



Terms of Reference

EA1617-01

Tłıchǫ All-season Road

Government of Northwest Territories -

Department of Transportation

October 28, 2016

Mackenzie Valley Environmental Impact Review Board

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ABBREVIATIONS

ASR	Adequacy Statement Response
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	Tłıchǫ All-season Road
ToR	Terms of Reference
WLWB	Wek’eezhii Land and Water Board

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 on the Review Board's Approach to the Terms of Reference* (PR#44), 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 public 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 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 used to: (1) evaluate the adequacy of the GNWT's Project Description Report and (2) to inform the further investigation required in the adequacy statement.

The Review Board posted both the draft *Adequacy Statement* and the draft *Terms of Reference* on the public registry for review and comment on September 23, 2016. The comment period allowed 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 considered all the comments it received and issued these final *Terms of Reference* as well as a final *Adequacy Statement*, with accompanying *Reasons for Decision on the Scope of the Environmental Assessment*.

1.1 Project overview

The Government of Northwest Territories - Department of Transportation (GNWT-DOT or the developer) has applied to construct and operate an all-season road beginning at kilometre 196 on Highway 3 and terminating at the Community Government of Whatì boundary. The 94 km, two lane gravel road would consist of a 60 m right-of-way and would include 16 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 Tłıchǵ lands and the remaining 77 km, or 82%, of the route located on Territorial lands.

The GNWT-DOT currently operates and maintains a winter road system beginning at Highway 3 near Behchokǵ 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 alignment¹ from kilometer 196 of Highway 3 to the Community Government of Whatì boundary. Figure 1 shows the proposed TASR alignment and existing winter road route.

1.2 Referral to environmental assessment

On July 21, 2016, the Review Board referred the Tłıchǵ 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

¹ The old overland winter road alignment was used up until the 1980s.

The Review Board notified the developer on July 27th 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](#)).

