Northwest Territories Transportation

Mackenzie Valley Highway

Terms of Reference for the Environmental Assessment

Draft for Review

September 2013

Department of Transportation,
Government of the NWT
Yellowknife, Northwest Territories

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Northwest
Territories Transportation

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Abbreviations

COSEWIC ..... Committee on the Status of Endangered Wildlife in Canada
DAR. ..... Developer's Assessment Report
DOT ..... Department of Transportation
GNWT ..... Government of the Northwest Territories
MVEIRB ..... Mackenzie Valley Environmental Impact Review Board
MVH. ..... Mackenzie Valley Highway
MVRMA ..... Mackenzie Valley Resource Management Act
NWT ..... Northwest Territories
PDR. ..... Project Description Report
ROW ..... Right of Way
SARA ..... Species at Risk Act
TOR. ..... Terms of Reference
VC. ..... Valued Component

1 INTRODUCTION

1.1 Purpose and Organization

The Department of Transportation (DOT) of the Government of the Northwest Territories (GNWT) is proposing to extend the Mackenzie Valley Highway (MVH) from Wrigley to the Dempster Highway (Figure 1). The GNWT is the Developer for this project.

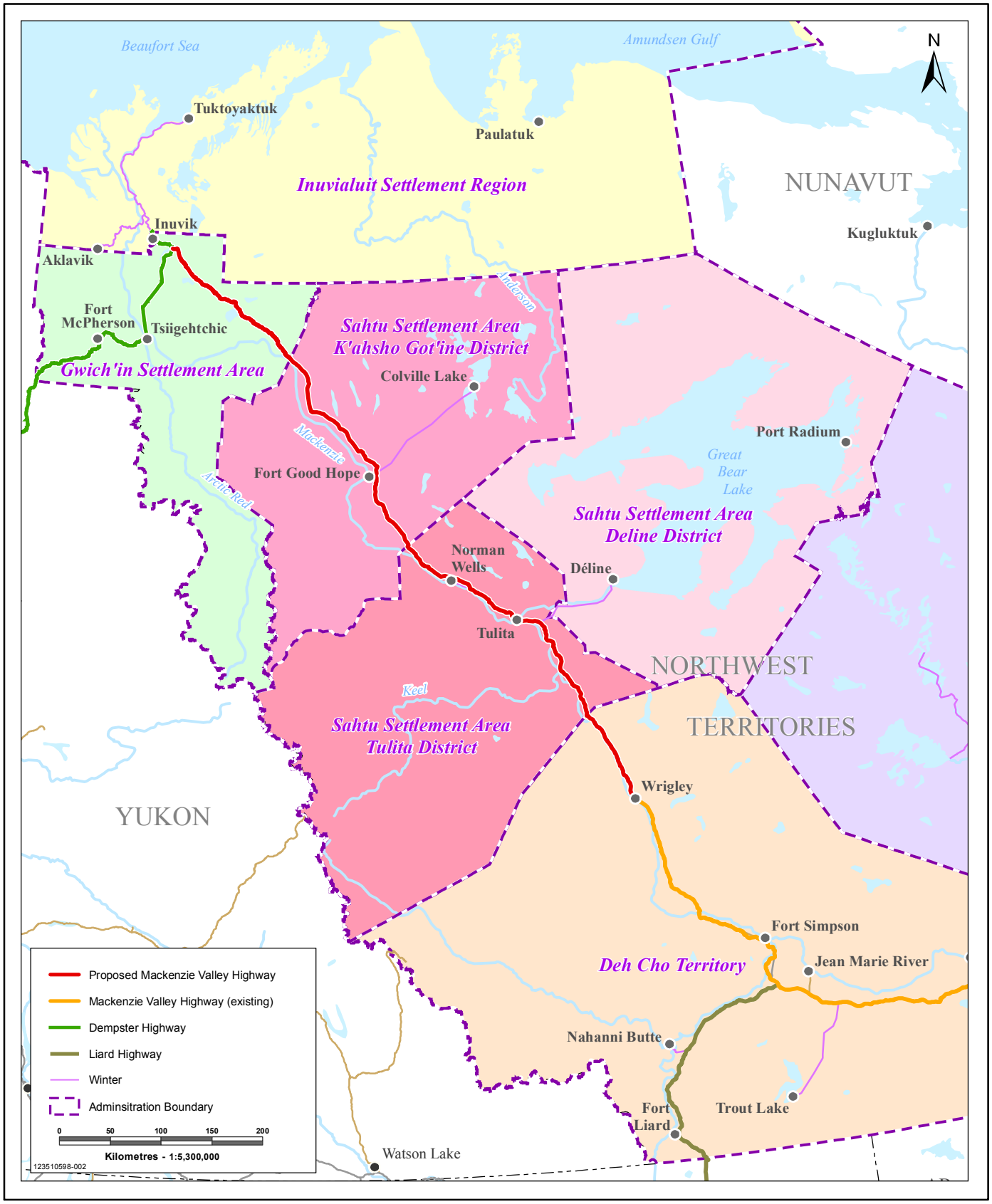
These Terms of Reference (TOR) have been prepared to identify the information and analysis the Developer is required to provide in its Developer's Assessment Report (DAR) for the proposed development. The DAR will be the focus of the Environmental Assessment conducted by the Mackenzie Valley Environmental Impact Review Board (MVEIRB) in fulfillment of the requirements of Part 5 of the *Mackenzie Valley Resource Management Act (MVRMA)*.

