follow-up and reporting to ensure the measures are effective. This applies to regulatory authorities and government other than the developer, which is covered by a similar measure above.

The Review Board hopes that communication about what government and regulators are doing to make sure EA measures are implemented will help strengthen the linkages between the different parts of the integrated system of resource management in the Mackenzie Valley. This communication will better connect, for the public and all participants in the resource management system, the significance determinations and EA measures required for Project approval with the regulatory process throughout the life of Project operations.

Like Measure 14-1, this measure is not intended to be duplicative. Where applicable, governments and regulators can reference and rely on more detailed information that can be found in other reports. The Review Board will receive the reports required below and publish them to the Review Board's registry so they are accessible to the parties and the public. This will provide opportunities to learn from them to improve future EAs and EA measures.

Measure 14-2: Annual reporting from government and regulatory authorities

To help evaluate the effectiveness of mitigation measures for the protection of the environment, each regulatory authority or government that is wholly or partly responsible for implementation of any measure in this Report of Environmental Assessment will prepare an annual report on implementation of measures. The report will:

- c) describe the actions being undertaken to implement the measures or the part(s) of the measures for which the regulatory authority or government is responsible; and,
- d) explain how these actions, including those implemented through adaptive management, fulfill the intent of the EA measures, including consideration of the following questions:
 - iii. How are implementation actions addressing a likely significant adverse impact on the environment?
 - iv. How effective are implementation actions at reducing or avoiding the impact or its likelihood?

Government and regulators are only responsible for reporting on the implementation actions they take, not actions taken by the developer. For example, if a regulator does not issue an authorization, provide direction to the developer, approve a management plan, or take other actions that relate to an EA measure(s) in a given year, the regulator will not need to submit a report for that year.

The governments and regulators will provide their annual reports to the Review Board one year from the date of the final approval of this *Report of Environmental Assessment*, and annually thereafter.

Working group

The Review Board has determined that a working group is required to assist in the monitoring, mitigation and adaptive management of impacts on the Project. The following measure formalizes and builds on the developer's commitment to establish the TASR Corridor Working Group. To mitigate significant adverse impacts from the Project to the environment and people, the developer will implement the TASR Corridor Working Group and incorporate actions of the group as described below. The intent is for a working group like the one formed for the Inuvik to Tuktoyaktuk Highway, which communicates on a wide variety of topics.¹ The information and discussion of the Working Group will help the developer improve its management of the Project, to adaptively reduce or avoid impacts that are otherwise likely.

Measure 14-3: Project working group

The developer will establish the Tłıchǵ All-Season Road Corridor Working Group by:

- funding the Tłıchǵ Government, Wek'èezhì Renewable Resources Board, Yellowknives Dene First Nation and North Slave Métis Alliance to participate in twice annual working group meetings, one of which will annually take place in Whatì;
- requiring the participation of the P3 operator; and,
- inviting Tłıchǵ Elders to participate.

The developer will make meeting minutes publicly available.

The developer will maintain the working group throughout the Project construction phase and for five years of Project operations, unless an extended term is agreed to by parties.

P3 Operator

The Review Board is concerned about increased potential for impacts arising from uncertainties due to the use of a P3 operator to construct and operate the road.² The

¹ The Inuvik to Tuktoyaktuk Highway Corridor Working Group was established with key areas of interest including permafrost, granular resources, surface hydrology, vegetation, fish, wildlife and harvesting.

² The P3 operator will be responsible for the construction and initial 25 years of operation. Please see Chapter 4 for the Review Board's discussion about the P3 operator.

Review Board intends the following measure and suggestion to ensure the developer's commitments and the Board's measures are carried through from the EA into action during construction and operation of the Project by an unknown P3 operator. The Review Board emphasizes that it is the developer's responsibility to ensure all commitments and measures are followed.

Measure 14-4: P3 operator agreement

To ensure that all applicable and relevant commitments of the developer and measures directed at the developer are carried out during the construction and operation phases of the Project, the developer will formalize and include these commitments and measures in its final contract with the P3 operator.

As discussed in Chapter 4, the successful P3 operator will operate in the project area for approximately 29 years. There are other organizations with extensive experience in managing contractors' environmental and social performance. Some of these organizations have produced guidance for implementing environmental and social commitments when working with third parties that are likely applicable to the Project. The Review Board intends this suggestion to assist the developer in selecting and managing an appropriate P3 operator.

Suggestion 14-3: Contractor good practices

The developer, in selecting and managing a P3 operator, should follow best practice guidelines from international organizations or other jurisdictions, such as the International Finance Commission's good practice note on <i>Managing Contractors' Environmental and Social Performance</i> .

Appendix B: Adaptive management

In several chapters throughout this Report of EA, the Review Board has concluded that adaptive management is a necessary part of the overall mitigation strategy needed to prevent significant adverse impacts on the environment. The Review Board is not prescribing the specific details (for example, triggers or action levels, management actions) for these adaptive management requirements. Rather, where a requirement to adaptively manage a potential impact(s) is indicated in a measure, each measure specifies that:

- a. the developer must establish and implement an adaptive management framework that satisfies the requirements set out in this appendix; and
- b. the relevant regulators will be responsible for ensuring the frameworks are adequately developed and implemented.

The developer has the flexibility to determine, subject to regulatory approval, how to organize the various adaptive management frameworks in a way that is practical for operations; for example, whether to have separate frameworks for each of its management and monitoring plans, or to prepare a combined framework for several related plans. The Review Board expects that the level of detail of different adaptive management frameworks will vary, depending on the circumstances (for example, impact predictions, monitoring requirements, robustness of initial mitigations) while still meeting the requirements set out below.

Where the Board has determined that adaptive management is necessary, as set out in a measure¹ in this REA, the adaptive management framework will²:

1. Be submitted for review and approval by the appropriate regulatory authority (that is, having jurisdiction over the part of the operation and/or environment to which each framework applies), considering the timeframe identified in each measure.
2. Include consideration of Traditional Knowledge.
3. Include engagement with communities, Aboriginal groups, and other stakeholders (for example, on components such as action levels).

¹ These requirements could have been included within each measure in the chapters above, but have instead been consolidated here for clarity and consistency.

² These requirements are consistent with the principles described in the WLWB's Oct 2010 Draft Guidelines for Adaptive Management.

4. Identify the monitoring program or mechanism that will provide information on project effects and how data and information will be evaluated (and be used to determine when action levels are reached).
5. Set action levels that will ensure significant adverse impacts¹ do not occur: all action levels (for example, low, medium, and high) must be below the threshold of a significant adverse impact.
 - a. In some cases it may be acceptable to set only the low action level in advance, and to set other action levels if/when the low action level is reached.
6. Define the management actions (for example, mitigations) that will be taken upon reaching a pre-defined level of environmental change or effect (the action level).
 - a. In some cases, it may be acceptable to describe detailed actions pertaining only to the low action level and describe options pertaining to the medium and high action levels.
7. Include a requirement for the developer to prepare a response plan, to be implemented following review and approval by the appropriate regulatory authority, in a timely manner upon meeting a low action level. Each response plan will include an evaluation of the effectiveness of the mitigations that have been implemented to date and the expected effectiveness of new or adjusted actions that will be taken when the response plan is implemented. Each response plan will also reaffirm or define additional action levels and management actions. A response plan should be updated as needed if higher action levels are reached, or based on management action results.

¹An important requirement for adaptive management is defining, quantitatively or qualitatively, what is meant by “significant adverse impacts”. This will be informed by the Review Board’s significance determination and may be refined during licensing, permitting, and other regulatory processes.

Appendix C: Monitoring requirements

In several chapters throughout this Report of EA, the Review Board has concluded that monitoring is a necessary part of the overall mitigation strategy needed to prevent significant adverse impacts on the environment (including people). To be effective, monitoring programs must meet the necessary objectives to reliably support adaptive management (described in Appendix B) and track the effectiveness of mitigation and measures.

This appendix describes the general requirements that will be incorporated into all monitoring programs that are identified in measures, either by revising existing programs or creating new ones, to ensure robust monitoring is carried out. This information could have been included in each measure where relevant but has instead been included here to avoid unnecessary duplication. Where applicable, additional specific requirements are set out in individual measures.

Monitoring required by the measures of this report will:

- i. measure the effects of the Project on the environment;
- ii. inform adaptive management where applicable, so that mitigation can be adjusted to avoid significant adverse impacts; and,
- iii. where applicable, provide relevant data and information to support other monitoring initiatives (such as Aboriginal monitoring initiatives and government monitoring).

These requirements will be incorporated into all monitoring programs that are identified in measures in this Report of EA.

Appendix D: Developer commitments

Table of Commitments made by the GNWT for the construction (Table D-1), operation (Table D-2), environmental assessment and permitting (Table D-3) of the Tẖcẖq̱ All-season Road (EA-1617-01).

Table D-1. GNWT Commitments Related to TASR Construction.

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
1	Aquatic Environment	Blasting	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Blasting is not likely to be needed to clear the route. Should explosives be required for blasting within borrow sources or along the proposed corridor in close proximity to fish-bearing waters, blasting plans designed to avoid or minimize blasting impacts to fish and fish habitat will be provided to the appropriate authorities.
2	Aquatic Environment	Blasting	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Blasting operations will avoid or minimize impacts to fish by following DFO Measures to Avoid Causing Harm to Fish and Fish Habitat Including Aquatic Species at Risk and DFO Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters, including setback distances from fish-bearing water bodies and avoiding use of explosives in or near water. No explosive will be detonated in or near fish habitat that produces, or is likely to produce, an instantaneous pressure change greater than 50 kPa in fish-bearing water in efforts to avoid direct impacts to fish.
3	Aquatic Environment	Blasting	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	To reduce the potential for introducing nutrients into water bodies or watercourses, ammonia management best practices will be implemented during storage and transport of ammonia explosives, should ammonium nitrate explosives be used.
4	Aquatic Environment	Blasting	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	To reduce the potential for introducing blasting residue into fish habitat, only the required amount of explosive will be used as necessary for the amount of rock or borrow material to be blasted. The use of ammonium nitrate-fuel oil mixtures will not occur in or within 30 m of fish bearing water (FFHPP 2016 [PR#7, Appendix X]).

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
5	Aquatic Environment	Camps	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	For large camps, erosion and sediment control structures will be installed where needed to avoid impacts to fish habitat (FFHPP 2016 [PR#7, Appendix X]).
6	Aquatic Environment	Camps	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Sewage waste generated from large camp construction/use will be stored in a leak-free container before being transported to an approved disposal facility to avoid impacting fish and fish habitat (FFHPP 2016 [PR#7, Appendix X]).
7	Aquatic Environment	Camps	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	All materials brought to camp sites will be removed at camp closure to avoid impacts to fish and fish habitat. Some materials may be incinerated (FFHPP 2016 [PR#7, Appendix X]).
8	Aquatic Environment	Erosion and Sediment Control	WLWB Preliminary Screening	GNWT will be using the ESC Manual as guidance in the development of an ESC plan, including monitoring, reporting and adaptive management. These plans will be finalized by the contractor ensuring the contractor is fully aware and capable of the requirements in that plan, while GNWT provides oversight while remaining accountable
9	Aquatic Environment	Erosion and Sediment Release	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Sediment releases into watercourses will be mitigated by using isolation methods when completing in-stream construction. Isolation methods will be used for work below the high water mark for streams with flowing water at the time of construction (DFO Measures to Avoid Causing Harm to Fish and Fish Habitat).
10	Aquatic Environment	Erosion and Sediment Release	ASR Section 3 Assessment of Effects to Fish	Where isolations are required for construction in flowing watercourses, bypass pumps will pump water through or onto a diffuser to disperse the force of the pumped water and avoid scour of the watercourse bed and banks. Any grey water removed from the isolation will be pumped away from the watercourse and onto a vegetated area to

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
			and Fish Habitat	prevent sediment from reaching the watercourse (DFO Measures to Avoid Causing Harm to Fish and Fish Habitat). Where an adequate vegetated area is not available, grey water will be filtered before returning to the watercourse or pumped into a container and removed from site.
11	Aquatic Environment	Erosion and Sediment Release	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Additional erosion mitigation (i.e., rock reinforcement or armouring) will be applied at watercourse crossings where needed to minimize future erosion, as per the GNWT Erosion and Sediment Control Manual (PR#7, Appendix W).
12	Aquatic Environment	Erosion and Sediment Release	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Materials installed below the high water mark (i.e., riprap) will be clean to avoid adding deleterious substances to watercourses (DFO Measures to Avoid Causing Harm to Fish and Fish Habitat).
13	Aquatic Environment	Erosion and Sediment Release	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Disturbed areas along the streambanks will be stabilized and allowed to re-vegetate upon completion of work to minimize future erosion (FFHPP 2016 [PR#7, Appendix X]).
14	Aquatic Environment	Erosion and Sediment Release	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Environmental Monitors will be onsite during construction to monitor the installation of crossing structures. Turbidity monitoring will be conducted at crossings with flowing water at the time of construction as per the In-Field Water Analysis Plan to meet regulatory requirements (PR#7, Appendix AA).
15	Aquatic Environment	Erosion and Sediment Release	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Removed vegetation/debris will be removed from site to prevent them entering the watercourse, and will be managed according to the Erosion and Sediment Control Plan.

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
16	Aquatic Environment	Erosion and Sediment Release	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Debris and excess materials resulting from construction will be removed from the work site to prevent them reaching water bodies, as per the GNWT Erosion and Sediment Control Manual (PR#7, Appendix W).
17	Aquatic Environment	Erosion and Sediment Release	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	To reduce potential for sediment release, areas for cleaning equipment will be a minimum of 30 m away from watercourses and will not drain into or toward watercourses.
18	Aquatic Environment	Erosion and Sediment Release	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Excess soils resulting from construction will be removed from the work site to prevent them reaching water bodies and impacting fish and fish habitat.
19	Aquatic Environment	Erosion and Sediment Release	WLWB Preliminary Screening	The In-Field Analysis Plan can be updated to indicate the management actions that would be implemented depending on the difference between the upstream and downstream turbidity levels (including immediate response triggers such as more frequent monitoring and assessment of mitigation measure). The In-Field Water Analysis Plan will be updated to include an appendix with the locations of the watercourse crossings and associated station numbers to be set up at the commencement of construction. The In-Field Water Analysis Plan will be updated to include one set of confirmatory TSS (during construction around immediate water crossing) to identify the ballpark relationship of TSS and turbidity at each site.
20	Aquatic Environment	Erosion and Sediment Release	WLWB Preliminary Screening	Water quality grab samples upstream and downstream of the four major water crossings can be added to the In-Field Water Analysis Plan to demonstrate best water quality management practices. The plan will be updated to include grab samples of TSS at select sites/time periods over the course of construction to ensure turbidity testing remains comparable. Baseline data will be collected upstream of the construction

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
				activity at the same time as the downstream samples to provide surety of any difference in turbidity levels.
21	Aquatic Environment	Fisheries	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	In-stream works where water is present will be conducted to avoid critical periods for spring-spawning fish, such as Arctic Grayling. In-stream work completed during the open water season will only take place between July 16 and September 14 as identified in the DFO Fish Timing Windows for the NWT to avoid impacting fish during critical life stages. In-stream works will be conducted when watercourses are dry or frozen to bed where possible.
22	Aquatic Environment	Fisheries	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Disturbance of fish and fish habitat below the high water mark will be minimized by using snow bridges/ice fills or temporary bridges (with no fill below the high water mark) as construction access and work platforms instead of fording (DFO Measures to Avoid Causing Harm to Fish and Fish Habitat).
23	Aquatic Environment	Fisheries	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Pumping rates will be matched to watercourse flow rates in order to maintain fish habitat upstream and downstream of isolations (DFO Measures to Avoid Causing Harm to Fish and Fish Habitat). Backup pumps will be kept available to ensure flows and fish habitat are maintained in the event of a malfunction of the primary pump(s).
24	Aquatic Environment	Fisheries	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	To avoid fish entrainment/impingement, fish screens on pumps will be designed according to DFO guidelines, kept clean and free of ice and debris, and inspected for damage prior to each withdrawal. A backup fish screen will be kept available to be used if the primary screen is frozen or damaged (DFO Measures to Avoid Causing Harm to Fish and Fish Habitat).
25	Aquatic Environment	Fisheries	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Culverts will be designed and installed to avoid creating fish movement barriers and to meet normal flow velocities for all seasons; culvert slopes will be optimized during construction to reduce velocities at the outlet (FFHPP 2016 [PR#7, Appendix X]).

