



# **Draft Terms of Reference**

**EA1617-01**

**Tłıchǫ All-season Road**

**Government of Northwest Territories  
Department of Transportation**

**September 23, 2016**

**Mackenzie Valley Environmental Impact Review Board**

200 Scotia Centre

P.O. Box 938

Yellowknife, NT

X1A 2N7

Tel: (867) 766-7050

Fax: (867) 766-7074

# TABLE OF CONTENTS

<b>1 INTRODUCTION .....</b>	<b>6</b>
1.1 Project overview .....	6
1.2 Referral to environmental assessment.....	9
1.3 Legal context and the Terms of Reference development process .....	9
<b>2 SCOPE 10</b>	
2.1 Scope of Development .....	10
2.2 Scope of assessment.....	10
2.2.1 Statutory scope of assessment requirements .....	11
2.2.2 Valued components .....	11
2.2.3 Geographic Scope of Assessment.....	13
2.2.4 Temporal Scope of Assessment .....	13
<b>3 DEVELOPER'S ASSESSMENT REPORT GENERAL REQUIREMENTS .....</b>	<b>14</b>
3.1 Presentation of material.....	14
3.2 Incorporation of traditional knowledge.....	14
3.3 Public engagement.....	16
3.4 Developer commitments and mitigation measures .....	16
3.5 Summary materials.....	16
3.6 Development description.....	17
3.7 Land use plans .....	17
3.8 Developer information .....	17
<b>4 ASSESSMENT METHODOLOGY.....</b>	<b>18</b>
4.1 Impact assessment steps .....	18
4.2 Cumulative effects assessment steps.....	20
<b>5 BASELINE INFORMATION REQUIREMENTS .....</b>	<b>21</b>
<b>6 DETAILED REQUIREMENTS FOR ASSESSMENT OF INDIVIDUAL VCS .....</b>	<b>21</b>
<b>7 CUMULATIVE EFFECTS SUMMARY .....</b>	<b>21</b>
<b>8 FOLLOW-UP AND MONITORING PROGRAMS.....</b>	<b>21</b>
<b>APPENDIX A: ADDITIONAL GUIDANCE MATERIALS FOR RESOURCE MANAGEMENT IN THE MACKENZIE VALLEY .....</b>	<b>23</b>

## FIGURES

Figure 1: Project Location of the proposed Tłıchǫ All-season Road (PR#7, PDR, p.iii) ..... 8

## TABLES

Table 1: List of Valued Components and associated topics ..... 12

DRAFT

## ABBREVIATIONS

DAR	Developer’s Assessment Report
EA	Environmental Assessment
GNWT-DOT	Government of Northwest Territories –Department of Transportation
MVLWB	Mackenzie Valley Land and Water Board
MVRMA	Mackenzie Valley Resource Management Act
NWT	Northwest Territories
PDR	Project Description Report
TASR	Tẖcẖ All-season Road
ToR	Terms of Reference
WLWB	Wek’eezhii Land and Water Board

## GLOSSARY

cumulative effect	Those impacts (biophysical, socio-cultural or economic) that result from the impacts of a proposed development in combination with other past, present or reasonably foreseeable future developments.
developer	Government of Northwest Territories, led by the Department of Transportation as the proponent. <sup>1</sup>
follow-up program	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.
heritage resources	Archaeological or historic sites, burial sites, artifacts and other objects of historical, cultural or religious significance, and historical or cultural records.
operations	The fact or functioning of being active, including maintenance
the Project	The Tẖcẖ All-season Road development as defined in section 2 of this document.

---

<sup>1</sup> [GNWT Participation in the TASR Environmental Assessment](#)

residual effect	An effect that remains after the application of mitigation measures.
scope of development	The components of the proposed development, including the principal development and all other physical works or activities required for the development to proceed, as defined in these Terms of Reference
scope of assessment	The issues and valued components of most importance for the environmental assessment, as defined in these Terms of Reference
valued component	An element of the biophysical or human environment that is identified as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance.
vulnerability	A situation or condition characterized by low resilience and/or higher risk and reduced ability of an individual, group or community to cope with shock or negative impacts. Vulnerability is associated with having a low socio-economic status, disability, ethnicity, or one or more of the many factors that influence people's ability to access resources and development opportunities.
well-being	The social, economic, psychological, spiritual or medical state of an individual or group.

## 1 INTRODUCTION

In environmental assessment (EA), terms of reference allow the Mackenzie Valley Environmental Impact Review Board (Review Board) to set the scope of the EA, provide the methodology to be used for impact assessment, and define the specific information requirements for a developer's assessment report (DAR). The Tłıchǵ All-season Road (TASR or the "Project") EA is unique in the volume and quality of material submitted to the Review Board upon referral. The evidence currently on the record provides the Review Board with a good understanding of the project, and an indication of issues related to the project that have the potential to result in a significant adverse environmental impact. This amount of information and detail is not typically available at the outset of an EA.