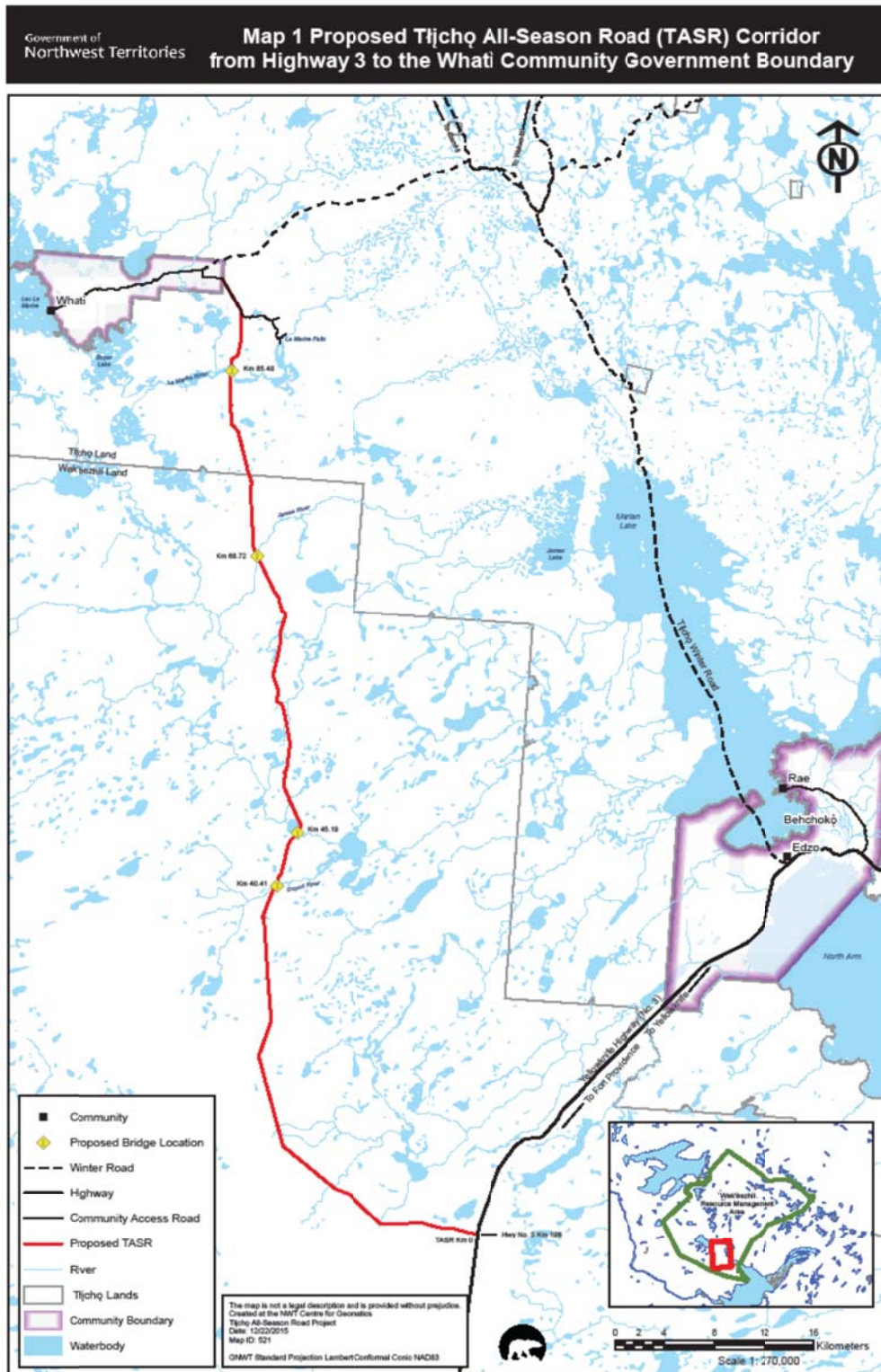


Figure 1: Project Location of the proposed Tłı̨chǫ All-season Road (PR#7, PDR, p.iii)

1.3 Legal context and the Terms of Reference development process

In accordance with subsection 115(1) of the *Mackenzie Valley Resource Management Act* (MVRMA), the environmental assessment process in the Mackenzie Valley “...shall be carried out in a timely and expeditious manner and shall have regard to:

- (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 ToR:

- 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 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 subsection 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 the development. For the TASR EA,

the scope of development for the construction and operations² phases (respectively) is based on information provided in the PDR. In summary, the scope of development includes:

- construction of a 94 kilometre public, all-season road from Highway 3 (km 196) to the Community Government of Whatì boundary;
- operation of a public, all-season road from Highway 3 (km 196) to the Whatì access road, including maintenance³ 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 carried out during the construction and operations phases.

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

Subsection 117(2) of the MVRMA outlines standard considerations to be included in the scope of an environmental assessment and gives the Review Board discretion to include other relevant issues in the scope of assessment on a project-by-project basis. The scope of assessment defines and prioritizes the issues that will be examined in the EA. The scope of assessment includes potential impacts of the development on the environment in general and, in particular, on what the Review Board defines as "valued components" of the biophysical and the human environment (for example, wildlife species or heritage resources⁴).

For the TASR EA, the Review Board has prioritized issues based on the body of evidence on the public record to date. The scope of assessment for the TASR EA is set out under section 2.2.1 below, and the valued components are described in section 2.2.2.

² The operation phase (operations) of the Project refers to the time period following construction, when the highway is being used as intended, for the transportation of people and vehicles. This phase includes highway use and maintenance.

³ 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."

⁴ Heritage resources include archaeological or historic sites, burial sites, artifacts and other objects of historical, cultural or religious significance, and historical or cultural records.

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 paragraph 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 paragraph 117(2)(a) of the MVRMA. Direction on this topic is found in section 4.1.

In considering the “impact of the development on the environment” and the MVRMA definition of “environment,” the scope of assessment is focused on, but not limited to, impacts on the subset of the environment the Review Board has identified as requiring the most attention during the environmental assessment (i.e. the valued components in section 2.2.2).

Subsection 117(2) also requires consideration of the significance of any impacts, comments submitted by the public, the need for mitigation measures and, under paragraph 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). At this time, the Review Board has not identified any other matters under paragraph 117(2)(e) that need to be included in the scope of assessment.

In summary, the scope of assessment for this EA includes all potentially significant impacts on the environment that are likely to result directly or indirectly from the developer’s proposed Project (as described in the scope of development under section 2.1), including cumulative impacts and impacts that may arise from accidents and malfunctions, with particular emphasis on the valued components and associated topics the Review Board has identified in section 2.2.2.