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
26	Aquatic Environment	Fisheries	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Temporary snowfill/ice bridge crossings will be constructed to not restrict or block flow at any time to maintain fish habitat and ensure fish passage. Prior to spring break-up, ice bridges will be physically v-notched in the middle to allow it to melt from the centre (FFHPP 2016 [PR#7, Appendix X]).
27	Aquatic Environment	Fisheries	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Project staff will not be allowed to hunt or fish during construction or operations while on their work rotation to minimize overexploitation of fish populations.
28	Aquatic Environment	Fisheries	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Only water sources identified using DFO Protocol for Winter Water Withdrawal in the Northwest Territories will be used for winter withdrawal to avoid impacts to fish and fish habitat. Withdrawal volumes and rates will not exceed guidelines in order to maintain fish habitat.
29	Aquatic Environment	Fisheries	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	All water use will be monitored and tracked and, if required, regulated through a water license to avoid impacts to fish habitat (FFHPP 2016 [PR#7, Appendix X]).
30	Aquatic Environment	Seepage	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Runoff from quarry areas will be directed away from fish habitat and sediment control measures will be installed. Where natural topography is modified for quarry areas, natural contours will be reconstructed and the area will be revegetated upon closure.
31	Aquatic Environment	Seepage	ASR Section 3 Assessment of Effects to Fish	The GNWT commits to avoid using borrow sources that have been characterized as having high or moderate acid rock drainage or metal leaching potential to avoid impacting fish habitat with deleterious substances; testing will verify acid rock drainage and metal leaching potential.

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
			and Fish Habitat	
32	Aquatic Environment	Seepage	WLWB Preliminary Screening	Should concrete be required (and cannot be precast), un-cured/partly cured concrete will be isolated from watercourses.
33	Aquatic Environment	Seepage	WLWB Preliminary Screening	The Quarry Operations Plan will follow Lands' Guidelines. Should pit drainage be planned, appropriate management techniques will be utilized. This includes designing and constructing the quarry to drain naturally without ponding or the requirement for pumping, ensuring water exists naturally through diffuse flow back into the natural environment with the avoidance of distinct run-off channels and ensuring buffer zones of undisturbed land and vegetation for water to flow exists.
34	Aquatic Environment	Seepage	WLWB Preliminary Screening	A consultant will be hired to analyze laboratory results and will indicate what parameters should be analyzed prior to sending samples to the laboratory during in-field geotechnical investigations.
35	Aquatic Environment	Spills	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Spill Contingency Plan (PR#7) will be developed and implemented, including ready access to an emergency spill clean-up kit for cleaning up any spills during construction or maintenance of the TASR. Drivers and construction crews on site will be familiar with the spill contingency plan and appropriately qualified to minimize impacts resulting from spills and leaks.
36	Aquatic Environment	Spills	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Fuels, lubricants and hydraulic fluids for equipment used will be carefully handled to prevent spillage, properly secured against unauthorized access or vandalism, provided with spill containment and disposed of in accordance with the Waste Management Plan to avoid spillage impacts on fish and fish habitat. Fuel caches will be located on flat stable terrain or in natural depressions away from slopes to water bodies, and caches will be clearly marked and drums will be placed on their sides and spaced to facilitate inspections (FFHPP 2016 [PR#7, Appendix X]).
37	Aquatic Environment	Spills	ASR Section 3 Assessment of	Construction equipment, machinery, and vehicles will be regularly maintained to avoid accidental spills.

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
			Effects to Fish and Fish Habitat	
38	Aquatic Environment	Spills	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Machinery used for work below the high water mark will use only biodegradable hydraulic fluid, and drip pans/trays will be placed under all equipment while not in use (FFHPP 2016 [PR#7, Appendix X]).
39	Aquatic Environment	Spills	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	All stationary fuel storage containers will have integrated 110% secondary containment, and refueling and servicing of machinery and storage of fuel and other materials for the machinery will occur a minimum of 30 m away from any water body, where possible, to avoid impacts to fish and fish habitat (FFHPP 2016 [PR#7, Appendix X]).
40	Aquatic Environment	Spills	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Equipment used in or near water will be clean and free of oil, grease or other deleterious substances. Vehicles travelling on the road will be properly loaded and loads appropriately covered where necessary (FFHPP 2016 [PR#7, Appendix X]).
41	Aquatic Environment	Spills	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Accidental spill impacts will be minimized by posting and enforcing speed limits on the road.
42	Aquatic Environment	Spills	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Any spills will be reported immediately to the NWT Spill Line to minimize spillage impacts, as per the Spill Contingency Plan (FFHPP 2016 [PR#7, Appendix X]).

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
43	Aquatic Environment	Spills	WLWB Preliminary Screening	In instances where fuel storage does not already incorporate 110% containment (such as drums and jerry cans vs. the larger double-walled storage tanks), containment pads will be provided for all fuel storage, dispensing and transfer sites
44	Aquatic Environment	Spills	WMMP	Construction and Maintenance vehicles will be equipped with spill kits and fuelled at least 30 m away from water bodies unless otherwise specified by the Inspector.
45	Aquatic Environment	Water crossings	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Culverts will be embedded as appropriate to maintain species and habitat present, and will be installed parallel to the existing channel to minimize changes to channel morphology.
46	Aquatic Environment	Water crossings	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Water crossing structures (e.g., culverts, bridges, ice bridges/snow fills) will be installed and maintained using best management practices (DFO Measures to Avoid Causing Harm to Fish and Fish Habitat) and following environmental approval conditions to minimize impacts to fish and fish habitat.
47	Aquatic Environment	Water crossings	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Permanent bridges will not contact water bodies to minimize impacts below the ordinary high water mark, bridge abutment installation will be outside of the active channel. Pier installation will be outside the active channel and within the floodplain (1 in 5 year flood).
48	Aquatic Environment	Water crossings	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Impacts to riparian vegetation at temporary crossings will be minimized by using structures such as snow fills and single-span bridges instead of fording, especially where banks are susceptible to erosion.
49	Socio-Economics	Culture	ASR Section 5 Assessment of	Implement the Archaeological Site Find Protocol to provide guidance to employees and contractors conducting ground disturbing operations

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
	and Land Use		Socio-Economic effects	
50	Socio-Economics and Land Use	Labour	ASR Section 5 Assessment of Socio-Economic effects	Project construction and operations will be funded through the P3 procurement process, and so will be exempt from the GNWT Business Incentive Policy requirements. However, the GNWT will include conditions in bid contracts that include a requirement for Tłıchǵ and Northern hires. Contractors should demonstrate how local labour and businesses will be sourced, plans to provide and maximize on-the-job training for local residents, and an approach to communicating and collaborating with local governments and Aboriginal organizations regarding local involvement in construction and operations.
51	Socio-Economics and Land Use	Labour	Section 5 Assessment of Socio-Economic effects	In the event that incidental Project activities are funded extra to the P3 process, the GNWT Business Incentive Policy will be applied, as appropriate.
52	Socio-Economics and Land Use	Land Use	Section 5 Assessment of Socio-Economic effects	The GNWT, in collaboration with the Tłıchǵ Government and other planning partners, is in the process of working towards the development of a land use plan for public lands in the Wek'èezhì Management Area.
53	Socio-Economics and Land Use	Land Use	PDR, Section 5.1.2	During final design phase, consideration will be taken to ensure a safe snowmobile crossing is established near bridge near km 45.2.
54	Socio-Economics and Land Use	Land Use	PDR, Section 7.1.2	Verify that the cabin sites near the Project footprint are at least 50 m away. May need to double check coordinate locations with Tłıchǵ Government prior to construction and ensure that the two cabins that will be rebuilt (burnt as a result of 2014 fire) are far enough away.
55	Socio-Economics	Land Use	PDR, Section 5.1.2	Maintain safe access to T'ooheèhoteè, an important portage site at the La Martre River.

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
	and Land Use			
56	Socio-Economics and Land Use	Land Use	PDR, Section 10.9	An Emergency Response Plan will be produced and provided by the successful contractor. It will include details of how to deal with various emergency situations such as a fire, vehicle or mobile equipment incident, serious medical incidents, camp evacuation and wildlife encounters.
57	Terrestrial Environment	Disturbance to Wildlife	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	Destruction of bat roosts will be avoided by managing, to the extent possible, the incremental removal of vegetation so that it occurs outside of spring through fall. If vegetation clearing is required within this time, pre-clearing surveys and no-work zones for identified active maternity roost sites will be conducted to avoid disturbance.
58	Terrestrial Environment	Disturbance to Wildlife	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	Avoid disturbance of hibernating bats by surveying for sites of hibernacula potential (i.e., abandoned buildings and mines and caves) within 200 m of ROW for bat use prior to construction.
59	Terrestrial Environment	Disturbance to Wildlife	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	Avoid disturbance of bird nests and eggs by clearing land outside of the bird nesting and fledging season (May to mid-August); however, if vegetation clearing is required within this time, pre-clearing nest surveys will be completed and no-work zones will be observed for identified active nests. Through consultation with ENR and ECCC, bird nests will be protected by a buffer that protects the nest while allowing construction to continue, and will be included in the weekly wildlife monitoring reports.
60	Terrestrial Environment	Disturbance to Wildlife	WMMP	Boreal caribou collar locations will be used to notify construction crews of their proximity to active construction areas during the late-winter and calving season, and increased mitigation measures will be triggered as described in Appendix E.
61	Terrestrial Environment	Disturbance to Wildlife	WMMP	If any big game species are observed within the cleared right of way adjacent to active construction areas, speed limits will be reduced to 30 km/h within 1 km on either side of the sighting. If bison are present on roads, Environmental Monitories will be

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
				contacted. Environmental Monitors should be aware that groups of bison with more than 5 individuals are likely to be nursery groups containing calves and juveniles.
62	Terrestrial Environment	Disturbance to Wildlife	WMMP	Fixed-wing and helicopter flights associated with highway construction will consider the minimum altitude guidelines outlined in the brochure “Flying Low? Think Again...” where safety permits. Flight paths will follow the cleared highway right of way to the extent feasible.
63	Terrestrial Environment	Disturbance to Wildlife	WMMP	If available, generalized calving locations of collared boreal caribou will be provided to pilots indicating areas to avoid during the calving season. Pilots will be expected to complete a visual scan for large mammals prior to landing.
64	Terrestrial Environment	Disturbance to Wildlife	WMMP	If caribou, bison, or moose are observed during helicopter flights, they will not be approached, followed, hovered above, or circled around.
65	Terrestrial Environment	Disturbance to Wildlife	WMMP	Pilots will increase altitude and follow flight paths that veer away from caribou, bison, and moose if the animals are observed running, panicking, or exhibiting other startled response.
66	Terrestrial Environment	Invasive Plants	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	Cleaning and inspection of Project vehicles and equipment prior to entering the NWT to avoid introducing noxious and invasive plants.
67	Terrestrial Environment	Invasive Plants	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	Re-cleaning Project vehicles and equipment if an area of weed infestation is encountered, prior to advancing to a weed-free area to minimize the spread of noxious and invasive plants.
68	Terrestrial Environment	Invasive Plants	WMMP ASR Section 4 Effects to	Locating and managing cleaning locations on the Project site to avoid the spread of noxious and invasive plants.

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
			Wildlife and Wildlife Habitat	
69	Terrestrial Environment	Invasive Plants	WMMP	Herbaceous plant surveys of the Project footprint will be completed during the growing season by a qualified botanist in advance of construction, one year following construction and again after five years of operations. If rare plants and/or invasive species are found, ENR will be consulted to determine next steps.
70	Terrestrial Environment	Spills	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	Hazardous materials and fuel will be stored according to regulatory requirements to avoid contamination to the environment and workers.
71	Terrestrial Environment	Spills	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	An approved Spill Contingency Plan will be followed by Project staff to prevent spills and if they were to occur as a result of an accident, that they will be controlled to minimize the area impacted.
72	Terrestrial Environment	Spills	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	Emergency spill kits will be available wherever toxic materials or fuel are stored and transferred during construction to minimize effects to vegetation and wildlife habitat.
73	Terrestrial Environment	Spills	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	Spill response and containment will be completed expeditiously in accordance with the approved site specific Spill Contingency Plan to reduce the area impacted. Spills will be reported in a timely manner.
74	Terrestrial Environment	Spills	WMMP	Construction equipment, machinery, and vehicles will be regularly maintained to avoid accidental spills.

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
			ASR Section 4 Effects to Wildlife and Wildlife Habitat	
75	Terrestrial Environment	Spills	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	Domestic and recyclable waste and dangerous goods will be stored on site in appropriate containers, as per the Waste Management Plan, to avoid exposure until they are shipped off site to an approved facility, and to prevent spills or leakage into the surrounding environment that would cause habitat degradation.
76	Terrestrial Environment	Spills	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	Fuel storage areas will be equipped with spill kits, will be located at least 30 m away from water bodies. Large fuel storage tanks (2,000 to less than 80,000 litres) will be double walled as per the regulations
77	Terrestrial Environment	Wildlife Habitat	WMMP	Dust suppression techniques (as per the GNWT Guideline for Dust Suppression and the GNWT-INF Erosion and Sediment Control Manual) will be utilized as required and feasible to reduce dust emissions onto vegetation outside of the right of way.
78	Terrestrial Environment	Wildlife Habitat	ASR Section 4 Effects to Wildlife and Wildlife Habitat	The current layout of the Project footprint will minimize the amount of new disturbance by primarily following the existing Old Airport Road route to Whatì and intersecting areas previously burned.
79	Terrestrial Environment	Wildlife Habitat	ASR Section 4 Effects to Wildlife and Wildlife Habitat	Lights will be positioned to shine downwards and/or will be fixed with shielding to minimize the distribution of peripheral light and shut off when not in use.
80	Terrestrial Environment	Wildlife Habitat	WMMP	Limit the cleared TASR corridor to 60 m wide (not including the borrow sites and access corridors).