As described in the *Notice of Proceeding: Review Board's Approach to the Tłıchǵ All-Season Road Terms of Reference*, the Review Board has prepared a companion document to the Terms of Reference (ToR) for this EA, called the *Adequacy Statement*. To prepare the *Adequacy Statement*, the Review Board evaluated the Project Description Report (PDR) and evidence on the record against the draft ToR. The purpose of the *Adequacy Statement* is to:

- acknowledge the information and evidence on the public record, including the developer's PDR;
- avoid duplication and focus further investigation throughout the EA on those effects that have the potential for significant adverse impacts on the environment; and
- provide detailed guidance to the developer regarding what further investigation is needed at this time.

The Review Board believes that the *Adequacy Statement* will enable a more efficient EA process by focusing the assessment on these outstanding concerns and information gaps.

The purpose of these ToR, therefore, is to:

- set the scope of development and the scope of assessment for the EA; and,
- provide the assessment methodology that the developer will use to conduct the additional study and analysis set out in the *Adequacy Statement*.

The Review Board has posted both the draft *Adequacy Statement* and the draft ToR on the public registry for review and comment. The comment period allows reviewers (including the developer) to provide input to the Review Board on the proposed scope of development and scope of assessment, and on the information requirements set out in the *Adequacy Statement*. Following the review period, the Review Board will consider all the comments it receives and will produce a final ToR and final *Adequacy Statement*, with accompanying reasons for decision.

### 1.1 Project overview

The Government of Northwest Territories (GNWT) has applied to construct and operate an all-season road beginning at kilometre 196 on Highway 3 and terminating at the community of Whatì.

The 94 km, two lane gravel road would consist of a 60 m right-of-way and would include 15 water crossings requiring culverts and/or bridges. The estimated footprint of the proposed TASR corridor is approximately 564 hectares, with an additional 220 hectare footprint estimated for the borrow sources and access roads (PR# 7). The road would be located entirely within the Wek'èezhìi Resource Management Area, with approximately 17 km or 18% of the alignment located on Th̓chq̓ lands and the remaining 77 km or 82% of the route located on Territorial lands.

The Government of Northwest Territories–Department of Transportation (GNWT–DOT) currently operates and maintains a winter road system beginning at Highway 3 near Behchok̓ and connecting the communities of Whatì, Gamètì and Wekweètì. Due to increasingly variable climate conditions, construction and maintenance of this winter road system that crosses waterbodies and saturated soils is becoming increasingly uncertain. The Project proposes to replace the existing winter road with an all-season road following the old overland winter road alignment from kilometer 196 of Hwy 3 to Whatì that was used up until the 1980s.

Figure 1 shows the proposed TASR alignment and existing winter road routes.