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 be the focus of this environmental assessment:

- Fish and fish habitat

- Caribou
- Wildlife and species at risk
- Traditional use, culture and heritage resources
- Economic well-being
- 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 review. 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
Fish and fish habitat	Fish habitat Fish harvesting
Caribou	Barren-ground caribou Boreal caribou
Wildlife, including species at risk*	Mammals (moose, bison and wolverine) Mammals (bats), birds, fish, plants, amphibians, insects
Traditional use, culture and heritage resources	Traditional use and way of life Harvesting Heritage and cultural resources
Economic well-being	Equity and vulnerability ⁵ Traditional and non-wage economy
Stable and healthy Communities	Community cohesion Use and maintenance of infrastructure Public safety Population sustainability

⁵ According to the [IAIA guidelines on Socio-economic Impact Assessment](#), vulnerability is defined as “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 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.”

* For this EA, “species at risk” includes any species whose range is within the scope of assessment that is listed under the *Species at Risk Act* or the *Species at Risk (NWT) Act*; a species in the Northwest Territories under consideration for listing (as of July 2016); or a species considered “at risk” by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

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 to the characteristics of that component, or to 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; and
- 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 and provide rationale for the temporal scope for the assessment of potential impacts on 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).

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, shifts in distribution/range 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 component required for the EA of the Project. As a result of the extensive information that the developer provided in the PDR, the Review Board has narrowed the focus of future work in the accompanying *Adequacy Statement*. In order to satisfy these ToR, the developer must address the items in the *Adequacy Statement* by providing an Adequacy Statement Response (ASR) document. Together, the PDR and the ASR will meet the typical DAR requirement. For the remainder of this document, the term PDR/ASR will be used, and will refer to information in both documents.

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 PDR/ASR, 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 PDR/ASR 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 PDR/ASR 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 PDR/ASR, 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 made available during an EA. In addition, paragraph 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 should make all reasonable efforts to collect and use traditional knowledge, where applicable, in project design and in evaluating impacts and proposing mitigations in the PDR/ASR. The Board is encouraged by the collaboration between the Tlıchǵ Government and the developer

and by the former's satisfaction with the developer's work in this regard. However, the ASR must contain a comprehensive, stand-alone section summarizing the use and consideration of traditional knowledge, as described below. This will assist the Board in evaluating the incorporation and use of traditional knowledge in its determinations of significant adverse impacts.

This summary will explain how traditional knowledge has been incorporated into specific aspects of: Project design; impact predictions; and potential mitigations.

The methods used in the acquisition, analysis and presentation of traditional knowledge are at the developer's discretion but should 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 (described in the PDR, [PR#7, Appendix E](#)) the developer has already 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 PDR/ASR, the developer will submit an updated engagement log and summary at the time of the PDR/ASR 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; and
- 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 PDR/ASR, 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 and enforcing the mitigation measure.

3.5 Summary materials

The following summary materials will be required in the PDR/ASR:

- a plain language summary of the PDR/ASR in English and Tłıchǵ;
- a concordance table for new materials that cross references the items in the ToR and *Adequacy Statement* with relevant sections of the PDR/ASR; and,
- an updated list of anticipated authorizations, permits, licenses and other approvals, including any authorizations required from the Tłıchǵ Government, DFO or other responsible authorities that are not already covered in the PDR

3.6 Development description

The developer will ensure that a description of all Project components and activities is included in the PDR/ASR, including any proposed or existing components and activities not listed in Section 2.1 of these ToR.

Where the developer feels it would be helpful to reviewers, the PDR/ASR 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 the construction and operations phases, with a description of major activities by phase. Include milestone events (e.g. bridge construction, halfway point, project completion, etc.) and anticipated progress of construction activities (e.g. length of road constructed per year).

The development description will describe all Project components and activities for the construction and operations phases 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'èezhì Resource Management Area. Seventeen kilometers of the TASR cross Tłıchǵ lands and are thus subject to the Tłıchǵ 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; and
- 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 PDR/ASR 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 impacts⁶.

⁶ Residual impacts are effects that remain after the application of mitigation measures.