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
81	Terrestrial Environment	Wildlife Habitat	WMMP	Borrow source areas will be minimized and will be located close to the TASR right of way so that access roads are short. Most of the borrow sources also overlap the TASR alignment so additional disturbance to access these areas will be limited.
82	Terrestrial Environment	Wildlife Habitat	WMMP	If borrow pits and quarries are no longer required during the operations phase, reclamation will be conducted in consideration of the Northern Land Use Guidelines for Pits and Quarries. Once reclamation activities are complete, access will be blocked to quarries and borrow sources that are no longer required.
83	Terrestrial Environment	Wildlife Habitat	WMMP	Birds will be deterred from nesting on infrastructure by placing covers/screens on vents, holes, and crevices where birds could potentially nest, and if necessary through active (but non-lethal) disturbance of birds to discourage them from establishing a nest on a construction site. If bird nesting occurs, the nest will not be disturbed until after the birds have left the area, with clearance to be discussed in consultation with GNWT-ENR and ECCC.
84	Terrestrial Environment	Wildlife Habitat	WMMP	If any reclamation activities are planned for the terrestrial portions of the existing Tłıchǫ winter road, it will be managed and addressed jointly by the Tłıchǫ Government and the GNWT by way of a bilateral agreement.
85	Terrestrial Environment	Wildlife Habitat	WMMP	Operating machinery on highly saturated soil (primarily during freshet) outside of the highway alignment, borrow sources and borrow source access roads will be avoided where practical. Where it is unavoidable, suitable ground equipment will be used to prevent unnecessary soil damage through rutting, etc.
86	Terrestrial Environment	Wildlife Habitat	WMMP	Layout and location of quarries will consider the Northern Land Use Guidelines for Pits and Quarries.
87	Terrestrial Environment	Wildlife Habitat	WMMP	Reduced speed limits (50 km/h) during construction will reduce dust production.
88	Terrestrial Environment	Wildlife Habitat	WMMP	Quarries will be operated in accordance with the ECCC brochure Bank Swallows in Sandpits and Quarries.
89	Terrestrial Environment	Wildlife Safety	WMMP	Construction activities will consider sensitive periods. For example, vegetation clearing is planned to occur outside of the nesting season for migratory birds.

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
90	Terrestrial Environment	Wildlife Safety	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	Wildlife will have the right-of-way on all roads during construction.
91	Terrestrial Environment	Wildlife Safety	WMMP	In the event that an active mammal den or bird nest is identified during construction, GNWT-ENR will be consulted to determine an appropriate strategy to avoid or minimize disturbance. A protocol for pre-clearing den surveys will be developed once the final TASR alignment and borrow source locations are determined.
92	Terrestrial Environment	Wildlife Safety	WMMP	Observations of caribou, moose, bison, and other big game and species at risk will be reported to Environmental Monitors. Observations of species at risk will be reported to GNWT-ENR through weekly reports.
93	Terrestrial Environment	Wildlife Safety	WMMP	Harassment, feeding or approaching wildlife by Project staff will be prohibited.
94	Terrestrial Environment	Wildlife Safety	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	Project staff will be provided with environmental awareness training.
95	Terrestrial Environment	Wildlife Safety	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	Environmental Monitors will be on site to document wildlife and manage and minimize risks to wildlife and workers.
96	Terrestrial Environment	Wildlife Safety	WMMP ASR Section 4 Effects to	Exposure of wildlife to contaminants will be avoided by use of appropriate deterrents (e.g., temporary fencing, noise makers) to discourage wildlife from entering an affected area.

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
			Wildlife and Wildlife Habitat	
97	Terrestrial Environment	Wildlife Safety	WMMP ASR Section 4 Effects to Wildlife and Wildlife Habitat	No hunting or fishing by Project staff will be permitted.
98	Terrestrial Environment	Wildlife Safety	WMMP	<p>Development and implementation of a Waste Management Plan to avoid access to food waste by wildlife. This will include:</p> <ul style="list-style-type: none"> • Waste products will be stored in secured containers and transported to approved facilities to avoid access by wildlife. • Food waste will be collected in bear proof containers that minimize attraction or impact to wildlife. • Littering and feeding of wildlife will be prohibited to avoid wildlife attraction to the site. • All workers and visitors will be educated on waste management practices for the Project site to avoid wildlife attraction.
99	Terrestrial Environment	Wildlife Safety	WMMP	Workers will not travel off of Project site unless there is a specific requirement.
100	Terrestrial Environment	Wildlife Safety	<p>WMMP, Section 5.2.3 and 5.2.4</p> <p>GNWT response to WRRB questions on fish and wildlife (PR#211)</p>	<p>The GNWT is committed to supporting, subject to availability of additional resources, the Tłıchǫ Government in the design and implementation of a program that uses Tłıchǫ harvesters' traditional knowledge and methods to monitor the health of boreal caribou (tǫdzı) and the state of their habitat, and the state of barren-ground caribou (zekwǫ) winter habitat, during and after the completion of the TASR Project. Further details of the program, including monitoring questions and approach, will be determined following discussion with traditional harvesters and elders through engagement with Tłıchǫ Government, with a view it be included as a component of the Wildlife Management and Monitoring Plan (WMMP) to be finalized and approved during the</p>

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
				regulatory phase for this Project. The expertise and advice of the WRRB will also be sought in the design of the program.
101	Terrestrial Environment	Wildlife Safety	WMMP	Project staff will communicate relevant observations of wildlife to other drivers via radio.
102	Terrestrial Environment	Wildlife Safety	WMMP	Blasting may only proceed if no large mammals (e.g.) caribou, moose, bison are detected in the blast radius identified by Blast Supervisor. The Blast Supervisor or Environmental Monitor will conduct a visual scan of the blast radius prior to blasting to ensure no large mammals are present. All blasting will be preceded by air horn signals, which should deter wildlife from the area. Specific mitigation measures that apply to blasting during the late-winter and calving season for collared boreal caribou are included in Appendix E.
103	Terrestrial Environment	Wildlife Safety	WMMP	The presence of large mammals (caribou, moose, and bison) and other wildlife will be communicated to construction workers, which will minimize risks of physical hazards through site-wide awareness. Project staff will communicate relevant observations of wildlife to other drivers via radio. If bison, caribou or moose are observed within construction areas, and their safety, or the safety of workers or equipment, are at imminent risk, operations at that particular work site will be temporarily suspended by the Project Supervisor to allow wildlife to move away from the area of their own accord. If they do not leave the area within 15 minutes, they will be gently encouraged to move away from construction activities, and an incident report will be completed. This will involve the slow approach of Environmental Monitors towards the caribou/moose/bison to encourage them to move. It is possible that females may be unwilling to leave the area if they have a calf hiding nearby. In these cases, operations in the area may be suspended by the Project Supervisor.
104	Terrestrial Environment	Wildlife Safety	WMMP	An appropriately designated supervisor will provide field workers with Bear Aware training and general wildlife awareness.
105	Terrestrial Environment	Wildlife Safety	WMMP ASR Section 4 Effects to	To avoid wildlife harvest, firearms will not be allowed on-site during construction except for firearms in the possession and control of authorized Environmental Monitors or law enforcement officers.

No.	Discipline	Subject	Source	Commitment Description – Construction Phase
			Wildlife and Wildlife Habitat	
106	Terrestrial Environment	Wildlife Safety	WMMP	Camps and buildings will be designed to prevent wildlife interactions, including appropriate storage of non-waste wildlife attractants (e.g. food and petroleum products) and use of adequate lighting will be installed in areas where it is essential to detect bears that may be in the vicinity.
107	Terrestrial Environment	Wildlife Safety	WMMP	In case of wildlife exposure to contaminants, territorial (GNWT-ENR) or federal (ECCC) authorities will be contacted immediately to determine appropriate course of action, which may including capturing, relocating or treating contaminated wildlife.
108 ¹	Socio- Economics and Land Use	Land Use	PDR, Section 4.12	A Closure and Reclamation Plan will be produced and provided by the successful contractor. It will include details of how the temporary access roads and work camps will be closed.

No. = number; TG = Tłıchǫ Government; ECCC = Environment and Climate Change Canada; WRRB = Wek'èezhì Renewable Resources Board; DFO = Fisheries and Oceans Canada; WLWB = Wek'èezhì Land and Water Board; GNWT = Government of Northwest Territories; ENR = Environment and Natural Resources; WMMP = Wildlife Management and Monitoring Plan; TASR = Tłıchǫ All-Season Road; ASR = Adequacy Statement Response; m = metre.

¹ This commitment was included in the Developer's original commitment table from the Closing Arguments (PR#285) but did not have a number.

Table D-2. GNWT Commitments Related to TASR Operations.

No.	Discipline	Subject	Source	Commitment Description - Operations
1	Aquatic Environment	Erosion and Sediment Control	WLWB Preliminary Screening	GNWT will be using the ESC Manual as guidance in the development of an ESC plan, including monitoring, reporting and adaptive management. These plans will be finalized by the contractor ensuring the contractor is fully aware and capable of the requirements in that plan, while GNWT provides oversight while remaining accountable
2	Aquatic Environment	Erosion and Sediment Control	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Dust entering fish habitat will be minimized by enforcing speed and load limits to preserve the road bed, and regular road maintenance will be conducted to suppress dust production (as per the GNWT Guideline for Dust Suppression).
3	Aquatic Environment	Erosion and Sediment Control	ASR Section 3 Assessment of Effects to Fish and Fish Habitat and in WMMP	Riparian areas will be maintained whenever possible to minimize erosion and impacts to fish habitat, with vegetation removal limited to the width of the right of way. At watercourse crossings, a riparian buffer will be maintained along the width of the right of way except at the actual crossing location (FFHPP 2016 [PR#7, Appendix X]).
4	Aquatic Environment	Erosion and Sediment Control	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Watercourses will be inspected upstream and downstream of the crossings for erosion, scour, and flow blockages during the spring freshet and through the open water season, as required. Impacts will be minimized by culvert maintenance, including removal activities of debris (e.g., ice, beaver dams), following DFO guidance (i.e., gradual removal such that flooding downstream, extreme flows downstream, release of suspended sediment, and fish stranding can be avoided).
5	Aquatic Environment	Erosion and Sediment Control	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Snow will be ploughed off of the road in such a manner that it melts into vegetated areas in the spring to filter out sediment, minimizing downstream sedimentation impacts to fish and fish habitat (FFHPP 2016 [PR#7, Appendix X]).
6	Aquatic Environment	Erosion and Sediment Control	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Drainage from quarries will not flow directly into any water bodies or watercourses and a minimum of 30 m of undisturbed land will be maintained between a quarry and any fish bearing water body to avoid impacts to fish habitat (FFHPP 2016 [PR#7, Appendix X]).

7	Aquatic Environment	Spills	WLWB Preliminary Screening	In instances where fuel storage does not already incorporate 110% containment (such as drums and jerry cans vs. the larger double-walled storage tanks), containment pads will be provided for all fuel storage, dispensing and transfer sites.
8	Aquatic Environment	Spills	WLWB Preliminary Screening	GNWT will be using the ESC Manual as guidance in the development of an ESC plan, including monitoring, reporting and adaptive management. These plans will be finalized by the contractor ensuring the contractor is fully aware and capable of the requirements in that plan, while GNWT provides oversight while remaining accountable.
9	Aquatic Environment	Spills	ASR Section 3 Assessment of Effects to Fish and Fish Habitat	Road maintenance equipment will be regularly maintained and inspected to ensure it is free of leaks to avoid impacts to fish and fish habitat (FFHPP 2016 [PR#7, Appendix X]).
10	Aquatic Environment	Water Crossings	ASR Section 3 Assessment of Effects to Fish and Fish Habitat and in WMMP	Disturbed areas along the streambanks will be stabilized and allowed to revegetate upon completion of work to minimize erosion.
11	Aquatic Environment	Water Crossings	WMMP	Culverts will be embedded as appropriate to maintain species and habitat present, and will be installed parallel to the existing channel to minimize changes to channel morphology.
12	Socio-Economics and Land Use	Health and Well-Being	ASR Section 5 Assessment of Socio-Economic effects	Speed limits aimed at maintaining safe driving speeds for vehicles.
13	Socio-Economics and Land Use	Health and Well-Being	ASR Section 5 Assessment of Socio-Economic effects	There are no shelters in the Tłıchǫ region, however the TCSA and the GNWT are engaging with the communities to create community specific family violence protocols and response teams. This is done via a contribution agreement between the Department of Health and Social Services and the TCSA to cover the costs associated with community engagement and development of the protocols by a consultant.
14	Socio-Economics	Labour	ASR Section 5 Assessment of	Project construction and operations will be funded through the P3 procurement process, and so will be exempt from the GNWT Business Incentive Policy

	and Land Use		Socio-Economic effects	requirements. However, the GNWT will include conditions in bid contracts that include a requirement for Tłıchǫ and Northern hires. Contractors should demonstrate how local labour and businesses will be sourced, plans to provide and maximize on-the-job training for local residents, and an approach to communicating and collaborating with local governments and Aboriginal organizations regarding local involvement in construction and operations.
15	Socio-Economics and Land Use	Labour	ASR Section 5 Assessment of Socio-Economic effects	In the event that incidental Project activities are funded extra to the P3 process, the GNWT Business Incentive Policy will be applied, as appropriate.
16	Socio-Economics and Land Use	Labour	ASR Section 5 Assessment of Socio-Economic effects	Planning for employment and local opportunity catchment is expected to reduce a surge in the required out-of-territory labour force during construction, reducing the potential for in-migration into the region. (PR#96 Tłıchǫ Government IR 1).
17	Socio-Economics and Land Use	Land Use	ASR Section 5 Assessment of Socio-Economic effects	The GNWT, in collaboration with the Tłıchǫ Government and other planning partners, is in the process of working towards the development of a land use plan for public lands in the Wek'èezhìi Management Area.
18	Socio-Economics and Land Use	Land Use	PDR, Section 5.1.2	Maintain safe access to T'ooheèhoteè, an important portage site at the La Martre River.
19	Socio-Economics and Land Use	Land Use	ASR Section 5 Assessment of Socio-Economic effects	GNWT-ENR will enforce the NWT's hunting regulations which are in place to ensure that wildlife is conserved for future generations and that hunting is done safely.
20	Terrestrial Environment	Invasive Plants	WMMP	Herbaceous plant surveys of the Project footprint will be completed during the growing season by a qualified botanist in advance of construction, one year following construction and again after five years of operations. If rare plants and/or invasive species are found, ENR will be consulted to determine next steps.