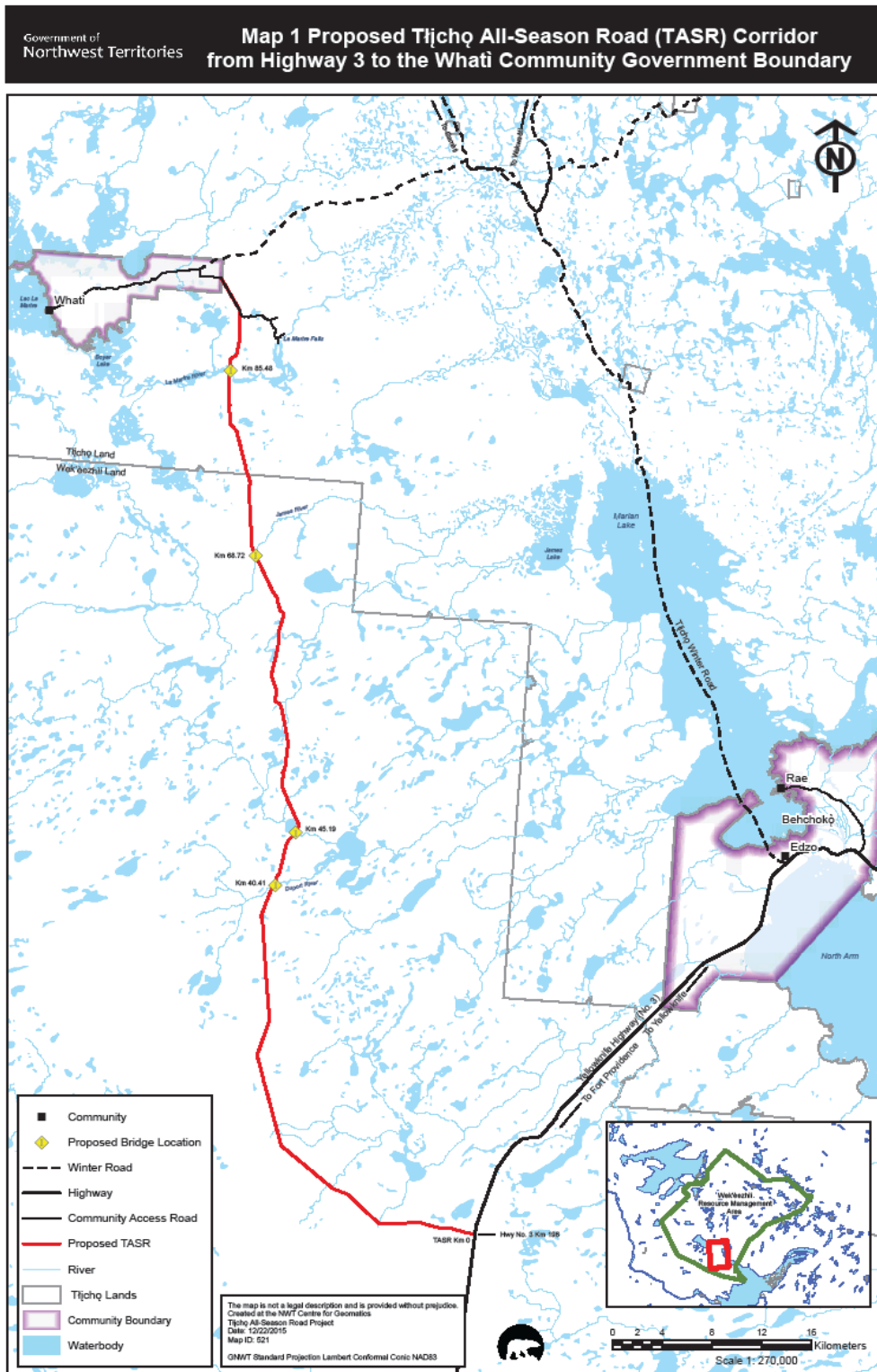


Figure 1: Project Location of the proposed Tłı̨chǫ All-season Road (PR#7, PDR, p.iii)



## 1.2 Referral to environmental assessment

On July 21, 2016, the Review Board referred the Tłıchǫ All-season Road Project to EA on its own motion. After initial review and consideration of the materials on the Wek'èezhìi Land and Water Board's (WLWB) public registry and the comments provided on the Online Review System, the Review Board identified the following key areas of concern that might result in a significant adverse impact on the environment or cause significant public concern:

- i. Change to access – new all-season access to the community of Whatì
- ii. Changes causing stresses on existing social services – related to increased drug and alcohol addiction and increased crime
- iii. Impacts on caribou – increased harvesting pressure, increased predation resulting from new access, increased road-induced mortality, and barrier effects to caribou – linear impediments, dust, noise, reduced air quality
- iv. Uncertainty regarding the effectiveness of mitigation measures

The Review Board notified the developer on July 27<sup>th</sup> 2016, that the environmental assessment had begun. The Review Board's complete *Reasons for Decision for referral to Environmental Assessment* is available on the public registry (PR#2).

## 1.3 Legal context and the Terms of Reference development process

In accordance with section 115(1) of the *Mackenzie Valley Resource Management Act* (MVRMA), the environmental assessment process in the Mackenzie Valley must have regard for:

- (a) the protection of the environment from the significant adverse impacts of proposed developments;
- (b) the protection of the social, cultural and economic well-being of residents and communities in the Mackenzie Valley; and
- (c) the importance of conservation to the well-being and way of life of the Aboriginal peoples of Canada to whom section 35 of the *Constitution Act, 1982* applies and who use an area of the Mackenzie Valley.

In addition, subsection 114(c) of the MVRMA requires that the Review Board ensure that the concerns of Aboriginal people and the general public are taken into account. To this end, the Review Board has considered the following sources of information in the development of these terms of reference:

- Community scoping meeting held by Review Board staff in Whatì, August 18, 2016 (PR#19);
- Technical scoping meeting held by Review Board staff in Yellowknife, August 24, 2016 (PR#26);
- Comments and developer responses from the Wek'èezhìi Land and Water Board (WLWB) Online Review System (PR#24);
- The developer's PDR (PR#7); and

- Other evidence to date available on the Review Board's Public Registry.

The Review Board is also informed by its experience in conducting previous EA processes.

## **2 SCOPE**

### **2.1 Scope of Development**

Under section 117(1) of the MVRMA, the Review Board determines the scope of development for every EA it conducts. The scope of development consists of all physical works and activities required for the project to proceed, and includes all phases of development from construction to closure. For the TASR EA, the scope of development for the construction and operations phases (respectively) is based on information provided in the PDR. In summary, the scope of development includes:

- Construction of a 94 km public, all-season road from Highway 3 (km 196) to the Whatì access road;
- Operation of a public, all-season road from Highway 3 (km 196) to the Whatì access road, including maintenance of the highway and use thereof;
- 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 associated with the project during the course of its operations

Given that the TASR is proposed for permanent use as an NWT public highway, the scope of development does not include a closure phase. The long-term nature of the project's proposed operational period is addressed in the temporal scope of assessment (see section 2.2.4).