The sections below describe the standard steps to follow in assessing potential impacts to valued components. Any deviation from the listed methodology must be accompanied by detailed rationale regarding the selected methodology in assessing Project effects on the environment.

4.1 Impact assessment steps

For each valued component identified in section 2.2.2, the developer will complete an impact 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 (including seasonal, inter-annual, and spatial variability for applicable/ appropriate parameters) 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 impacts⁷:
 - 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 and fire 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);

⁷ 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).

- e. reversibility of the impact;
- f. uncertainty associated with prediction;
- g. overall implication of the impact on the valued component; and
- h. 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.
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 management⁸ best practices, such as those described in guidelines listed in Appendix A⁹.

⁸ 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).

⁹ 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 iv).

4.2 Cumulative effects assessment steps

A cumulative effect is an impact (biophysical, socio-economic, or cultural) that results from the proposed development in combination with other past, present or reasonably foreseeable future developments. In the PDR/ASR, the developer will conduct a cumulative effects assessment¹⁰ 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:

1. Describe and provide rationale for which past, present or reasonably foreseeable future developments, human activities, climate and fire scenarios are being considered in the cumulative effects assessment.
2. Combine the Project-related residual impact predicted under step 6 in section 4.1 with the impacts from the developments and human activities identified above:
 - a. identify and discuss the way in which a cumulative impact may occur;
 - b. predict the potential direct and indirect cumulative impacts;
 - c. describe techniques utilized in impact prediction (e.g. models,) assumptions and the level of uncertainty; and
 - d. discuss the contribution of the Project to the overall cumulative impact.
3. Characterize the cumulative impact according to steps 4 – 6 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 PDR/ASR, 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

¹⁰ Please see [Appendix H of the Review Board's EIA Guidelines](#) for additional requirements of the cumulative effects assessment.

information so that the linkage between Project activities and impacts to valued components as a result of the Project are clearly described and evaluated.

6 DETAILED REQUIREMENTS FOR ASSESSMENT OF VALUED COMPONENTS

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

1. Describe any monitoring, evaluation and adaptive management plans that will be used to achieve the following objectives:
 - a. detect unexpected changes;
 - b. determine whether impact predictions are accurate;
 - c. evaluate the effectiveness of mitigations;
 - d. adjust management actions to minimize adverse impacts; and
 - e. discuss responsibilities for data collection, analysis and dissemination.
2. Describe how Project-specific monitoring will be compatible with the NWT Cumulative Impact Monitoring Program or other regional monitoring and research programs.
3. Demonstrate how the plans adhere to adaptive management¹¹ best practices, such as those described in guidelines listed in Appendix A.

¹¹ 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

4. 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. The extent and quality of data used to establish the baseline conditions for any monitoring program should be explained.

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*](#)

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)*
- *Draft Guidelines for Considering Wildlife at Risk in Environmental Impact Assessment in the Mackenzie Valley (2010)*

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)*

Environment and Climate Change Canada

- *Addressing Species at Risk Act Considerations Under the Canadian Environmental Assessment Act for Species Under the Responsibility of the Minister responsible for Environment Canada and Parks Canada (2010)*

- *The Species at Risk Act Environmental Assessment Checklists for Species Under the Responsibility of the Minister Responsible for Environment Canada and Parks Canada (2010)*
- *Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada (2004)*
- *Recovery Strategy for Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*) in Canada [Proposed]*
- *Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal population, in Canada*
- *Recovery Strategy for the Wood Bison (*Bison bison athabasca*) in Canada [Proposed]*
- *Recovery Strategy for the Common Nighthawk (*Chordeiles minor*) in Canada*
- *Recovery Strategy for Olive-sided Flycatcher (*Contopus cooperi*) in Canada*
- *Management Plan for the Yellow Rail (*Coturnicops noveboracensis*) in Canada*
- *Management Plan for the Rusty Blackbird (*Euphagus carolinus*) in Canada*
- *Management Plan for the Short-eared Owl (*Asio flammeus*) in Canada [Proposed]*
- *ECCC Scientific Assessment to Inform the Identification of Critical Habitat for Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada (2011)*

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*¹²
- *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*¹³

Other Guidelines

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

¹² See <http://www.enr.gov.nt.ca/programs/nwt-cimp>

¹³ See <http://services.exec.gov.nt.ca/service-directory>