21	Terrestrial Environment	Invasive Plants	NSMA Technical Report Response PR#239	One more survey will be added to the Non-Native/Invasive Species Monitoring Plan. This will be done by a qualified botanist, 10 years after the start of road operations, as northern invasive species can be slow to establish.
22	Terrestrial Environment	Wildlife Habitat	WMMP ASR, Section 4 Effects to Wildlife and Wildlife Habitat	Signs indicating the daily wildfire risk will be posted by GNWT at the TASR junctions at Highway 3 and the existing Whatl community access road to minimize the risk of accidental fires.
23	Terrestrial Environment	Wildlife Habitat	WMMP	Dust suppression techniques (as per the GNWT Guideline for Dust Suppression and the GNWT-INF Erosion and Sediment Control Manual) will be utilized as required and feasible to reduce dust emissions onto vegetation outside of the right of way.
24	Terrestrial Environment	Wildlife Habitat	WMMP, Section 5.2.3 and 5.2.4 GNWT response to WRRB questions on fish and wildlife (PR#211)	The GNWT is committed to supporting, subject to availability of additional resources, the Tłıchǵ Government in the design and implementation of a program that uses Tłıchǵ harvesters' traditional knowledge and methods to monitor the health of boreal caribou (tǵdzl) and the state of their habitat, and the state of barren-ground caribou (zekwǵ) winter habitat, during and after the completion of the TASR Project. Further details of the program, including monitoring questions and approach, will be determined following discussion with traditional harvesters and elders through engagement with Tłıchǵ Government, with a view it be included as a component of the Wildlife Management and Monitoring Plan (WMMP) to be finalized and approved during the regulatory phase for this Project. The expertise and advice of the WRRB will also be sought in the design of the program.
25	Terrestrial Environment	Wildlife Safety	WMMP	Speed limits will be established, posted, and enforced to reduce the risk of vehicle-wildlife collisions.
26	Terrestrial Environment	Wildlife Safety	WMMP	GNWT has the ability to install temporary portable signage and temporarily lower speed limits on parts of the TASR if a localized wildlife collision hazard is present. This mitigation will be applicable to areas where groups of bison, caribou, or moose are seen or reported along the right of way, in areas where wildlife-vehicle collisions repeatedly occur, or where caribou are known to be nearby based on collar data.
27	Terrestrial Environment	Land Use	WMMP	As the operational phase will require gravel, borrow pits will remain only accessible to Project Co. staff and blocked to unauthorized personnel. Protocols to follow the Quarry Operations Plan.

28	Terrestrial Environment	Land Use	WWMP Public Hearing Transcripts Day 2	There will be a winter checkpoint station for barren-ground caribou on the TASR between Highway 3 and Whatì.
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No. = number; TG = Tłıchǫ Government; NSMA = North Slave Metis Alliance; ECCC = Environment and Climate Change Canada; WRRB = Wek'èezhì Renewable Resources Board; DFO = Fisheries and Oceans Canada; WLWB = Wek'èezhì Land and Water Board; GNWT = Government of Northwest Territories; ENR = Environment and Natural Resources; WMMP = Wildlife Management and Monitoring Plan; TASR = Tłıchǫ All-Season Road; ASR = Adequacy Statement Response; km = kilometre; m = metre.

Table D-3. GNWT Commitments Related to TASR Environmental Assessment and Permitting.

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
1	WMMP	Technical Session Commitment 1, PR#171, 238	GNWT to meet with any interested parties to discuss any additional documents or outcomes of responses to IRs and WMMP, if requested	The GNWT responded to questions from WRRB (PR#211). The GNWT responded to NSMA questions (PR#155 and PR#187). GNWT remains open to meeting with parties when requested.
2	WMMP	Technical Session Commitment 2, PR#171, 238	If there are outstanding issues to consider, GNWT will consider a public review of the WMMP after the EA process is complete.	GNWT-ENR submitted a letter to GNWT-INF on Oct 16, 2017 identifying that a WMMP was required for the TASR and that the WMMP will undergo a public review (PR#225).
3	Caribou	Technical Session Commitment 3, PR#171, 238	GNWT commits to describe the likelihood of caribou distribution relative to the RSA by specifically including all available data on the distribution of barren-ground caribou on the western winter ranges including locations of harvesting and locations of caribou recorded during winter aerial surveys since 1996.	Submitted to the Review Board on September 18, 2017. See PR#189 for the response and PR#190 for the associated maps.
4	WMMP	Technical Session Commitment 4, PR#171, 238	GNWT commits to sharing its cumulative effects monitoring and adaptive mitigation protocols for TASR with Fortune Minerals, and collaborate with Fortune for opportunities to share boreal and barren-ground caribou monitoring and mitigation.	In the next revision of the WMMP, the GNWT commits to considering opportunities for collaboration and data sharing with Fortune Minerals NICO Project. Fortune Minerals commits to sharing wildlife monitoring data with the Tłıchǫ Government and the GNWT, and considering opportunities for collaborative monitoring at the proposed NICO Project. In coordination with the Tłıchǫ Government and the GNWT, Fortune Minerals commits to collaborative monitoring of harvesting

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
				and access on the proposed NICO Project Access Road.
5	WMMP	Technical Session Commitment 5, PR#171, 238	GNWT to commit as part of traffic monitoring to look at average annual daily traffic and variations of traffic over time and provide the data in a timely way with the WEMP reporting.	Details incorporated into the WMMP (PR#192). Tracking of this commitment will fall under WMMP report tracking.
6	WMMP	Technical Session Commitment 6a, PR#171, 238	GNWT commits to a literature search for effects of a range of potential seasonal traffic rates; including a maximum of 200 vehicles per day for moose, caribou and bison. The GNWT will incorporate the result of the literature search into the draft WMMP, which will be provided by September 22, 2017.	Incorporated into the WMMP as Appendix G (PR#192).
7	WEMP	Technical Session Commitment 6b, PR#171, 238	GNWT commits to research and produce biologically relevant traffic exceedance values (related to information gathered in the literature search in commitment 6a) to trigger adaptive management in the WEMP. These may be seasonally-specific and/or species specific.	Incorporated into section 5.2.1 of WMMP (PR#192). Threshold of literature indicated 300-500 vehicles/day; however, the GNWT chose a 200 vehicles/day trigger to be precautionary and to reflect the design criteria for the road.
8	Water Crossings	Technical Session Commitment 7, PR#171, 238	GNWT commits to review concerns regarding culverts, including a site visit with elders to view potential culvert locations, and commits to bring a harvester along with the DFO water crossing review, as feasible.	Harvester John Beaverho from Whatı accompanied Golder and DFO on water crossing tour Sept 20-21, 2017 (PR#235). Elder helicopter tour and culvert workshop occurred on Oct 11, 2017. Presentation and tour summary was posted to the public registry on October 26 (PR#234).
9	Caribou	Technical Session Commitment 8, PR#171, 238	The GNWT commits to enter into licensing agreements with the Tłıchǫ Government on boreal caribou collaring data, as soon as it becomes available.	ENR to complete this task. No data-sharing agreement as of October 20. ENR can follow-up with Tłıchǫ Government on setting up

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
				this agreement. Commitment falls outside of TASR Project.
10	Caribou	Technical Session Commitment 9a	The GNWT commits to providing boreal caribou collar maps for the summer, breeding, fall and winter periods as the information becomes available, as stated in the GNWT's response to ECCC IR#7	ENR to complete this task and provide directly to ECCC when more maps become available. Second set of maps provided in PR#199 on September 28, 2017.
11	Caribou	Technical Session Commitment 9b, PR#171, 238	The GNWT commits to providing a narrative to accompany the figures provided in the GNWT's response to ECCC IR#7 (PR#128). This narrative will include an explanation of boreal caribou movements around Highway 3 and will be provided prior to the final technical report submission date.	Completed September 28, 2017. Uploaded as PR#199 .
12	WMMP	Technical Session Commitment 10, PR#171, 238	The GNWT commits to providing the protocol outlining how boreal caribou collaring data was used for the TASR geotechnical investigations. The GNWT will provide new protocols for how boreal caribou collar data will be used during construction and operation of the TASR in the updated WMMP.	First part of commitment was submitted to Review Board for posting to public registry on Sept 8 (see PR#181). Second part was incorporated into WMMP (PR#192).
13	WRRB	Technical Session Commitment 11, PR#171, 238	The WRRB will be unable to provide the final report on Tłıchǫ knowledge of todzi, boreal caribou, and wildfire which will contain information about key habitat types within their range. However, the WRRB may be able to identify if any of those special habitats for boreal caribou are in the vicinity of the proposed road route and provide this information to the Review Board by October 4, 2017.	WRRB commitment. WRRB submitted response to Review Board on Oct 3 (PR#210). This material was reviewed prior to the GNWT submitting its response to intervenor technical reports.
14	WMMP	Technical Session Commitment 12, PR#171, 238	The GNWT commits to including monitoring and mitigation of avian species at risk at pit run borrow sources and stockpile locations in the next version of the	Captured in WMMP (PR#192).

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
			WMMP which will be provided prior to the final technical report submission date.	
15	WMMP	Technical Session Commitment 13, PR#171, 238	Removed – included in revised wording for commitment 12.	N/A
16	Water crossings	Technical Session Commitment 14, PR#171, 238	The GNWT commits to take DFO on site tours of stream crossing before freeze-up to confirm the ephemeral nature of crossings.	Golder, DFO & Harvester John Beaverho travelled alignment Sept 20-21, 2017. Summary of the fieldtrip and fish habitat survey was posted to the public registry on October 26 (PR#235).
17	Health and Well-being	Technical Session Commitment 15, PR#171, 238	The GNWT will provide the Review Board with the ‘Mind and Spirit’ framework that was released in November 2016, which sets the foundation for the GNWT’s improvements to mental health and addictions programs and services.	Provided to Review Board and uploaded to public registry (see PR#170).
18	Workplace safety	Technical Session Commitment 16, PR#171, 238	GNWT commits to review construction and operation work safe policies for the TASR with a gender lens to strive for safety of women.	The GNWT will engage the short-listed proponents during the collaborative sessions as a part of the procurement process to review how the proponents’ construction and operation work safe policies for the TASR consider safety of women. Based on the results of these sessions, the GNWT may meet with the Tłıchǫ Government to discuss. The proponents’ work safe policies will be compared to internal GNWT policies on workplace safety and to industry best practices.

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
19	Highway Safety	Technical Session Commitment 17, PR#171, 238	GNWT commits to update the Multi-Agency Rescue Coordination System (MARCS) in collaboration with the community government of Whatì and the community government of Behchokò.	The 2017/2018 operational assessment referenced in commitment 18 includes an assessment of the current operating environment in addition to an assessment of MARCS. As outlined in the commitment 18 below, this assessment is already underway. The operational assessment should determine whether the MARCS is adequately serving its intended purpose, which is to establish a basic architecture for facilitating on-scene command and control, coordinating resources, and integrating multiple agencies for incidents and emergencies on NWT highways. Should the operational assessment indicate that MARCS should be replaced or changed, this will be carefully considered in the development of a GNWT action plan in support of community-based ground ambulance and highways rescue services.
20	Highway Safety	Technical Session Commitment 18, PR#171, 238	The parties commit that the 2017/2018 operational assessment will include analysis for the TASR and will jointly coordinate a community government of Whatì and community government of Behchokò and GNWT session, yielding an examination of the current operating environment for the purpose of determining an acceptable standard of service and the necessary resources to maintain the desired service level.	Work is well underway on this commitment. Interviews have already been completed for several key communities, including Behchokò. Interviews with municipal officials in Whatì will be conducted in November. Inter-jurisdictional and standards research will soon follow based on the findings and qualitative data collected via consultation. The GNWT's lead department, MACA, expects a baseline

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
				report to be complete in 2017, which will be followed by a facilitated discussion with senior GNWT officials in January 2018 to determine future actions necessary to support and develop an effective ground ambulance and highway rescue response capacity in the NWT. Results of this assessment will be provided to the short-listed proponents during the collaborative sessions for procurement if required to aid with Project design.
21	Highway Safety	Technical Session Commitment 19, PR#171, 238	The GNWT will consider having a camera on the TASR for the purpose of monitoring road conditions to assist in maintenance activities and to allow the public to see real-time road conditions prior to travelling, which can enhance traveller safety.	The GNWT will engage with the short-listed proponents during the collaborative sessions as a part of the procurement process to determine if proponents would consider having a camera on the TASR for the purpose of monitoring road conditions to assist in maintenance activities and to allow the public to see real-time road conditions prior to travelling, which can enhance traveller safety, and which would be compatible with the NWT's overarching intelligent transportation systems plan. Amendment to commitment during Day 3 public hearing: If the GNWT installs a camera, the GNWT will also consider having signage to note that a camera is installed.
22	Highway Safety	Technical Session	The GNWT intends to consult with the Tłıchǫ Government and Project Co. from a highway safety perspective to ensure that there is a cohesive plan for	The GNWT and Tłıchǫ Government will meet to discuss access points or rest stops at a time concurrent to the collaborative

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
		Commitment 20, PR#171, 238	access points or rest stops on the highway including appropriate signage where necessary.	sessions that the GNWT will hold with the short-listed proponents. The first collaborative session is tentatively scheduled in February 2018 as a part of the RFP process.
23	Land Use	Technical Session Commitment 22, PR#171, 238	The GNWT will provide the Review Board with an overview of findings from the summer archaeological impact assessment conducted as part of land use permit W2016S0009.	Summary report submitted September 25, 2017 (PR#193).
24	Water Quality	Technical Session Commitment 23, PR#171, 238	The GNWT commits to avoid using borrow sources that have been characterized as having high or moderate acid rock drainage or metal leaching potential.	Draft borrow source geotechnical report was provided on September 29 and uploaded to public registry (PR#200 to PR#208). Geochemical results indicate no ARD or ML potential for any of the sources.
25	Water Quality	Technical Session Commitment 24, PR#171, 238	The GNWT commits to providing the following with the water licence application and for approval: <ul style="list-style-type: none"> • A draft Sediment and Erosion Control Plan • Measures for potential thermal erosion events • Relevant lessons learned from other northern road projects (e.g. Inuvik to Tuktoyaktuk Highway) with respect to sediment and erosion control • An updated In-Field Water Analysis Plan with further details on monitoring frequency and duration 	Will be revisited when reapplying for the water license.
26	WMMP	Technical Session Commitment 25, PR#171, 238	The GNWT commits to providing an updated WMMP to parties by September 22, 2017, and agrees to organize a half-day session with all interested parties to facilitate an overview of the revised WMMP.	WMMP submitted on Sept 22 (PR#192). Half-day workshop occurred on Sept 28 (PR#209). Second meeting occurred on Oct 3 for those who could not attend first meeting (PR#213).