### **2.2 Scope of assessment**

The Review Board determines the scope of assessment for every EA it conducts. The scope of assessment defines which issues will be examined in the EA. The scope of assessment includes potential impacts on valued components of the biophysical and the human environment (for example, wildlife species or heritage resources) from the development, by itself and in combination with other past, present and reasonably foreseeable future developments. For the TASR EA, the Review Board has identified issues based on the body of evidence on the public record to date.

The scope of assessment for this EA includes all potentially significant impacts that may result directly or indirectly from the developer's proposed project, as described in Section 2.1.

During the course of the EA, the prioritization of issues may change or additional issues may be identified. Regardless of the issues prioritized, the GNWT–DOT will consider and demonstrate substantive analysis in assessing whether the development is likely to be the cause of, or contribute to, any significant adverse impacts on the environment.

### 2.2.1 Statutory scope of assessment requirements

Section 117(2) of the MVRMA stipulates that the every EA shall include consideration of the impact of the development on the environment, including:

- **Cumulative Effects**– the Review Board is required to assess the cumulative effects of the proposed development under Section 117 (2) (a) of the MVRMA. Direction on this topic is provided in section 4.2, which describes the assessment methodology and in section 7, which requests a summary of cumulative effects.
- **Accidents and Malfunctions** – The Review Board is required to assess the effects of potential accidents and malfunctions under Section 117 (2) (a). Direction on this topic is found in section 0.

Section 117(2) also requires consideration of the significance of impacts, any comments submitted by the public, mitigation measures, and, under 117(2)(e) any other matter the Review Board determines to be relevant (such as the need for the development and any available alternatives to it).

For the TASR EA scope of assessment, the Review Board is particularly interested in impacts on the valued components set out in Table 1 below, including such impacts that may arise from cumulative effects or accidents and malfunctions. At this time, the Review Board has not identified any other matters under 117(2)(e) that need to be included in the scope of assessment.

### 2.2.2 Valued components

Valued components are elements of the biophysical or human environment identified as having scientific, social, cultural, economic, historical, archaeological or aesthetic importance. After reviewing the body of evidence on the public record, the Review Board has determined that there is a potential for significant adverse impacts on the following valued components; these valued components will form the basis of inquiry for this environmental assessment:

- Fish and fish habitat
- Caribou
- Wildlife and species at risk
- Traditional use, culture, and heritage resources
- Economic well-being, and
- Stable and healthy communities

Table 1 lists topics related to each valued component that the Review Board requires the developer to address in the DAR. The developer will discuss how potential direct and indirect project-effects are likely to affect the valued components in the context of each related topic.

In the DAR, the developer will provide an assessment for each identified impact to facilitate public evaluation. Data and analysis related to the project effects in the DAR should be at a level of detail appropriate for other interested parties to understand the technical material prior to any technical sessions on these topics.

Section 4 of these ToR provides the assessment methodology that should be followed in conducting the impact assessment for each valued component.

**Table 1: List of Valued Components and associated topics**

Valued Component	Topic
<b>Fish and fish habitat</b>	Fish habitat Fish harvesting
<b>Caribou</b>	Barren-ground caribou Boreal caribou
<b>Wildlife, including species at risk*</b>	Mammals (moose, bison and wolverine) Mammals (bats), birds, fish, plants, amphibians, insects
<b>Traditional use, culture, and heritage resources</b>	Traditional use and way of life Harvesting Heritage and cultural resources
<b>Economic well-being</b>	Equity and vulnerability Traditional and non-wage economy
<b>Stable and healthy Communities</b>	Community Cohesion Use and maintenance of infrastructure Public safety Population sustainability

\*Including federally and territorially listed species at risk

### **2.2.3 Geographic Scope of Assessment**

The DAR must define the spatial boundaries (geographic scope) for the assessment of potential impacts to each valued component in the DAR. The geographic scope of assessment for each valued component should be appropriate for the characteristics of that component, or for the nature and extent of the impact and/or impact source.

In defining the geographic scope of assessment, the developer should consider:

- 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;
- other ecological, technical, social and cultural considerations

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. This will include cumulative impacts to valued components associated with the extended operating period of the winter roads to Gamètì and Wekweètì.

The developer will indicate and provide rationale for the geographic scope of assessment selected for each valued component.

### **2.2.4 Temporal Scope of Assessment**

In addition to geographic scope, the developer must define the temporal scope for the assessment of potential impacts to each valued component. For example, while some impacts may be very short or limited to a particular project phase (e.g. sensory disturbance to caribou during road construction), others may occur over a longer period (e.g. barrier effects to caribou over the life of a project). If the temporal boundaries used for impact predictions do not span all phases of the project, the DAR will identify the boundaries used and provide rationale for their selection. Because there is no closure phase planned for the project, the GNWT-DOT may select a suitable long-term temporal boundary for the operations phase that coincides with major project maintenance activities (e.g. bridge replacements).