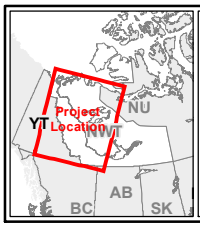
1.2 Background

The concept of building an all-weather highway through the Mackenzie Valley to connect southern Canada with northern communities originated in the 1960s, although it was not until 1972 that the federal government announced that the Mackenzie Highway would be extended from Fort Simpson to the Dempster Highway. Construction of the highway started in Fort Simpson but was halted in 1977, approximately 18 km south of Wrigley following completion of 210 km.

The GNWT developed its Highway Strategy in 1989 after authority for the Northwest Territories (NWT) highway system was devolved from the federal government. By 1994, the remaining 18km of the highway to Wrigley was completed. Preliminary engineering, environmental and financial studies to support planning for construction of the remainder of the MVH to Inuvik were completed in 1999.

In 2010, the DOT of the GNWT signed Memoranda of Understanding with the Gwich'in Tribal Council; 5658 NWT Ltd representing the Tulita Land Corporation, the Norman Wells Land Corporation, the Fort Norman Metis Land Corporation and the Tulita Dene Band; K'ahsho Got'ine Development Foundation; and the Pehdzeh Ki First Nation to complete Project Description Reports (PDRs) to support further planning for the development of the highway in their respective territories. The PDRs were completed in 2011 and 2012 providing preliminary design and environmental planning information for each territory.





Mackenzie Valley Highway Extension

Mackenzie Valley Highway Extension

Base Data provided by Government of Canada; Private Land data provided by the Joint Secretariat

PREPARED BY
Stantec

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Northwest Territories

FIGURE NO.
1-1

Last Modified: August 26, 2013 By: pretho

1.3 Legal Context

Most applications for a licence, permit or other authorization to carry out a development in the Mackenzie Valley are required to undergo a Preliminary Screening according to Section 124 of the *MVRMA.* If the Regulatory Authority conducting the Preliminary Screening determines that the development might be a cause of public concern or might have a significant adverse impact on the environment, the development is referred to the MVEIRB for environmental assessment. Section 126 of the *MVRMA* permits referral of developments to environmental assessment notwithstanding the determination of the Preliminary Screening.

Environmental assessments conducted under the *MVRMA* must include an assessment of the impact of the development on the environment. Impact on the environment means an effect on land, water, air or any other component of the environment, as well as wildlife harvesting and includes any effect on the social and cultural environment or on heritage resources (S111(1)). This includes impacts associated with Accidents and Malfunctions and cumulative impacts resulting from the development in combination with other developments (S 117(2) (a).