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
27	WMMP	Tłıchǵ Government Technical Report, PR#216	Post Technical Session Commitment 4: The Tłıchǵ Government runs strong and effective programs that collect traditional knowledge and answer citizens' questions. They are strong counterparts to the data collected by the GNWT. The WMMP Annual Reports and Comprehensive Reports will consider other studies that are conducted on an annual basis in the region, and will specifically review traditional knowledge of the harvesters and the elders from existing Tłıchǵ programs in order to inform adaptive management and revise or change mitigations as indicated by the research.	
28	WMMP	Tłıchǵ Government Technical Report, PR#216	The GNWT and Tłıchǵ Government commit to regular, face-to-face meetings to support the integration of traditional knowledge and western science monitoring perspectives throughout the process.	
29	WMMP	Meeting between GNWT and ECCC, PR#132	GNWT/Golder will assess ECCC's avian monitoring data from Highway 3 when it is received and update their effects assessment with the data incorporated, or provide an explanation as to why the data will not be included. GNWT will post the decision to use additional data or not to the public registry once available	
30	WMMP	GNWT Response to MVEIRB IR #3 – Boreal Woodland Caribou	A draft Wildlife Effects Monitoring Program (WEMP) will be provided prior to the technical sessions and a revised draft Wildlife and Wildlife Habitat Protection Plan (WWHPP) will be provided to reviewers prior to the public hearing. Together, the WEMP and WWHPP constitute a Wildlife Management and Monitoring Plan (WMMP), which will outline caribou management specifics.	A draft WEMP was submitted on August 4, 2017 (PR#151). The draft WEMP and the revised WWHPP were consolidated into the Wildlife Management and Monitoring Plan (WMMP). The draft WMMP was submitted on September 22, 2017 (PR#192).

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
31	WMMP	GNWT Response to ECCC IR#10 – WMMP	A draft WEMP will be provided prior to the technical sessions and a revised draft WWHPP will be provided to reviewers prior to the public hearing. Together, the WEMP and WWHPP constitute a WMMP.	A draft WEMP was submitted on August 4, 2017 (PR#151). The draft WEMP and the revised WWHPP were consolidated into the Wildlife Management and Monitoring Plan (WMMP). The draft WMMP was submitted on September 22, 2017 (PR#192).
32	WMMP Updates	Informal conversations with WRRB.	Clarify that bird nesting monitoring includes little brown myotis.	
33	WMMP Updates	Response to WRRB Technical Report, section 2.7.2, PR#239	Add the list of ASR measurement indicators and associated WMMP Pathway Categories to the WMMP.	
34	WMMP Updates	Response to WRRB Technical Report, section 2.7.2, PR#239	Consider the WRRB's suggestion that "The range of monitoring techniques and mitigation actions should be expanded (see preceding text) to use the experience gained from elsewhere and especially for the operational phase."	
35	WMMP Updates	Response to NSMA Technical Report, section 2.1.2 and 2.2.2, PR#239	Consider NSMA's traditional knowledge study when making decisions about the WMMP and discuss how NSMA could participate in traditional knowledge based monitoring programs for the WMMP.	
36	WMMP Updates	Response to NSMA Technical Report, section 2.2.2, PR#239	NSMA will have the opportunity to review and comment on annual and comprehensive WMMP reports.	
37	WMMP Updates	Response to NSMA Technical	GNWT will invite NSMA members to participate in wildlife surveys when opportunities are available.	

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
		Report, section 2.2.2, PR#239		
38	WMMP Updates	Response to NSMA Technical Report, section 2.2.6, PR#239	GNWT will include NSMA, and any other potentially affected Aboriginal government or organization, in any discussions relating to concerns about unsustainable levels of wildlife harvest in the TASR Project area. The GNWT will update the WMMP to include a more detailed list of Aboriginal government organizations that would be contacted in the event that such discussions need to take place.	
39	WMMP Updates	Response to NSMA Technical Report, section 2.3.2, PR#239	GNWT will seek NSMA's further input on ENR's proposed methods for monitoring access and harvest along the TASR as part of the review of an updated WMMP during the regulatory phase for the Project	
40	WMMP Updates	Response to NSMA Technical Report, section 2.4.2 and 2.5.2, PR#239	The GNWT will consider alternative proposals to the boreal caribou study area during the WMMP approval phase, but ultimately the study area will be informed by ecologically relevant population unit boundaries and the area used and movement patterns of caribou on which GPS collars have been deployed in the vicinity of the TASR. [In response to NSMA's request for a smaller study area for boreal caribou].	
41	WMMP Updates	Response to NSMA Technical Report, section 2.4.6 and 2.5.2, PR#239	Monitoring of wolves may be initiated as a management response if the monitoring of boreal caribou, moose or bison indicate a concern.	
42	WMMP Updates	Response to NSMA Technical	The GNWT is willing to consider re-calculating and re-assessing the amount of continuous boreal caribou	

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
		Report, section 2.6.2, PR#239	habitat within the NT1 range, prior to TASR construction.	
43	WMMP Updates	Response to NSMA Technical Report, section 2.98.2, PR#239	GNWT will update the sensitive period for boreal caribou calving to include the post-calving period. The new sensitive period for boreal caribou calving will be April 5 – July 15.	
44	WMMP Updates	Response to NSMA Technical Report, section 2.8.12, PR#239	A table summarizing specific mitigation and monitoring for bison and moose during sensitive periods will be added to the next version of the WMMP.	
45	WMMP Updates	Response to NSMA Technical Report, section 2.8.14, PR#239	The GNWT will change the sensitive period for bison to March 1 – July 15 in the next version of the WMMP.	
46	WMMP Updates	Response to NSMA Technical Report, section 2.10.2, PR#239	GNWT will ensure that, as part of the development of a wildlife collision and sightings smartphone app for use by INF, ENR and Project Co. employees that will regularly travel the TASR once operational, it includes a mechanism for reporting instances of wildlife that show signs of being stuck or having difficulty moving through snow cleared alongside of the road.	
47	WMMP Updates	Response to NSMA Technical Report, section 2.14.2, PR#239	The GNWT will review the suggestion that the GNWT allow for additional time above the 15 minute period (up to 2 hours) for animals to clear the area before the animals are approached in the next version of the WMMP, but qualify that the duration will be subject to review through the adaptive management process described in the WMMP.	

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
48	WMMP Updates	Response to NSMA Technical Report, section 2.15.2, PR#239	The GNWT will consider NSMA's suggestions regarding an annual audit on Project related flight paths and altitude compliance in the next version of the WMMP.	
49	WMMP Updates	Response to ECCC Technical Report, section 2.5.2, PR#239	The requirement for the slope of less than 70 degrees on all quarry stockpiles, overburden or exposed soil banks will be explicitly mentioned in the next version of the WMMP. Consideration can be made to flatten vertical faces according to an achievable schedule. It is currently common practice to flatten the slopes at non-continuous GNWT operations; however, this is not applicable to bedrock quarries.	
50	WMMP Updates	Response to ECCC Technical Report, section 2.6.2, PR#239	ECCC will be consulted regarding methods and reporting, should the pre-clearing survey for migratory bird nests be required.	
51	WMMP Updates	Response to ECCC Technical Report, section 2.6.2, PR#239	A revised version of the WMMP will be prepared for the permitting process. Parties will have the opportunity to comment on the revised WMMP during the permitting process and during a public review of the WMMP, which will be facilitated by the Department of Environment and Natural Resources.	
52	WMMP Updates	GNWT Technical Report Response to the NSMA, section 2.4.8, PR#239	If the proposed caribou, moose and bison monitoring indicates population level concern related to wolf predation, the GNWT will work within the co-management framework to explore and address concerns.	
53	WMMP Updates	GNWT Technical Report Response to the	The methods used for pre-clearing surveys for migratory bird nests if clearing is required during the migratory bird nesting season, for bat roosts if	

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
		NSMA, section 2.20.2, PR#239	vegetation clearing is required between spring and fall, and for carnivore dens will be added to the WMMP as they are developed, or if and when they are needed.	
54	WMMP Updates	GNWT Technical Report Response to the NSMA, PR#239	The WMMP describes that traffic data will be collected for the TASR, as it is for other NWT highways. The results will be included in annual GNWT highways reporting, as well as a breakdown of the monthly average traffic levels for the TASR within the WMMP report (WMMP Section 5.2.1). The GNWT will address the request to link the results also to wildlife sensitive periods for the next version of the WMMP.	
55	Project Design	GNWT Technical Report Response to the NSMA, PR#239	The GNWT can continue to carefully document the use of sodium chloride on Highway 3 should it approach the junction to the TASR and if it is ever used in rare instances on the TASR.	
56	Project Design	GNWT Technical Report Response to NRCAN, PR#239	The GNWT acknowledges NRCAN's recommendation pertaining to explosives storage (Section 2.1.1) and concurs that, at a later date, additional information will be provided to NRCAN in order to satisfy the permit requirements for explosive storage. The preferred proponent (Project Co.) will be responsible for obtaining the necessary permits associated with explosives storage.	
57	Project Design	GNWT Technical Report Response to NRCAN, PR#239	NRCAN's recommendation pertaining to embankment design options (Section 2.2.1) will be provided to the short-listed proponents for their information and consideration.	
58	Project Design	GNWT Technical Report	NRCAN's recommendation pertaining to embankment geotextiles (Section 2.3.1) will be provided to Project Co. for their information and consideration.	

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
		Response to NRCan, PR#239		
59	Project Design	GNWT Technical Report Response to NRCan, PR#239	NRCan's recommendation pertaining to pre-existing permafrost conditions on and off disturbed terrain (Section 2.4.1) will be provided to Project Co. for their information and consideration.	
60	Project Design	GNWT Technical Report Response to NRCan, PR#239	NRCan's recommendation pertaining to removal of permafrost (Section 2.5.1) will be provided to Project Co. for their information and consideration.	
61	Project Design	GNWT Technical Report Response to NRCan, PR#239	NRCan's recommendation pertaining to geotechnical conditions (Section 2.6.1) will be provided to Project Co. for their information and consideration.	
62	Project Design	GNWT Technical Report Response to NRCan, PR#239	NRCan's recommendation pertaining to borrow materials will be provided to Project Co. for their information and consideration.	
63	In-Field Water Analysis Monitoring Plan	Response to WRRB Technical Report, section 2.10.2, PR#239	The frequency of watercourse inspection will be defined in the next version of the In-Field Water Analysis Plan during permitting.	
64	In-Field Water Analysis Monitoring Plan	GNWT Technical Report Response to ECCC, PR#239	<p>The GNWT will consider the following recommendations in the next version of the In-Field Water Analysis Monitoring Plan (PR#43) and the TASR Erosion and Sediment Control Plan during the regulatory phase:</p> <ul style="list-style-type: none"> ECCC recommends that the Proponent add water quality monitoring pre- construction, during freshet and immediately after heavy 	<ul style="list-style-type: none"> The In-Field Analysis Plan can be updated to indicate the management actions that would be implemented depending on the difference between the upstream and downstream turbidity levels (including immediate response

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
			<p>rainfall events to the sampling regime for water crossings in the updated In-Field Water Analysis Monitoring Plan.</p> <ul style="list-style-type: none"> Depending on the site and how vulnerable or prone to erosion the site is, ECCC recommends, that at a minimum, the Proponent complete monitoring the following freshet, summer and late fall. If there are no issues then this could revert to the general road inspections. If instability or erosion is detected, ECCC recommends that monitoring and mitigation take place again in the next year in all three seasons. This monitoring should be outlined in the updated In-Field Water Analysis Monitoring Plan. 	<p>triggers such as more frequent monitoring and assessment of mitigation measure).</p> <ul style="list-style-type: none"> The In-Field Analysis Plan will be updated to include an appendix with the locations of the watercourse crossings and associated station numbers to be set up at the commencement of construction. The In-Field Water Analysis Plan will be updated to include one set of confirmatory TSS (during construction around immediate water crossing) to identify the ballpark relationship of TSS and turbidity at each site. Water quality grab samples upstream and downstream of the four major water crossings can be added to the In-Field Water Analysis Plan to demonstrate best water quality management practices. The Plan will be updated to include grab samples of TSS at select sites/time periods over the course of construction to ensure turbidity testing remains comparable. Baseline data will be collected

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
				upstream of the construction activity at the same time as the downstream samples to provide surety of any difference in the turbidity levels.
65	Wildlife Habitat	GNWT Technical Report Response to ECCC, PR#239	The GNWT will contact ECCC to schedule a meeting prior to the public hearing to continue the discussion of baseline monitoring of avian species at risk so that the GNWT can further understand ECCC's recommendation.	The developer has committed to consider the collection of Avian Species at Risk baseline data prior to the commencement of construction.
66	WMMP Updates	GNWT Technical Report Response to ECCC, PR#239	The next update to the WMMP will clarify that surveillance monitoring will be expanded to include all construction areas including equipment and vehicles that have remained stationary during the spring and may provide nesting sites for birds. Any bird nests discovered as part of routine surveillance monitoring will trigger the same mitigation as bird nests discovered during pre-clearing surveys.	
67	WMMP Updates	GNWT Technical Report Response to ECCC, PR#239	The mitigation and monitoring in the Prairie Creek Wildlife Management and Monitoring Plan will be reviewed again when drafting the next version of the TASR WMMP. For example, the GNWT recommended that CZN install windrows consisting of cleared brush at the intersection between existing linear features (mainly seismic lines) and the proposed Prairie Creek road to discourage predator/harvester access along these features and to limit sightlines. The GNWT will consider the feasibility of implementing this measure where the TASR intersects with other existing linear features along the corridor, and where the TASR deviates from the alignment of the old winter road. This will be	

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
			incorporated in the next version of the WMMP. The GNWT has also committed to not blocking traditional trails that interest with the road. The GNWT will have to evaluate whether there are any potential land use conflicts that would limit the implementation of this mitigation measure.	
68	Working Group	GNWT Response to Technical Reports, PR#239 (response to WRRB and NSMA) GNWT closing argument	The GNWT commits to establishing an overarching corridor working group that is similar to the GNWT's highly successful Inuvik Tuktoyaktuk Highway Corridor Working Group (ITHCWG) which will meet twice per year and will operate for the construction period and up to 5 years of highway operations, unless an extension is agreed to by its parties; and will provide advice on monitoring and mitigation results that will inform adaptive management. The corridor working group may also serve as a forum to exchange information with academic parties and researchers. Additional specifics pertaining to the functions and operations of the group will be laid out in the group's terms of reference which will be established when the group is formed.	
69	Wildlife Habitat	GNWT Response to WRRB Technical Reports, PR#239	The GNWT commits to the mitigation hierarchy described in the Adequacy Statement Response Section 2.31 as it relates to managing the impacts of this Project on wildlife and their habitat. The GNWT commits to follow the reclamation guidelines in the Northern Land Use Guidelines: Pits and Quarries, which were developed with a view to increasing the probability of re-vegetation in these areas. The GNWT commits to pursuing and supporting research that would support identification of viable offsetting projects, when and where they are	

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
			appropriate. The GNWT is in the process of studying the utility, effectiveness, and legal implications of potential offsetting approaches in the context of regulatory decision making and range planning for boreal caribou and barren-ground caribou, including when and where it is appropriate and how it might be undertaken by developers. The GNWT is undertaking this work with a view to developing a policy and guidelines around the use of offsets for mitigating residual impacts from developments.	
70	WMMP	WLWB Preliminary Screening	The Wildlife Management and Monitoring Plan will be updated to be consistent with the proposed Wood Bison recovery strategy to the extent feasible.	
71	Wildlife Habitat	WLWB Preliminary Screening	The GNWT (via ENR) will approach the Barren Ground Caribou Technical Working Group, regarding possible approaches for monitoring wildlife harvest in relation to TASR.	
72	Wildlife Habitat	GNWT Technical Report Response to ECCC, PR#239	The GNWT commits to providing publicly the precise measurements and associated spatial data of the final Project footprint following construction. This information will be submitted to the Cumulative Impact Monitoring Program Inventory of Landscape Change disturbance database and to the Wek'èezhì Land and Water Board.	
73	WMMP	PR#99. Meeting between GNWT, ECCC, WRRB and CANNOR. 10 November 2016	Establish a wildlife effects monitoring program for boreal caribou to assess their response to construction and operation of the TASR and to assess population trend for boreal caribou in the region.	The draft WMMP was submitted on September 22, 2017 (PR#192).