In defining the temporal scope of assessment, the developer should consider:

- periods during the development when predicted effects are most intense (such as during initial construction);
- periods when valued components are most sensitive to potential impacts (such as key times for wildlife, migration periods, population cycles, or wildlife harvesting periods);
- the duration of effects, with attention to how these effects relate to the life of the Project; and
- appropriate temporal boundaries for considering any impacts that may require long-term monitoring and management.

For cumulative impacts, the temporal scope includes the period of effects of past, present and reasonably foreseeable future projects that are predicted to combine with the impacts of the proposed Project.

### 3 DEVELOPER'S ASSESSMENT REPORT GENERAL REQUIREMENTS

These ToR provide important information to be used by the developer in completing the DAR required for the EA of the Th̓chq̓ All-season Road (TASR or the "Project"). In order to satisfy these ToR, the developer must also address the items in the accompanying *Adequacy Statement*. The developer should seek clarification from the Review Board in writing if specific requirements in the ToR are unclear, and provide rationale for any items that cannot be addressed. When developing their DAR, the GNWT should consider all applicable guidelines, services, and programs including those listed in Appendix A.

#### 3.1 Presentation of material

The Review Board encourages the developer to present information in its DAR in user-friendly ways. The use of maps, aerial photographs, development component/valued component interaction matrices, full explanation of figures and tables, and an overall commitment to plain language is encouraged. When it is necessary to present complex or lengthy documentation to satisfy the requirements of the ToR, the developer should make every effort to simplify its response in the main body of the DAR and place supporting materials in appendices.

The developer will also adhere to the Review Board's [Document Submission Standards](#) when submitting evidence as part of this EA. For the DAR, the developer will submit ten print copies and ten electronic copies on memory sticks to the Review Board office.

#### 3.2 Incorporation of traditional knowledge

In accordance with section 115(1) of the MVRMA, the Review Board must consider both traditional knowledge and scientific information that is available to it during an EA. In addition, section 115(1)(c) of the MVRMA requires that the EA process have regard for the importance of conservation to the well-being and way of life of the Aboriginal peoples of Canada to whom Section 35 of the *Constitution Act* 1982 applies and who use an area of the Mackenzie Valley. As such, the developer will make all reasonable efforts to use traditional knowledge when collecting information, evaluating impacts, and proposing mitigations in the DAR. In addition to incorporating traditional knowledge in impact predictions on valued components of the environment, the DAR must contain a comprehensive, stand alone, summary report on traditional knowledge.

This report will:

- provide a summary of the efforts made to collect relevant traditional knowledge;



- explain how traditional knowledge has been used in the EA process (including how traditional knowledge has influenced project design, impact predictions and potential mitigations); and,
- provide a plan for future cooperation between the developer and traditional knowledge holders covering the lifespan of the proposed development.

The traditional knowledge summary report must address the following specific items.

Where project-specific traditional knowledge has been formally submitted or conducted by an Aboriginal group or government:

- Describe how traditional knowledge has influenced the developer's project design, impact assessment, and mitigation measures, as well as reclamation.
- Describe any differences in opinion on project effects between the submitted traditional knowledge and the developer's perspective.
- Describe how any impacts or mitigation measures from those reports, including any recommendations, have been addressed.

Where traditional knowledge is gathered by the developer:

- Verify for each community whether there are policies and cultural practices for the acceptable standards for working with traditional knowledge holders and handling the traditional knowledge. Where these do exist, verify how they were adhered to.
- Describe the approach taken in working with traditional knowledge holders and in the collection and use of traditional knowledge, and why.
- Describe which communities and traditional knowledge holders participated in any traditional knowledge studies and how those participants were identified and agreed upon.
- List sources of traditional knowledge that have been used to date, including specific studies, archives, and individuals interviewed.
- When traditional knowledge is used from existing studies and reports, provide verification or rationale on how that secondary source is relevant and appropriate to the developer's project, given the original context in which the traditional knowledge was gathered.
- Provide evidence that the traditional knowledge was collected and peer-reviewed with the Aboriginal community or traditional knowledge holders, and approved by the appropriate individuals or organizations.
- Describe how traditional knowledge and traditional knowledge holders have influenced the developer's project design, impact assessment, and mitigation measures, as well as reclamation and closure planning.

The methods used in the acquisition, analysis, and presentation of traditional knowledge are at the developer's discretion but must be consistent with the Review Board's [\*Guidelines for Incorporating Traditional Knowledge into the Environmental Impact Assessment Process\*](#).