Upon conclusion of the environmental assessment, the MVEIRB reports its findings and recommendations to the federal Minister and responsible ministers.

1.3.1 Procedural History

In February 2013 the DOT submitted a land use application for clearing of a section of the MVH in the Gwich'in Settlement Area. Under authority of Section 126 (2) (a) of the *MVRMA* the DOT referred the development, including the entire proposed MVH, to the MVEIRB for environmental assessment.

1.4 Developer's Assessment Report General Requirements

The Terms of Reference will direct the developer to organize existing material, and conduct additional study and analysis as appropriate, in order to submit a "stand-alone" Developer's Assessment Report. That report will then be used to inform all interested parties about the proposed development during the analytical phase of the environmental assessment.

1.4.1 Incorporation of Traditional Knowledge

The MVEIRB considers both traditional and scientific knowledge in its deliberations. The Developer shall make reasonable efforts to collect traditional knowledge from traditional knowledge holders and utilize this knowledge in its effects assessment and mitigation strategies. The Developer shall document all efforts taken to collect traditional knowledge and indicate where it has been used in the DAR to either inform baseline environmental conditions, influence project design, assist with effects assessment and monitoring plans. The Developer should refer to the MVEIRB publication "*Guidelines for Incorporating Traditional Knowledge into the Environmental Impact Assessment Process"* and community/culture specific traditional knowledge protocols.

1.4.2 Format and Content of the DAR

The Developer shall submit a DAR that addresses these TOR and is presented in a clear and plain language format. The DAR should be a stand-alone document which provides sufficient information for the reader to understand the conclusions presented. Detailed studies and analysis should be presented in appendices or supporting volumes. In addition to addressing these TOR, the DAR should contain:

- Plain Language Summary
- Concordance Table
- Public Engagement Documentation
- Developer Commitments
- References

The DAR and supporting documentation shall be submitted in both hard copy and digital formats. A draft Table of Contents for the DAR is presented as Appendix A.

1.4.3 Public Engagement

The Developer shall clearly describe its public engagement activities and demonstrate how results from public engagement and consultation activities, as well as traditional knowledge, have been used to influence the preferred project design, mitigation measures, management and monitoring plans.

2 SCOPE OF THE DEVELOPMENT

As described in these Terms of Reference, the DAR is to clearly present the overall scope of the development to be assessed.

The proposed development includes the construction, operation and reclamation of an all-weather highway between the community of Wrigley and Km 248 of the Dempster Highway, south of Inuvik. The development includes the following components:

- Clearing of Right of Way (ROW) (intermittent sections between Wrigley and Fort Good Hope and new ROW between Fort Good Hope and Dempster Highway)
- Initial extension of the current winter road from Fort Good Hope north to the Dempster Highway;
- Construction of an 818 km all-season gravel highway from Wrigley to the Dempster Highway;
- Construction of watercourse crossing structures;
- Construction and operation of borrow sources;
- Construction and operation of highway maintenance areas;
- Construction and operation of temporary construction support infrastructure and workspaces including, camps; laydown and staging areas, bulk fuel storage areas and airstrips;
- Ongoing highway operations and maintenance; and
- Reclamation of facilities not required for ongoing operations.

The highway is expected to operate for an indeterminate period.

The scope of the project does not include the ongoing operation and planned capital improvements to the existing winter road system between Wrigley and Fort Good Hope.

3 DEVELOPMENT DESCRIPTION

The Developer shall be clearly identified, providing the following information:

- Primary and back-up contacts
- Policies, codes of practice, guidelines related to design, environmental management, public engagement, health and safety
- Experience and environmental record with execution of similar developments in the Northwest Territories
- Measures to enforce the adherence to policies and commitments of the Developer by contractors and sub-contractors carrying out the Development

The Developer shall fully describe the facilities and activities associated with all phases of the Development, including a discussion of the need for the project, alternatives to the project, alternative means of carrying out the project and development schedule. The development description should address for both the initial winter road and the all-weather MVH, as applicable, the following topics:

- Proposed alignment and alternatives considered
- Design Standards
- Land requirements (footprint, location, permanent or temporary, ownership, zoning)
- Right of Way clearing
- Road construction methods
- Water crossing structures and locations
- Borrow source locations, quality and quantities, activities and methods
- Support facilities (e.g. staging, camps, laydown areas, access roads)
- Fuel storage and management
- Explosives
- Equipment requirements (by phase)
- Solid waste Management
- Water Use
- Wastewater treatment
- Mobilization/Demobilization
- Frequency of vehicle and aircraft movement during construction
- Routine maintenance activities
- Expected traffic volumes during operational phase

- Clean-up /restoration of work areas during construction phase
- Reclamation
- Procurement and implementation approach
- Training, employment and business opportunities

The development description must also contain an overall and seasonal activity schedule for the development. The Developer is expected to include an analysis of alternative options to, and means of carrying out the proposed development that are technically and economically feasible. The economic considerations and the environmental effects of any options to and alternative means of carrying out the components of the development shall also be discussed.

4 REGULATORY APPROVALS

The Developer shall identify all permits, licences or other regulatory approvals necessary for the different phases of the development. The Developer shall also document all land tenure agreements required for the development.

5 CONSULTATION AND ENGAGEMENT

The DAR shall include a consultation and engagement log which describes dates, individuals and organizations engaged with, the mode of communication, consultation methods, information presented, discussion topics and input received. The GNWT' shall rely upon this log when determining GNWT compliance with its Section 35 duty to consult. Issues raised during consultation shall be identified and all agreements or commitments made in response to those issues and how those issues affected project design, mitigations and monitoring plans shall be documented.

6 ASSESSMENT METHODOLOGY

The Developer shall describe the approach and methodology used to complete the assessment.

6.1 Issues Scoping and Valued Component Selection

The Developer will clearly describe and justify the selection of Valued Components (VCs) upon which the environmental assessment will focus. The developer will document the scoping process and describe the methods and rationale for VC selection. Those VC's not selected for further assessment will be noted and an explanation and justification for their exclusion provided.

6.2 Boundaries

6.2.1 Geographic Scope

The geographic scope of the assessment shall include the geographic range over which the development's effect may occur. The Developer will be required to define and provide rationale for the selection of spatial boundaries for each valued component assessed. Definition of spatial boundaries shall consider ecological, technical and social factors related to the valued component.

6.2.2 Temporal Scope

The temporal boundaries of the assessment shall include all project phases: construction, operation and clean-up. Temporal boundaries should consider seasonal and annual variations of valued components. The temporal scope of the cumulative effects assessment must allow for the assessment of effects from past, present and reasonably foreseeable future developments.

6.3 Identification of Potential Effects

The developer will identify all potential effects of the development on the selected VCs and describe the pathway by which the effect might occur. The environmental assessment will focus on those effects considered of most importance. The developer will provide a rationale as to how those effects are selected for detailed assessment.

6.4 Mitigation Measures

The developer will describe mitigation measures that have been implemented at the design stage or, will be added to the project to reduce or avoid potential project related effects to VCs.

6.5 Characterization of Residual Effects

The developer will provide a clear methodology for the characterization of predicted residual effects, after the application of mitigation measures. The characterization will be based on the following factors:

- nature or type of effect
- geographic range
- duration and frequency of effect
- magnitude
- reversibility
- likelihood

The developer will document the basis on which the determination was reached i.e., availability and quality of baseline data, published literature, professional judgment, and the level of confidence in the determination.

6.6 Determination of Significance

Based on the characterization of the residual effects the developer will present the methodology for determination of the significance of each effect. The methodology should consider established criteria, standards, guidelines and thresholds for VCs, where available.

6.7 Cumulative Effects Assessment

The Developer shall identify the methodology used to assess the potential cumulative environmental and socio-economic effects of the development in combination with other past, present or reasonably foreseeable developments and/or activities. The assessment of a project's contribution to cumulative effects involves identifying a development's residual environmental effects and then evaluating how these residual effects may act in combination with effects from other past, present and reasonably foreseeable human activities and developments.

The Developer shall identify other past, present and reasonably foreseeable developments and activities whose effects might combine with residual effects of the development to cause a cumulative effect.