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
74	WMMP	GNWT Response to Technical Reports, PR#239 Letter from ENR to INF (PR#225)	The Minister of Environment and Natural Resources requires the Department of Infrastructure to submit a WMMP for approval at least 60 calendar days prior to construction of the TASR. ENR will post the submitted WMMP for public review for 30 calendar days.	
75	Socioeconomics	Public Hearing Day 3 (PR#273) GNWT closing argument	The GNWT will consider the appointment of a community liaison officer for the duration of the project construction with whom employees can discuss workplace safety concerns.	
76	Socioeconomics	Public Hearing Day 3 (PR#273)	The GNWT is committed to meeting with and working with key stakeholders, including the community government of Whatı, the TCSA and the Tłıchǫ Government to work toward the development of an effective ground ambulance and the highway rescue response capacity.	
77	WMMP	Public Hearing Day 2 (PR#274) GNWT closing argument	For the purposes of this environmental assessment proceeding, the GNWT formally commits that MVEIRB may consider the draft WMMP the foundation from which the final WMMP will be built.	
78	Project Design	Public Hearing Day 1 (PR#272) GNWT closing argument	The GNWT will establish a Tłıchǫ road website to ensure that information about the project is also available to the public. The tracking of commitments will also be made available on this website.	
79	Commitments	Public Hearing Day 1 (PR#272) GNWT closing argument	The GNWT will be responsible for fulfilling all commitments it has made. The GNWT will contractually bind the contractor and sub-contractors to any relevant commitments.	

No.	Subject	Source	Commitment – EA and Permitting Process	Notes
80	Fisheries Management	GNWT closing argument	The GNWT participate in preparation of the fisheries management as appropriate where invited to do so and will comply with the fisheries management plan.	
81	Fish Habitat	PR#190	The GNWT commits to providing final designs to DFO prior to constructing the watercourse crossings and/or where construction will take place below the Ordinary High Water Mark at crossings where there is the potential to support large-bodied fish.	
82	WMMP	ECCC closing argument	The WMMP will be updated to clarify that ECCC will be included in the reporting of all instances of migratory bird and avian species at risk nesting, incident and/or mortality and that ECCC be consulted regarding any additional measures and advice for migratory birds and avian species at risk.	

Notes: No. = number; TG = Tłıchǫ Government; NSMA = North Slave Metis Alliance; ECCC = Environment and Climate Change Canada; WRRB = Wek'èezhì Renewable Resources Board; DFO = Fisheries and Oceans Canada; NRCan = Natural Resources Canada; MVEIRB = Mackenzie Valley Environmental Impact Review Board; WLWB = Wek'èezhì Land and Water Board; GNWT = Government of Northwest Territories; ENR = Environment and Natural Resources; TK = Traditional Knowledge; WMMP = Wildlife Management and Monitoring Plan; TASR = Tłıchǫ All-Season Road; ASR = Adequacy Statement Response; km = kilometre.

Appendix E: Tłıchǵ Government commitments

Commitment Number	Topic	Source	Commitment Description
1	Community Safety	TG Technical Report, Appendix C	The Community Government of Whatı is investigating two options to strengthen community security: Community Bylaw Officer and the Aboriginal Policing Program. This is an issue that needs to be addressed jointly by the Tłıchǵ Government and the Community Government of Whatı, as well as other supportive agencies.
2	Community Safety	TG Technical Report, Appendix C	There is a need to provide on-the-land treatment for substance abusers, using the healing-power of the elders and the land. This is a social issue that needs to be addressed collectively, and one recommendation is to introduce the Nishi Program by accessing a variety of funding sources. In most cases, social issues are “community issues” that at the very least require community input into the solution. TCSA should be viewed for a tool or an organization that has resources to help communities.
3	Community Safety	TG Technical Report, Appendix C	There is currently an alcohol prohibition in place in Whatı. Annually, TCSA, the RCMP and the GNWT allocates a large sum to prohibition enforcement and responding to the negative impacts which are most often ineffective. The Community Government of Whatı would like to review the possibility of revisiting the prohibition ban, in favour of more proactive resilience strategies for managing alcohol and drug consumption in the community.
4	Economic Development	TG Technical Report, Appendix C	The need has been shown for increased business acumen for local entrepreneurs, in order to maximize local procurement opportunities from the road and mine. The Tłıchǵ Government currently maintains Economic Development Officers (EDO) in the communities who assist Tłıchǵ residents in establishing their own businesses. It may create a larger benefit for the Tłıchǵ Government to redirect each local EDO to focus on local economic development issues. (PR#96 p78 notes: “Funding provided by GNWT-Industry, Tourism and Investment)
5	Community Preparedness	TG Technical Report, Appendix C	The Community Government of Whatı has an active Community Emergency Management Plan and completes regular training and exercises of staff, Council, and various community members. In 2014, the relevance of this training and preparedness was graphically demonstrated as wildland fires came within 5 km of the community.

6	Community Preparedness	TG Technical Report, Appendix C	The Community Government of Whatì is an active supporter of a local Inter-Agency Committee which includes the RCMP, Health, various TCSA agencies, and the Tłıchǫ Government. Whatì Inter-Agency responds to issues related to community preparedness. Issues such as emergency response, social programs, and the community & lands concerns are all brought to this monthly forum. Reasonable discussions about costs, liabilities and insurance will need to be addressed at this forum. Both parties commit to continuing this community forum in order to coordinate among agencies.
7	Community Preparedness	TG Technical Report, Appendix C	The Community Government of Whatì commits to clear and ongoing communication with citizens in the region, using appropriate means. These may include posters, door-to-door mail-outs, newsletters, as well as public meetings.
8	Community Preparedness	TG Technical Report, Appendix C	Housing stock and condition is an ongoing barrier to community well-being and preparedness. There is insufficient information on housing and the barriers, but key issues to investigate include income support, home ownership, property management, and local organization, as well as financing. A Local Housing Organization (LHO) is being established in Whatì, and the Tłıchǫ Government has signed a MOU with the GNWT on Housing, forming the Working Group – Housing.
9	Community Preparedness	TG Technical Report, Appendix C	There is a need for locally agreed-upon goals and plans for Community Well-Being. The Whatì Inter-Agency Committee should develop a small set of community based goals of resilience. As an example: A number of local gardens, and the support of a community garden, could be an example, with goals set for 2020 and 2025. The Community Government of Whatì commits to forming a small set of community goals during the 2015 Strategic Planning process (March 6 & 7), and then monitoring progress towards goals over-time.
10	Governance	TG Technical Report, Appendix C	To ensure effective management, the Tłıchǫ Government will investigate the need for regulations and policies to manage the construction of cabins and design of hunting, trapping, and fishing in the area, in order to minimize impacts on local animal populations. The Tłıchǫ Government and the GNWT commit to work together to provide clear guidance on this topic.
11	Governance	TG Technical Report, Appendix C	The Tłıchǫ Government will develop mineral policy for Tłıchǫ Lands, so that there is clear and predictable regulation in the region.

12	TCSA	TG Technical Report, Appendix C	The Tłıchǵ Community Services Agency commits to providing more information for local health nurses on a range of health issues, such as sexually transmitted infections, among other issues.
13	Municipal Collaboration	TG Technical Report, Appendix C	There will be annual coordination between the Councils of Whatì and Behchokǵ to ensure that any changes and impacts are being collectively considered, addressed and managed.
14	Cultural and heritage resources	TG Technical Report, Appendix D	<u>Ground truthing trails and trapping routes:</u> The Tłıchǵ Government will be ground truthing the traditional trails and trapping routes from the traditional knowledge study and will be providing that information to the GNWT.
15	Harvest Monitoring	TG Technical Report, Appendix E	The Tłıchǵ Government commits, subject to the availability of additional resources, to the design and implementation of a program that uses Tłıchǵ harvesters' traditional knowledge and methods to monitor, during construction and operation of the road the health of fisheries and the state of their habitat in rivers and lakes along the route of TASR.
16	Fisheries Monitoring	TG Technical Report, Appendix E	DFO and the Tłıchǵ Government commit to develop a strategy to monitor and manage impacts to fisheries from human fishing pressures created as a result of the operation of the Tłıchǵ All-season Road, including the joint-development of a creel survey for three years following construction, and on an ongoing basis as needed.
17	Caribou Monitoring	TG Technical Report, Appendix E	The GNWT is committed to supporting, subject to availability of additional resources, the Tłıchǵ Government in the design and implementation of a program that uses Tłıchǵ harvesters' traditional knowledge and methods to monitor the health of tǵdzı (boreal caribou) and the state of their habitat, and the state of hozi ı ekwǵ (barren-ground caribou) winter habitat, during and after the completion of the TASR project. Further details of the program, including monitoring questions and approach, will be determined following discussion with traditional harvesters and elders through engagement with the Tłıchǵ Government, with WRRB being engaged/consulted, and with a view to being included as a component of the Wildlife Management and Monitoring Plan (WMMP) to be finalized and approved during the regulatory phase for this project.
18	Adaptive Management	TG Technical Report, Appendix E	The Tłıchǵ Government runs strong and effective programs that collect traditional knowledge and answer citizens' questions. They are strong counterparts to the data collected by the GNWT. The WMMP Annual Reports and Comprehensive Reports will consider other studies that are conducted on an annual basis in the region, and will specifically review traditional knowledge of the harvesters and the elders from existing

			Tłıchǫ programs in order to inform adaptive management and revise or change mitigations as indicated by the research. The GNWT and Tłıchǫ Government commit to regular, face-to-face meetings to support the integration of traditional knowledge and western science monitoring perspectives throughout the process.
19	Emergency Response	TG Closing Arguments	Government of the Northwest Territories is committed to meeting with and working with key stakeholders, including the Community Government Whatì, the Tłıchǫ Community Services Agency and the Tłıchǫ Government to work toward the development of an effective ground ambulance and the highway rescue. (Review Board, public hearings, November 17, 2017)

Appendix F: Public registry index

Any of the following referenced documents can be found [here](#).

PR #	Title	Stage	Originator	Date
1	EA referral notification letter - MVEIRB to GNWT-DoT - Tłıchǫ All Season Road	Environmental assessment start-up	Review Board	2016-07-27
2	Reasons for Decision - Tłıchǫ All Season Road EA referral	Environmental assessment start-up	Review Board	2016-07-27
3	Note to file - meeting with GNWT-DOT, WLWB, TG and Board staff	Environmental assessment start-up	Review Board	2016-07-29
4	Distribution list subscription request and instructions	Scoping	Review Board	2016-08-05
5	Notice of proceeding - scoping meetings in Whatı and Yellowknife	Scoping	Review Board	2016-08-04
6	MVRB notification letter to ECCC re new EA and species at risk	Environmental assessment start-up	Review Board	2016-08-05
7	Project Description Report 2016	Environmental assessment start-up	Developer	2016-08-08
7	Appendix A - Access to Tłıchǫ Lands GNWT/TG Joint Letter March 2016	Preliminary screening	Developer	2016-03-24
7	Appendix D - Motion 2015-018	Preliminary screening	Developer	2016-03-31
7	Appendix C - Nichols Economic Evaluation of the Tłıchǫ Road March 2015	Preliminary screening	Developer	2016-03-31
7	Appendix E - Engagement Plan and Record (Introduction)	Preliminary screening	Developer	2016-03-31
7	Appendix B - A Socio-Economic Issues Scoping Study for a Potential All-Weather Road to Whatı, Tłıchǫ Region	Preliminary screening	Developer	2016-03-12
7	Appendix F - Tłıchǫ Grand Chief to DOT Minister letter May 1 2013	Preliminary screening	Developer	2016-07-21
7	Appendix BB - 11 x 17 Figures of TASR road routes	Preliminary screening	Other	2016-07-21
7	Appendix AA - draft In-Field Water Analysis Plan	Preliminary screening	Other	2016-07-21
7	Appendix G - 1 to 2500 Map book of proposed TASR corridor	Preliminary screening	Developer	2016-07-21
7	Appendix H - TASR Photo Presentation - Conditions along route in June 2014	Preliminary screening	Developer	2016-07-21

7	Appendix I - Major Bridge and Culvert Conceptual Designs 2016	Preliminary screening	Developer	2016-07-21
7	Appendix N - draft Waste Management Plan	Preliminary screening	Developer	2016-07-21
7	Appendix P - Kavik AXYS Terrain Alignment Sheets Route A 2008	Preliminary screening	Developer	2016-07-21
7	Appendix W - DOT Erosion and Sediment Control Manual January 2013	Preliminary screening	Developer	2016-07-21
7	Appendix O - Landfill Authorizations from Whatı and Behchokǫ	Preliminary screening	Developer	2016-07-21
7	Appendix M - draft Wildlife and Wildlife Habitat Protection Plan	Preliminary screening	Developer	2016-07-21
7	Appendix K - draft Quarry Operations Plan	Preliminary screening	Developer	2016-07-21
7	Appendix J - Granular and Bedrock Prospects along Proposed TASR 2015	Preliminary screening	Developer	2016-07-21
7	Appendix L - draft Spill Contingency Plan	Preliminary screening	Developer	2016-07-21
7	Appendix V - Whatı Micro-Economic Analysis of the All-Season Road March 2015	Preliminary screening	Developer	2016-07-21
7	Appendix U - Stantec Archaeological Impact Assessment Report August 2014	Preliminary screening	Developer	2016-07-21
7	Appendix X - draft Fish and Fish Habitat Protection Plan	Preliminary screening	Developer	2016-07-21
7	Appendix Z - draft Emergency Response Plan	Preliminary screening	Developer	2016-07-21
7	Appendix Q - 2014 DOT Ground truthing observations and photos	Preliminary screening	Developer	2016-07-21
7	Appendix T - Fisheries Protection Self-Assessment Serious Harm Impacts Determination Record February 2016	Preliminary screening	Developer	2016-07-21
7	Appendix S - Stantec Hydrotechnical Progress Report August 2014	Preliminary screening	Developer	2016-07-21
7	Appendix R - Stantec Tłıchǫ Road Alignment Hydrologic and Hydraulic Study 2014	Preliminary screening	Developer	2016-07-21
7	Appendix Y - Archaeological Site Chance Find Protocol	Preliminary screening	Developer	2016-07-21