### 3.3 Public engagement

The Review Board acknowledges the engagement activities already described in the PDR (PR#7, Appendix E) the developer has undertaken with communities, Aboriginal groups, and other organizations with interests related to the construction and operation of an all season road. For any additional engagement activities that have occurred during the environmental assessment, and up to the submission of the DAR, the developer will submit an updated engagement log and summary at the time of the DAR submission. This engagement log and summary should describe dates, individuals and organizations engaged with, as well as the mode of communication, discussion topics and positions taken by participants, including:

- All commitments and agreements made in response to issues raised by the public during these discussions, and how these commitments altered the planning of the proposed Project
- All issues that remain unresolved, documenting any further efforts envisioned by the parties to resolve them

For more details regarding general engagement expectations and reporting requirements, please refer to the Mackenzie Valley Land and Water Board's (MVLWB) [Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits](#).

### 3.4 Developer commitments and mitigation measures

The Review Board acknowledges that the developer has listed numerous mitigation measures in their PDR. For the Review Board to consider this information as part of the DAR, the proponent will provide a commitments table listing all mitigation measures the developer will undertake related to the TASR. This includes, but is not limited to any commitments and mitigation measures identified in the PDR and on the public record, including from the Preliminary Screening process. The commitments table will also contain the following summary information:

- Describe the purpose of the mitigation; and
- Identify the responsible authority for implementing the mitigation measure.

### 3.5 Summary materials

The following summary materials will be required in the DAR:

- A plain language summary of the DAR in English and Tłıchǫ; and
- A concordance table for new materials that cross references the items in the ToR and *Adequacy Statement* with relevant sections of the DAR.



### 3.6 Development description

The developer will ensure that a description of all project components and activities is included in the *Developer's Assessment Report*, including any proposed or existing components and activities not listed in Section 2.1 of these *Terms of Reference*.

Where the developer feels it would be helpful to reviewers, the *Developer's Assessment Report* should describe alternative development components, management systems, or alternative locations for physical works and activities considered for the Project. Where applicable, the developer will provide reference to research that identifies the successful use of the specific technologies being proposed, and their relevance for this environmental setting.

Describe the proposed Project, providing details and a schedule for all physical works and activities throughout construction and operation phases, with a description of major activities by phase.

The development description will consist of project components and activities including, but not limited to:

- project components (i.e. physical infrastructure)
- use of chemicals and explosives
- stockpiling of material
- water usage, management and treatment
- waste management
- power generation
- transportation needs
- maintenance
- public safety
- management and monitoring plans

### 3.7 Land use plans

The TASR is entirely within the Wek'èezhìi Resource Management Area. Seventeen kilometers of the TASR cross Tłıchǫ lands and are thus subject to the Tłıchǫ Land Use Plan. The developer should demonstrate how the project conforms to this land use plan and/or if an exemption from the land use plan would be required for any specific activities. If an exemption is required, the Developer will state if the exemption is likely to alter the project. In such a case, the developer will describe the likelihood of those changes, and any additional direct or indirect impacts on valued components that might result.

### 3.8 Developer information

The following information about the developer is required:

- a. How the developer will ensure that its contractors and subcontractors honour commitments made by the developer in the context of the EA;
- b. Environmental performance record for the GNWT-DOT on its regulatory compliance on previous construction projects;
- c. Description of any corporate policies, codes of practice, programs or plans concerning the developer's environmental, sustainable development, community engagement, northern hiring, and workplace health and safety policies, with corresponding description of how they relate to the Project.

## 4 ASSESSMENT METHODOLOGY

The purpose of the DAR is to assess the potential impacts on the environment from the Project.

The major steps in impact assessment are:

- describing the pathways of effect that link the development to valued components of the environment;
- forming and refining impact predictions with the help of consultation and expert knowledge (including traditional knowledge);
- identifying mitigation measures to reduce or avoid adverse impacts; and
- predicting and characterizing residual impacts.

The sections below describe the standard steps to follow in assessing potential impacts to valued components. The developer has some flexibility in determining the precise methodology for the assessment of impacts, but should generally adhere to these steps.

### 4.1 Impact assessment steps

**For each valued component** identified in section 2.2.2, the developer will complete an effects assessment, considering scientific and traditional knowledge as applicable, using the following methodology:

1. identify the natural range of the baseline conditions without the project, considering variability and trends over time;
2. identify the potential effect pathways, or interactions, between the project and the valued component;

3. predict potential direct and indirect impacts<sup>2</sup>:
  - a. describe the techniques used in the impact predictions (e.g. models,);
  - b. describe all assumptions and the level of uncertainty associated with each prediction;
  - c. consider likely climate change scenarios and how scenarios affect predicted effects of the Project on valued components; and
  - d. consider and predict how accidents and malfunctions may contribute to predicted impacts. Provide a brief risk assessment for identified accidents or malfunctions on the valued component that includes any residual effects affecting that valued component.
4. Describe the impacts in terms of:
  - a. the mechanism that causes the predicted impact;
  - b. geographical extent of the impact and rationale for its selection;
  - c. the duration and frequency of the impact;
  - d. magnitude of the impact (what degree of change is expected);
  - e. reversibility of the impact;
  - f. uncertainty associated with prediction;
  - g. likelihood of the impact;

When describing impacts, compare the predicted impacts to pre-development conditions or to conditions without the Project as appropriate.