7 ASSESSMENT OF ENVIRONMENTAL EFFECTS AND CUMULATIVE EFFECTS

The Developer shall be responsible for the identification and assessment of effects of the development on the biophysical and human environment and for the assessment of cumulative effects resulting from the development in combination with past, present and reasonably foreseeable developments and activities. The MVEIRB acknowledges that much of the proposed development corridor has recently been subject to considerable study of baseline conditions and assessment of potential effects of the proposed Mackenzie Gas Project, also a linear development. The Developer is encouraged to utilize information and lessons learned from the assessment of this project in the preparation of its DAR.

7.1 Effects Assessment

For each VC selected by the Developer (Section 6.1), the following topics should be addressed, consistent with the Developer's methodology as identified in Section 6 of these TOR.

7.1.1 Introduction

The Developer should document and provide justification for the selection of the VC, addressing such topics as potential to be affected, importance to stakeholders, ecological or legal importance, etc.

7.1.2 Existing Conditions

The Developer will provide a description of the existing conditions in sufficient detail to enable an understanding of how the VC might be affected (positively or negatively) by the proposed development. The description of existing conditions should focus on the VC's potential interactions with the development and for biophysical components should address topics such as SARA and COSEWIC rankings, sensitive and important habitats (e.g., den sites, mineral/salt licks). The description should present existing information, the results of field studies, identify data gaps and conclude on the state of existing information for the VC. Detailed information and supporting studies should be appended rather than included in the DAR.

7.1.3 Identification of Potential Environment Effects

The potential interactions of the development with the VC and resulting potential environmental effects to the VC should be identified. The Developer shall present quantitative or qualitative parameters to measure potential environmental and cumulative effects on the VC. The spatial and temporal boundaries for the assessment of effects on the VC shall be presented and justified.

7.1.4 Mitigations

The Developer shall describe all mitigations that will be put into effect during project design, construction or operation to mitigate potential environmental effects.

7.1.5 Assessment of Potential Residual Effects

The Developer shall assess potential effects on the VC after implementation of mitigations. Residual effects shall be clearly identified and characterized based on methodology presented in DAR.

7.1.6 Assessment of Cumulative Effects

For each residual effect resulting from the development, the Developer shall conduct an assessment of the potential for cumulative effects resulting from a combination of effects of the development with effects from other past, present and reasonably foreseeable human activities and developments. The way in which a cumulative effect may occur and its potential spatial and temporal scope shall be discussed. Residual cumulative effects shall be identified.

7.1.7 Significance of Project and Cumulative Environmental Effects

The Developer should characterize the significance of residual project and cumulative environmental effects.

7.2 Preliminary VCs

The Developer shall be responsible for selecting the VCs for assessment. The following provides a preliminary list of VCs for consideration; however, this should not be viewed as either restrictive or exhaustive as additional issues may arise during the conduct of this environmental assessment.

7.2.1 Biophysical Components

7.2.1.1 Terrain, Soils and Permafrost

Describe and evaluate the potential effects of the project on terrain, soils and permafrost, including consideration of:

- Slope and soil stability
- Erosion
- Permafrost degradation
- Geohazards
- Granular resource extraction

7.2.1.2 Vegetation

Describe and evaluate the potential effects of the project on vegetation, including consideration of:

- Wetlands
- Rare, sensitive and culturally important species and assemblages,
- Introduction of invasive species
- Timber resources
- Re-establishment and reclamation of vegetation
- Effects of project emissions, including dust
- Biodiversity

7.2.1.3 Wildlife and Wildlife Habitat

Describe and evaluate the potential effects of the project on wildlife, including birds, and wildlife habitat, including consideration of:

- Species listed or pre-listed under either under the SARA, SARA (NWT) or assessed by the COSEWIC
- Key harvested species
- Direct and functional habitat loss or alteration
- Effects on critical habitat and sensitive life stages
- Movements and Migration
- Sensory disturbance (e.g., noise)
- Mortality
- Attraction to development
- Effects of increased harvesting access on populations