7	Appendix E - Engagement Record (Log)	Preliminary screening	Developer	2016-03-31
7	Appendix E - Engagement Record (Summary)	Preliminary screening	Developer	2016-03-31
8	Note to File - EA update meeting with GNWT-DOT and Board Staff	Scoping	Review Board	2016-08-09
9	GNWT participation in the TASR environmental assessment	Scoping	Developer	2016-08-11
10	Whati scoping meeting agenda August 18	Scoping	Review Board	2016-08-12
11	Yellowknife scoping meeting agenda August 24	Scoping	Review Board	2016-08-12
12	Note to File - Meeting with ECCC and Board Staff 18_Aug_16	Scoping	Review Board	2016-08-16
13	TG participation in the TASR environmental assessment	Scoping	Parties/Public	2016-08-17
14	NPMO Letters to Indigenous Groups Re TASR EA	Scoping	Parties/Public	2016-08-17
15	Updated Yellowknife Scoping Meeting Agenda	Scoping	Review Board	2016-08-22
16	WLWB Application Cover Letter	Preliminary screening	Developer	2016-03-31
17	Land Use Permit and Water Licence Application Form	Preliminary screening	Developer	2016-03-31
18	Draft TASR LUP and Terms and Conditions	Preliminary screening		2016-03-31
19	Summary of Community Scoping Session in Whati	Scoping	Review Board	2016-08-22
20	Issues Scoping Agenda, Yellowknife August 24, 2016	Scoping	Review Board	2016-08-22
21	GNWT Whati Scoping Presentation	Scoping	Developer	2016-08-18
22	MVEIRB Whati Scoping Presentation	Scoping	Review Board	2016-08-18
23	Review Board letter to GNWT RE crown consultation during EA ...	Scoping	Review Board	2016-08-23
24	Preliminary Screening - WLWB ORS Review Summary Table and Attachments	Preliminary screening	Other	2016-07-21
25	Fire disturbance to caribou habitat time horizons, an ECCC rationale	Scoping	Federal or responsible minister	2016-08-25

26	Summary of Technical Scoping Session in Yellowknife	Scoping	Review Board	2016-08-30
27	Note to File -Document Submission Standards Reminder	Scoping	Review Board	2016-08-30
28	Traditional Knowledge Study Report - May 16_16	Preliminary screening	Developer	2016-07-21
29	2013-05-10 DRAFT Whatı Resilience Plan	Scoping	Parties/Public	2013-05-10
30	2015-2016 Strategic Planning Details	Scoping	Parties/Public	2015-07-13
31	2016-05-04 Inter-agency Meeting Summary	Scoping	Parties/Public	2016-06-05
32	Tłıchǫ and Whatı Government Commitment Presentation	Scoping	Parties/Public	2016-04-28
33	ECCC Scientific Assessment to Inform the Identification of Critical Habitat for Woodland Caribou, Boreal Population	Scoping	Parties/Public	2011-01-01
34	SARA Receipt Letter to MVEIRB	Scoping	Federal or responsible minister	2016-09-01
35	Management Plan for the Rusty Blackbird in Canada	Scoping	Federal or responsible minister	2015-01-01
36	Proposed Management Plan for the Short-eared Owl in Canada	Scoping	Federal or responsible minister	2016-01-01
37	Management Plan for the Yellow Rail in Canada	Scoping	Federal or responsible minister	2013-01-01
38	Recovery Strategy for the Woodland Caribou, Boreal Population, in Canada	Scoping	Federal or responsible minister	2012-01-01
39	Recovery Strategy for the Common Nighthawk in Canada	Scoping	Federal or responsible minister	2016-01-01
40	Recovery Strategy for Little Brown Myotis, Northern Myotis, and Tri-colored Bat in Canada	Scoping	Federal or responsible minister	2015-01-01
41	Recovery Strategy for the Olive-side Flycatcher in Canada	Scoping	Federal or responsible minister	2016-01-01

42	Proposed Recovery Strategy for the Wood Bison in Canada	Scoping	Federal or responsible minister	2016-01-01
43	Hyperlinks to GNWT-DOT TASR Project Description Report with Appendices	Preliminary screening	Review Board	2016-09-15
44	Notice of proceeding - Review Board's Approach to the Terms of Reference	Terms of Reference and workplans	Review Board	2016-09-19
45	EA1617-01 - Review Board letter to Tłıchǫ Government RE responsibilities under Tłıchǫ Agreement and MVRMA - Sep 23_16	Scoping	Review Board	2016-09-23
46	TASR EA1617-01 draft Terms of Reference DRAFT for public review	Terms of Reference and workplans	Review Board	2016-09-23
47	EA1617-01_TASR draft Adequacy Statement for public review (corrected)	Terms of Reference and workplans	Review Board	2016-09-23
48	Note to File -Review instructions for dToR and Adequacy Statement - Sept 23, 2016	Terms of Reference and workplans	Review Board	2016-09-23
49	GNWT consultation letters notifying Aboriginal groups of the Tłıchǫ All-Season Road EA	Terms of Reference and workplans	Developer	2016-10-07
50	Note to File - Meeting with GNWT-DoT and Board Staff_7_Oct_2016	Terms of Reference and workplans	Review Board	2016-10-07
51	Note to File - GNWT TASR flight route video - October 7	Terms of Reference and workplans	Review Board	2016-10-07
52	NSMA letter to GNWT requesting engagement on TASR and recreational land use	Terms of Reference and workplans	Parties/Public	2016-10-07
53	GNWT email to NSMA confirming receipt of October 7 letter and intent to respond.	Scoping	Parties/Public	2016-10-07
54	GNWT letter re: TASR updated September 1, 2016 flyover video	Terms of Reference and workplans	Developer	2016-09-30

55	Note to File - GNWT TASR updated Sept 1 2016 flyover video	Terms of Reference and workplans	Review Board	2016-09-30
56	GNWT letter to Dehcho First Nations - TASR Sec 35 Consultation	Terms of Reference and workplans	Developer	2016-10-07
57	NSMA letter to MVEIRB - comments from review of draft ToR and draft Adequacy Statement	Terms of Reference and workplans	Parties/Public	2016-10-13
58	Note to file - notice of late submission to the Review Board	Scoping	Review Board	2016-10-17
59	Copy of email DGGFN to GNWT - Assertion of Treaty Rights in Project area	Terms of Reference and workplans	Parties/Public	2016-10-07
60	Copy of email response GNWT to DGGFN - asserted Treaty Rights in Project area	Terms of Reference and workplans	Developer	2016-10-20
61	GNWT letter to DGGFN - Assertion of Rights in TASR Project Area	Terms of Reference and workplans	Developer	2016-10-20
62	GNWT letter to NSMA - NSMA strength of claim preliminary assessment	Terms of Reference and workplans	Developer	2016-10-20
63	GNWT submission on protocol for review of water crossings	Scoping	Developer	2005-04-06
64	Position statement on water crossings	Terms of Reference and workplans	Developer	2007-04-10
65	GNWT-DOT letter - proponent responses to public comments on the Terms of Reference and Adequacy Statement	Terms of Reference and workplans	Developer	2016-10-20
66	GNWT reference - forced growth	Terms of Reference and workplans	Developer	2010-11-10
67	Notice of Proceeding - Board member recused from TASR EA and all GNWT development proposals (with attachments)	Terms of Reference and workplans	Review Board	2016-10-26

68	Notice of proceeding - Terms of Reference and supporting documents	Terms of Reference and workplans	Review Board	2016-10-28
69	Terms of Reference	Terms of Reference and workplans	Review Board	2016-10-28
70	MVEIRB Adequacy Statement for TASR, EA1617-01	Terms of Reference and workplans	Review Board	2016-10-28
71	Reasons for Decision for scope of EA and adequacy statement	Terms of Reference and workplans	Review Board	2016-10-28
72	GNWT and NSMA letter and email correspondence	Terms of Reference and workplans	Developer	2016-07-08
73	Board Information Requests to the Community Government of Whatı and Tłıchǫ Government	Terms of Reference and workplans	Review Board	2016-10-28
74	Board Information Requests to Aboriginal groups	Terms of Reference and workplans	Review Board	2016-10-28
75	Draft work plan	Terms of Reference and workplans	Review Board	2016-10-28
76	Comment and response table for draft Terms of Reference and draft Adequacy Statement	Terms of Reference and workplans	Review Board	2016-10-28
77	WRRB email to MVEIRB clarifying ORS#2 comment and availability of Bison Management Plan	Terms of Reference and workplans	Parties/Public	2016-11-01
78	ORS Comment Table Oct 31 final with errata	Terms of Reference and workplans	Review Board	2016-11-10
79	GNWT - Draft NWT Boreal Caribou Recovery Strategy	Terms of Reference and workplans	Developer	2016-06-03
80	GNWT - Draft Mackenzie Bison Mgt Plan	Terms of Reference and workplans	Developer	2016-07-31

81	MVEIRB Note to File - EA1617-01 Party Status Application Invite	Terms of Reference and workplans	Review Board	2016-11-16
82	NSMA letter to GNWT - NSMA Strength of Claim Assessment	Terms of Reference and workplans	Parties/Public	2016-12-16
83	NSMA letter to MVRB - TASR - time extension request	Information requests	Parties/Public	2016-11-17
84	Notice of proceeding - request for extension to respond to information requests	Information requests	Review Board	2016-11-28
85	GNWT letter to MVEIRB _Clarification of Terms of Reference and Adequacy Statement	Terms of Reference and workplans	Developer	2016-12-14
86	Note to File - Meeting with GNWT and Board staff_02.12.16	Terms of Reference and workplans	Review Board	2016-12-16
87	Note to File - GNWT TASR flight route video available online	Scoping	Review Board	2016-12-16
88	GNWT-DAAIR letter to NSMA: Update of Strength of Claim Results	Terms of Reference and workplans	Developer	2016-12-16
89	MVEIRB response to GNWT Clarification TO and AS_19.12.2016	Terms of Reference and workplans	Review Board	2016-12-19
90	WRRB response to Oct. 28 Review Board Information Request	Information requests	Parties/Public	2016-12-19
91	WRRB_DFO Report on North Slave fish harvests and stocks_Stewart_1997	Information requests	Parties/Public	1997-06-15
92	Federal letter to MVEIRB - information request response	Information requests	Review Board	2016-12-21
93	Federal applications in response to MVEIRB request for party status	Information requests	Parties/Public	2016-12-21
94	ECCC letter to GNWT: Boreal Caribou Pop Trends meeting minutes review	Terms of Reference and workplans	Federal or responsible minister	2016-12-21
95	Tłıchǫ letter to MVEIRB: supporting letter to Board IR response	Terms of Reference and workplans	Parties/Public	2016-12-21

96	Tłıchǫ and Community Government of Whatı: Oct. 28 IR response	Terms of Reference and workplans	Parties/Public	2016-12-21
97	Tłıchǫ Gov't response to Oct. 28 Board IR to Aboriginal groups and resource managers	Terms of Reference and workplans	Parties/Public	2016-12-21
98	NSMA ltr MVEIRB: Oct 28 IR Responses	Information requests	Parties/Public	2016-12-21
99	GNWT meeting minutes and post-meeting response: Boreal caribou population health	Terms of Reference and workplans	Developer	2016-11-10
100	WRRB letter to GNWT: re comments on Nov. 10 meeting on Boreal caribou	Terms of Reference and workplans	Parties/Public	2016-12-16
101	NSMA Appendix (1 of 2) -TAB 1 with Index Oct 28 IR response	Information requests	Parties/Public	2016-12-21
102	NSMA Appendix (2 of 2) - Tabs 2,3 and 4_Oct 28 IR response	Information requests	Parties/Public	2016-12-21
103	WRRB request for party status EA1617-01	Terms of Reference and workplans	Parties/Public	2016-12-07
104	COSEWIC Status of Caribou submitted to MVEIRB	Terms of Reference and workplans	Parties/Public	2016-11-15
105	ECCC letter to MVEIRB - COSEWIC status of barren-ground caribou	Information requests	Parties/Public	2017-02-15
106	2017 Recovery Strategy for Boreal Caribou (<i>Rangifer tarandus caribou</i>) in the Northwest Territories	Developer's Assessment Report Environmental Impact Statement	Parties/Public	2017-02-28
107	Boreal caribou meeting summary	Developer's Assessment Report Environmental Impact Statement	Developer	2017-01-20

108	Tłıchǫ Government party status form	Developer's Assessment Report Environmental Impact Statement	Parties/Public	2017-03-03
109	DFO-GNWT meeting summary report	Developer's Assessment Report Environmental Impact Statement	Parties/Public	2016-12-15
110	Developer's Adequacy Statement Response	Developer's Assessment Report Environmental Impact Statement	Developer	2017-04-13
111	Review Board letter to Developer - conformity determination of adequacy statement response	Developer's Assessment Report Environmental Impact Statement	Review Board	2017-04-28
112	Updated workplan	Information requests	Review Board	2017-04-28
113	Notice of proceeding - information requests	Information requests	Review Board	2017-05-22
114	Developer cover letter for updated concordance table	Information requests	Developer	2017-05-08
115	Updated concordance table, appendix A	Information requests	Review Board	2017-05-08
116	NSMA Request for Funding	Information requests	Developer	2017-05-03
117	Tłıchǫ Government letter regarding first round information requests	Information requests	Parties/Public	2017-05-29
119	Notice of Proceeding - extension request for submitting the first-round information	Information requests	Review Board	2017-05-29
120	Summary of the technical review session of the developer's adequacy statement response	Information requests	Developer	2017-05-16

121	Summary of the developer's Technical Review Session held on May 25	Developer's Assessment Report Environmental Impact Statement	Developer	2017-06-08
122	Letter from the NPMO to the NWTMN	Environmental assessment start-up	Developer	2017-06-23
123	Correspondence between GNWT and YKDFN	Developer's Assessment Report Environmental Impact Statement	Developer	2017-06-17
124	Letter from the developer regarding IR response timing	Information requests	Developer	2017-06-29
125	Government of Canada response to first round IRs	Information requests	Parties/Public	2017-06-29
126	The Tłıchǫ Government's response to information requests	Information requests	Parties/Public	2017-06-29
127	Developer's cover letter for information request responses	Information requests	Developer	2017-06-29
128	The developer's response to ECCC information requests	Information requests	Developer	2017-06-29
129	Developer's response to NRCAN IRs	Information requests	Developer	2017-06-29
130	The developer's response to Review Board IRs #8 and 14	Information requests	Developer	2017-06-29
131	Developer response to NSMA IRs #1 and 3	Information requests	Developer	2017-06-29
132	Meeting report, GNWT and ECCC regarding migratory birds	Information requests	Developer	2017-06-09
133	Developer's responses to MVEIRB IRs 1, 2, 4, 6	Information requests	Developer	2017-07-07
134	The developer's responses to the WRRB's IRs 3, 6, and 8	Information requests	Developer	2017-07-07
135	The developer's responses to ECCC's IRs 5 and 10.	Information requests	Developer	2017-07-07
136	The developer's cover letter for IR responses.	Information requests	Developer	2017-07-07