5. identify and describe any proposed mitigation measures:
  - a. describe the link between the mitigation measure and the project component responsible for the impact, and demonstrate **how** the proposed mitigation measures will reduce or avoid the predicted impacts. Include predictions that will help evaluate the effectiveness of the mitigation measures; and
  - b. evaluate the technical and economic feasibility of the mitigation measures, discussing constraints, uncertainties and implementation challenges.

---

<sup>2</sup> When predicting impacts, the developer must indicate and provide rationale for the chosen temporal and geographic scope used in their assessment (see ToR sections 2.2.3 and 2.2.4)

6. predict the residual impacts by updating the impact predictions in step 3 to include the proposed mitigation measures. Describe any residual impacts according to step 4, and discuss the overall implication of the impacts on the valued component.
7. describe any monitoring, evaluation, and adaptive management plans that will be used to:
  - a. detect unexpected changes;
  - b. determine whether impact predictions are accurate;
  - c. evaluate the effectiveness of mitigations; and
  - d. adjust management actions to minimize adverse impacts .

Demonstrate how the plans adhere to adaptive management<sup>3</sup> best practices, such as those described in guidelines listed in Appendix A.<sup>4</sup>

## 4.2 Cumulative effects assessment steps

A cumulative effect is an impact that results from the proposed development in combination with other past, present, or reasonably foreseeable future developments. In the DAR, the developer will conduct a cumulative effects assessment<sup>5</sup> for any valued component that is susceptible to cumulative effects.

In conducting a cumulative effects assessment for each applicable valued component, the developer will use the steps below:

- Describe and provide rationale for which past, present or reasonably foreseeable future developments and human activities are being considered in the cumulative effects assessment.
- Combine the project-related residual impact predicted under step 6 in section 0 with the impacts from the developments and human activities identified above:
  - identify and discuss the way in which a cumulative impact may occur;
  - predict the potential direct and indirect cumulative impacts;

---

<sup>3</sup> Adaptive management is a decision process that uses the results of monitoring programs to systematically adjust management actions in order to minimize adverse impacts on the environment. For adaptive management to be effective, it needs: 1) an overall framework of action levels or thresholds (which identify when to act); and 2) proposed mitigation options, policies, and practices linked to the action levels (which describe what actions to take)."

<sup>4</sup> In particular: WLWB Draft Response Framework for Aquatic Effects Monitoring; and U.S. Department of the Interior Technical Guide to Adaptive Management (particularly the Problem–Scoping Key on page 15).

<sup>5</sup> Please see Appendix H of the Review Board's *EIA Guidelines* for additional requirements of the cumulative effects assessment.

- describe techniques utilized in impact prediction (e.g. models,), assumptions, and the level of uncertainty; and
  - discuss the contribution of the project to the overall cumulative impact.
- Characterize the cumulative impact according to steps 4 – 7 in section 4.1.

Consideration should also be given to identifying ways in which the developer, either on its own or cooperatively with others, can reduce or avoid any predicted cumulative impacts. Current efforts on cumulative effects assessment and management should be described, including (if applicable) the developer's efforts to coordinate its monitoring and management to contribute towards a regional approach. Lessons learned from previous or current relevant cumulative effects initiatives should be discussed.

## 5 BASELINE INFORMATION REQUIREMENTS

In order to complete the impact assessment in the DAR, additional baseline information related to the assessment of specific valued components may be required. Step 1 of the impact assessment steps in section 4.1 requires the developer to identify the baseline conditions needed to assess impacts to valued components. The developer is required to incorporate sufficient baseline information so that the linkage between project activities and changes to valued components as a result of the project are clearly described and evaluated.

## 6 DETAILED REQUIREMENTS FOR ASSESSMENT OF INDIVIDUAL VCS

An adequacy review of the PDR and materials on the public record has been conducted against the terms set out in this ToR. The accompanying *Adequacy Statement* describes the specific assessment requirements for each valued component. The Developer will respond to the *Adequacy Statement* according to the assessment methodology and adequacy items set out in that document.

## 7 CUMULATIVE EFFECTS SUMMARY

Cumulative effects must be assessed for all relevant valued components as described in section 4.2. The developer will also provide a summary of the assessment of cumulative impacts. The summary will include a discussion of any proposed mitigations by which the developer, either on its own or cooperatively with others, will reduce or avoid any predicted cumulative impacts.