137	Notice of Proceeding, Technical Session on August 15 and 16	Technical or community sessions	Review Board	2017-07-11
138	NSMA review of the developer's Adequacy Statement Response	Information requests	Parties/Public	2017-07-14
139	The developer's cover letter for July 14 IR response submissions	Information requests	Developer	2017-07-14
140	Developer response to ECCC IRs 6, 8, and 9	Information requests	Developer	2017-07-14
141	Developer response to Review Board IRs 3, 16, 17, and 19	Information requests	Developer	2017-07-14
142	Developer response to WRRB IRs 1, 2, 7, 9, 10, 11, and 13	Information requests	Developer	2017-07-14
143	MVEIRB letter to NSMA and GNWT regarding NSMA Information requests	Information requests	Review Board	2017-07-19
144	Developer's cover letter for July 21 IR response submissions	Information requests	Developer	2017-07-21
145	Developer response to WRRB IRs 4, 5 and 12	Information requests	Developer	2017-07-21
146	Developer responses to MVEIRB IRs 10, 11, 12, 15, 21	Information requests	Developer	2017-07-21
147	Developer response to NRCan IR 6	Information requests	Developer	2017-07-21
148	Notice of proceeding, pre-technical session conference	Technical or community sessions	Review Board	2017-07-24
149	Amended developer response to WRRB IR1	Information requests	Developer	2017-07-26
150	Pre-Technical Session Conference Minutes	Technical or community sessions	Review Board	2017-08-01
151	Draft Conceptual Wildlife Effects Monitoring Program	Technical or community sessions	Developer	2017-07-01
152	CV for developer's consultant Cameron Stevens	Technical or community sessions	Developer	2017-08-08

153	Action Plan for the Woodland Caribou (Rangifer tarandus caribou), Boreal Population, in Canada	Technical or community sessions	Parties/Public	2017-08-08
154	Population dynamics and critical habitat of woodland caribou in the Saskatchewan Boreal Shield, interim report 2013-2016	Technical or community sessions	Parties/Public	2016-11-18
155	Developer response to NSMA review of the Adequacy Statement Response	Technical or community sessions	Developer	2017-08-11
156	Developer cover letter for the NSMA information request responses	Technical or community sessions	Developer	2017-08-11
157	Multi-agency MOU: regional engagement and partnership on social issues	Technical or community session	Parties/Public	2017-07-12
158	Technical session transcript for day one, August 15, 2017.	Technical or community sessions	Review Board	2017-08-15
159	Technical session transcript for day two, August 16, 2017.	Technical or community sessions	Review Board	2017-08-16
160	The Review Board's presentation for the technical session	Technical or community sessions	Review Board	2017-08-15
161	Developer presentations for the technical sessions	Technical or community sessions	Developer	2017-08-17
162	Technical Session Transcript for Day three, August 17, 2017.	Technical or community sessions	Review Board	2017-08-17
163	Letter from the developer regarding timing considerations	Technical or community sessions	Developer	2016-11-21
164	Meeting report between GNWT and WRRB regarding commitment #3	Technical or community sessions	Developer	2017-08-23
165	Updated work plan	Public hearings	Review Board	2017-08-25
166	Wek'èezhì Renewable Resources Board letter regarding review of the WMMP	Technical reports	Parties/Public	2017-08-28

167	Geotechnical report, road alignment, proposed Tłıchǫ All-season road, NWT	Technical reports	Developer	2017-08-01
168	WRRB extension request for submitting its technical report	Technical reports	Parties/Public	2017-08-31
169	Compiled ORS first round information requests and responses	Information requests	Review Board	2017-07-21
170	Mind and Spirit: Promoting Mental Health and Addictions Recovery in the NWT	Technical or community sessions	Developer	
171	Commitments from the technical session	Technical or community sessions	Review Board	2017-09-01
172	Note file - meeting with WRRB and the Review Board	Technical reports	Review Board	2017-09-06
173	YKDFN request for Party status	Technical reports	Parties/Public	2017-09-01
174	Notice of proceeding - next steps	Technical reports	Review Board	2017-09-07
175	The developer's response to ECCC bird data	Technical reports	Developer	2017-09-08
176	Questions from the WRRB to the Developer.	Technical reports	Parties/Public	2017-09-08
177	Overview - Boreal caribou habitat and habitat use in the Wek'èezhìi, 2012	Technical reports	Parties/Public	2012-05-13
178	Boreal caribou habitat and disturbance in the Wek'èezhìi, 2013	Technical or community sessions	Parties/Public	2013-05-03
179	Caribou migration and the state of their habitat	Technical reports	Parties/Public	2001-03-01
180	NSMA party status application	Technical reports	Parties/Public	2017-09-08
181	GNWT operating procedure for collared caribou and geotechnical investigations (commitment 10)	Technical or community sessions	Developer	2017-06-16
182	Note to file - Technical report preparation meeting	Technical reports	Review Board	2017-09-12
183	Presentation for the technical report preparation meeting	Technical reports	Review Board	2017-09-14
184	Meeting report - GNWT, NRCan, and NPMO	Technical reports	Developer	2017-09-15
185	NRCan Guidelines for Bulk Explosives Facilities	Technical reports	Developer	2017-09-15

186	Explosives Regulations, 2013	Technical reports	Developer	2017-09-15
187	GNWT Final IR response to NSMA July 14 questions	Information Requests	Developer	2017-09-09
188	WRRB-GNWT Meeting Report	Technical Reports	Developer	2017-09-18
189	Caribou distribution data (commitment 3)	Technical or community sessions	Developer	2017-09-18
190	Caribou distribution data maps	Technical or community sessions	Developer	2017-09-18
191	GNWT cover letter for updated WMMP submission	Technical reports	Developer	2017-09-22
192	Updated draft WMMP - Sep17	Technical reports	Developer	2017-09-22
193	Summer archaeological impact assessment findings (commitment 22)	Technical or community sessions	Developer	2017-09-25
194	GNWT Note regarding Cluff et al 2017 DRAFT report	Technical or community sessions	Developer	2017-09-26
195	Cluff et al. 2017 DRAFT report	Technical or community sessions	Developer	2017-09-26
196	Cluff et al. 2017 DRAFT appendices	Technical or community sessions	Developer	2017-09-26
197	Bathurst caribou range plan: interim discussion documents	Technical reports	Developer	2017-09-27
198	Species status report: porcupine caribou and barren-ground caribou in the NWT	Technical reports	Developer	2017-09-27
199	Additional boreal caribou maps (commitment 9)	Technical or community sessions	Developer	2017-09-28
200	DRAFT borrow source geotech investigation - report	Technical reports	Developer	2017-09-29
201	DRAFT borrow source geotech investigation - appendices a-d	Technical reports	Developer	2017-09-29
202	DRAFT borrow source geotech investigation - appendix e part 1	Technical reports	Developer	2017-09-29

203	DRAFT borrow source geotech investigation - appendix e part 2	Technical reports	Developer	2017-09-29
204	DRAFT borrow source geotech investigation - appendix e part 3	Technical reports	Developer	2017-09-29
205	DRAFT borrow source geotech investigation - appendix e part 4	Technical reports	Developer	2017-09-29
206	DRAFT borrow source geotech investigation - appendix e part 5	Technical reports	Developer	2017-09-29
207	DRAFT borrow source geotech investigation - appendix e part 6	Technical reports	Developer	2017-09-29
208	DRAFT borrow source geotech investigation - appendices f-h	Technical reports	Developer	2017-09-29
209	WMMP overview meeting notes	Technical reports	Developer	2017-09-28
210	WRRB response to Commitment 11	Technical or community sessions	Parties/Public	2017-10-03
211	GNWT response to WRRB questions on fish and wildlife	Technical reports	Developer	2017-10-03
212	Information on explosives use and management for the TASR.	Technical reports	Developer	2017-10-03
213	Oct 3 WMMP overview meeting notes	Technical reports	Developer	2017-10-03
214	NSMA's technical report	Technical reports	Parties/Public	2017-10-11
215	The WRRB's technical report	Technical reports	Parties/Public	2017-10-11
216	The Tłıchǫ Government's technical report	Technical reports	Parties/Public	2017-10-11
217	The YKDFN's technical report	Technical reports	Parties/Public	2017-10-11
218	ECCC's technical report	Technical reports	Parties/Public	2017-10-11
219	Ecological Regions of the NWT, Taiga Plains, Ecosystem Classification Group	Technical reports	Parties/Public	2009-01-01
220	Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials	Technical reports	Parties/Public	2009-01-01
221	DFO's technical report	Technical reports	Parties/Public	2017-10-11
222	NRCan's technical report	Technical reports	Parties/Public	2017-10-11
223	Cover letter for the GoC's technical reports	Technical reports	Parties/Public	2017-10-11
224	Notice of proceeding pre-hearing conference	Public hearings	Review Board	2017-10-11
225	GNWT-ENR letter to GNWT-INF on requirement of a WMMP for TASR	Public hearings	Developer	2017-10-16

226	NPMO letter: Federal Roles and Responsibilities	Public hearings	Federal or responsible ministers	2017-10-19
227	Note to file - James Wah-Shee participation in public hearings	Public Hearings	Review Board	2017-10-23
228	The WRRBs Technical Report - boreal woodland caribou	Technical reports	Parties/Public	2017-10-23
229	GNWT reference Primer on Boreal Caribou disturbance thresholds and opportunities	Public hearings	Developer	2017-10-24
230	GNWT response letter to YKDFN regarding their technical report	Public hearings	Developer	2017-10-24
231	EA1617-01 Pre-hearing Conference Agenda	Public hearings	Review Board	2017-10-24
232	EA1617-01 Draft Public Hearing Agenda	Public hearings	Review Board	2017-10-24
233	Pre-hearing conference slides	Public hearings	Review Board	2017-10-24
234	Summary of elder site visit of the TASR alignment	Technical or community sessions	Developer	2017-10-11
235	Fish Habitat Survey for the Tłıchǫ All-Season Road	Technical or community sessions	Developer	2017-10-25
236	GNWT position on Board member James Wah-Shee's participation in the public hearings	Public hearings	Developer	2017-10-27
237	Inuvik Tuktoyaktuk Highway Corridor Working Group Reference Material for the TASR EA	Technical reports	Developer	2017-10-27
238	Technical session commitment tracking table	Technical or community sessions	Developer	2017-10-27
239	Developer's response to technical reports	Technical reports	Developer	2017-10-27
240	GNWT response to WRRB technical report on boreal caribou	Technical reports	Developer	2017-11-01
241	The developer's updated engagement and consultation package	Public hearings	Developer	2017-10-31

242	Report on the Progress of Recovery Strategy Implementation for the Woodland Caribou (<i>Rangifer tarandus caribou</i>), Boreal population, in Canada for the Period 2012-2017	Technical reports	Parties/Public	2017-10-11
243	EA1617-01 Pre-hearing Conference meeting minutes	Public hearings	Review Board	2017-10-25
244	Note to file: Tłıchǫ spelling and dictionary resource	Public hearings	Review Board	2017-11-03
245	ECCC public hearing presentation on Water	Public hearings	Parties/Public	2017-11-03
246	ECCC public hearing presentation on Wildlife	Public hearings	Parties/Public	2017-11-03
247	NPMO cover letter for the hearing presentations	Public hearings	Parties/Public	2017-11-03
248	NRCAN's public hearing presentation	Public hearings	Parties/Public	2017-11-03
249	NRCAN's summary of its public hearing presentation	Public hearings	Parties/Public	2017-11-03
250	NSMA's public hearing presentation	Public hearings	Parties/Public	2017-11-03
251	TG public hearing presentation for day 1	Public hearings	Parties/Public	2017-11-03
252	TG public hearing presentation for day 2	Public hearings	Parties/Public	2017-11-03
253	TG public hearing presentation for day 3	Public hearings	Parties/Public	2017-11-03
254	The YKDFN's public hearing presentation	Public hearings	Parties/Public	2017-11-03
255	The agenda for the public hearings	Public hearings	Review Board	2017-11-03
256	The WRRB's public hearing presentation for day 2	Public hearings	Parties/Public	2017-11-03
257	The WRRB's public hearing presentation for day 3	Public hearings	Parties/Public	2017-11-03
258	Notice of proceeding - qualifications of expert witnesses	Public hearings	Review Board	2017-11-06
259	Media information sheet	Public hearings	Review Board	2017-11-06
260	ECCC/GNWT meeting report - avian species at risk	Public hearings	Parties/Public	2017-11-06
261	Developer's public hearing presentation for day 1	Public hearings	Developer	2017-11-06
262	Developer's public hearing presentation for day 2	Public hearings	Developer	2017-11-06
263	Developer's public hearing presentation for day 3	Public hearings	Developer	2017-11-06

264	CV for developer's consultant	Public hearings	Developer	2017-11-09
265	Tł̨chq̨ Land Use Guidelines	Public hearings	Parties/Public	2015-03-21
266	NICO project report of Environmental Assessment	Public hearings	Review Board	2013-01-25
267	The Jay project report of Environmental Assessment	Public hearings	Review Board	2016-02-01
268	Survey results concerning Whatì residents views on the road	Public hearings	Parties/Public	2011-10-11
269	INDIGENOUS COMMUNITIES AND INDUSTRIAL CAMPS Promoting Healthy Communities in Settings of Industrial Change	Public hearings	Parties/Public	2017-02-01
270	Results from a community of Whatì poll about an all-weather road from 2006	Public hearings	Parties/Public	2006-10-11
271	Tł̨chq̨ Government 2013-2017 Strategic Framework	Public hearings	Parties/Public	2014-01-01
272	Public hearing transcript for day one, November 15, 2017.	Public hearings	Review Board	2017-11-15
273	Public hearing transcript for day three, November 17, 2017.	Public hearings	Review Board	2017-11-17
274	Public hearing transcript for day two, November 16, 2017.	Public hearings	Review Board	2017-11-16
275	Notice of proceeding for closing arguments	Hearing follow-up	Review Board	2017-11-28
276	Yellowknives Dene First Nation letter regarding Review Board member comments at the Public Hearing	Public hearings	Parties/Public	2017-11-28
277	NRCan closing arguments	Hearing follow-up	Parties/Public	2017-12-15
278	DFO closing arguments	Hearing follow-up	Parties/Public	2017-12-15
279	ECCC closing arguments	Hearing follow-up	Parties/Public	2017-12-15
280	CanNor cover letter for closing arguments	Hearing follow-up	Parties/Public	2017-12-15
281	NSMA's closing arguments	Hearing follow-up	Parties/Public	2017-12-15
282	WRRB's closing arguments	Hearing follow-up	Developer	2017-12-15
283	YKDFN's closing arguments	Hearing follow-up	Parties/Public	2017-12-15
284	Tł̨chq̨ Government's closing arguments	Hearing follow-up	Parties/Public	2017-12-15
285	GNWT's closing arguments	Hearing follow-up	Developer	2018-01-19