## 8 FOLLOW-UP AND MONITORING PROGRAMS

The DAR will include a section that summarizes proposed follow-up, monitoring, and adaptive management plans and programs. This summary will:

- describe any monitoring, evaluation, and adaptive management plans that will be used to achieve the following objectives:
  - detect unexpected changes;
  - determine whether impact predictions are accurate;
  - evaluate the effectiveness of mitigations;
  - adjust management actions to minimize adverse impacts; and
  - discuss responsibilities for data collection, analysis and dissemination.
- describe how project-specific monitoring will be compatible with the NWT Cumulative Impact Monitoring Program or other regional monitoring and research programs.
- demonstrate how the plans adhere to adaptive management<sup>6</sup> best practices, such as those described in guidelines listed in Appendix A.
- clearly describe how these plans relate to regulatory and non-regulatory monitoring requirements for the life of the Project.

The developer is encouraged to discuss and adopt common data collection and monitoring protocols with local and regional monitoring programs including GNWT-Environment and Natural Resources to facilitate project impact analysis.

In addition, the developer is encouraged to use management response plans to accomplish adaptive management. Guidance on a management response framework, how to link monitoring results to management decisions, and how management activities can be developed adaptively in response to changes in the environment can be found in the WLWB document [\*Guidelines for Adaptive Management – a Response Framework for Aquatic Effects Monitoring. Draft. Oct 17, 2010\*](#)

---

<sup>6</sup> Adaptive management is a decision process that uses the results of monitoring programs to systematically adjust management actions in order to minimize adverse impacts on the environment. For adaptive management to be effective, it needs: 1) an overall framework of action levels or thresholds (which identify when to act); and 2) proposed mitigation options, policies, and practices linked to the action levels (which describe what actions to take)."

## APPENDIX A: ADDITIONAL GUIDANCE MATERIALS FOR RESOURCE MANAGEMENT IN THE MACKENZIE VALLEY

In the interest of fair, efficient, and effective EA that successfully meshes with integrated resource management in the Mackenzie Valley, the Review Board encourages the developer to review the following non-comprehensive list of documents while assessing potential impacts from the development, as well as in creating and presenting monitoring and mitigation programs for the Project. The documents include:

### **Mackenzie Valley Environmental Impact Review Board**

- *Environmental Impact Assessment Guidelines (2004)*
- *Socio-economic Impact Assessment Guidelines (2007)*
- *Guidelines for Incorporating Traditional Knowledge in Environmental Impact Assessment (2005)*

### **Mackenzie Valley Land and Water Board**

Any relevant guidelines published by the Mackenzie Valley Land and Water Board including:

- *The Mackenzie Valley Land and Water Board Document Submission Standards (2012)*
- *Standards for Geographical Information Systems Submissions (2012)*
- *Guide to Completing Land Use Permit Applications (2013)*
- *Guide to Completing Water Licence Applications (2003)*
- *Engagement and Consultation Policy (2013)*
- *Engagement Guidelines for Applicants and Holders of Water Licences and Land Use Permits (2013)*
- *Water and Effluent Quality Management Policy (2011)*
- *Guidelines for Developing a Waste Management Plan (2011)*
- *Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories (2013 MVLWB/AANDC)*
- *Draft Guidelines for Adaptive Management – A Response Framework for Aquatic Effects Monitoring (2010)*

### **Fisheries and Oceans Canada**

- *Freshwater Intake End-of-Pipe Fish Screen Guideline (1995)*
- *Protocols for Winter Water Withdrawal in the Northwest Territories (2005)*
- *Fish Screen Design Criteria for Flood and Water Truck Pumps (2011)*

### **Indigenous and Northern Affairs Canada**

- *Guidelines for Designing and Implementing Aquatic Effects Monitoring Programs for Development Projects in the Northwest Territories (2009)*



- *Mine Site Reclamation Policy for the Northwest Territories (2002)*
- *Guidelines for Spill Contingency Planning (2007)*

#### **Canadian Council of Ministers for the Environment**

- *Canadian Environmental Quality Guidelines for the Protection of Aquatic Life*

#### **Government of the Northwest Territories**

- *Guideline for Ambient Air Quality Standards in the Northwest Territories Government of the Northwest Territories Guideline for Dust Suppression (2004)*
- *Northwest Territories Cumulative Impact Monitoring Program<sup>7</sup>*
- *Draft Wildlife and Wildlife Habitat Protection Plan and Wildlife Effects Monitoring Program Guideline (2013)*
- *Guidelines for Dust Suppression (2013)*
- *Northern Land Use Guidelines: Camp and Support Facilities*
- *Northern Land Use Guidelines: Pits and Quarries*
- *Northern Land Use Guidelines: Access: Roads and Trails*
- *Guidelines for Developers for the Protection of Archaeological Sites in the Northwest Territories*
- *socio-economic programs and services <http://services.exec.gov.nt.ca/service-directory>.*

#### **Other Guidelines**

- *U.S. Department of the Interior Technical Guide to Adaptive Management*

---

<sup>7</sup> See <http://www.enr.gov.nt.ca/programs/nwt-cimp>