7.2.1.4 Water Quality and Quantity

Describe and evaluate the potential effects of the project on surface and ground water quality and quantity, including consideration of:

- potential changes to surface water drainage patterns, volumes and hydrology
- potential changes to surface water quality and resulting effects on drinking water quality for humans and animals
- potential changes to surface water quality resulting from borrow source development and use
- water quality changes relating to recreational uses

- the effects of water withdrawal for construction and operational purposes i.e., ice roads, potable water, dust suppression)

7.2.1.5 Fish and Fish Habitat

Describe and evaluate the potential effects of the development on fish and fish habitat, including consideration of:

- the alteration or loss of fish habitat due to development activities during all phases (construction, operation and reclamation)
- potential effects related to changes in water quality and quantity
- species listed under SARA
- potential effects on riparian areas
- potential effects on fish health
- effects of winter water withdrawal
- potential for increased pressure on the resource that could arise from improved access

7.2.1.6 Air Quality

Describe and evaluate the potential effects of the project on air quality, including consideration of:

- Emissions from vehicles, equipment and stationary sources
- Dust emissions
- Carbon emissions
- Effects to other VCs

7.2.1.7 Noise

Describe and evaluate the potential effects of project-related noise, including consideration of:

- Location, duration, timing
- Effects to other VCs

7.2.2 Human Environment Components

7.2.2.1 Business and Employment

Describe and evaluate the potential effects of the development on business and employment, including consideration of:

- Direct and indirect employment opportunities generated by the development and potential for uptake of opportunities locally, territorially and by Aboriginal peoples

- Measures, plans and commitment for maximizing local, territorial and Aboriginal employment
- Proposed education and training commitments
- Contractor and sub-contractor business opportunities
- Effects on capacity of businesses to service other sectors during construction phase
- Effects on existing transportation infrastructure and service industry
- Measures to maximize business opportunities for local, territorial and Aboriginal businesses

7.2.2.2 Regional and Local Economies

Describe and evaluate the potential effects of the development on the regional and territorial economy, including consideration of:

- Capital and operating costs of the development
- Contribution to GDP, business and income taxes
- Business revenues and employment income generated by development
- Effects on wages and incomes in the region
- Cost of living, consumer prices

7.2.2.3 Community Life

Describe and evaluate the potential effects of the development on community life, including consideration of:

- Demographics, including inward and outward migration
- Capacity of public infrastructure and services, including protection, emergency response, health and social services, waste management
- Public safety
- Human Health and Community Wellness, including crime, substance abuse, health, country food, safety

7.2.2.4 Culture and Traditional Land Use

Describe and evaluate the potential effects of the development on Culture and Traditional Land Use, including consideration of:

- Aboriginal Languages
- Traditional lifestyles, values and culture
- Cultural and spiritual sites and activities
- Resource availability for traditional harvesting

- Changes in traditional harvesting activity

7.2.2.5 Heritage Resources

Describe and evaluate the potential effects of the development on Heritage Resources, including consideration of:

- Known site locations and areas of high potential for undiscovered sites
- Influence of consultation on site identification and management
- Mitigations and management plans to protect known and undiscovered sites
- Effects of increased access on sites

7.2.2.6 Land Use

Describe and evaluate the potential effects of the development on non-traditional Land Use, including consideration of:

- Effects and management of increased access
- Effects to protected areas, parks and environmentally and culturally sensitive areas
- Tourism, outfitting, hunting, fishing, recreation and other non- traditional land uses
- Aesthetics
- Potential effects to other VCs

8 EFFECTS OF THE ENVIRONMENT ON THE PROJECT

The Developer shall describe and discuss how physical and biological changes in the environment could affect the development. This should include considerations of the following:

- Long-term climate change scenarios
- Short-term climatic and extreme weather events (e.g., major precipitation, wind, fog, drought)
- Landslides and ground movement
- Changes in permafrost regime
- Subsidence
- Seismic events
- Fire

9 ACCIDENTS AND MALFUNCTIONS

The DAR shall identify the potential for environmental effects resulting from accidents and malfunctions and unplanned events during any phase of the project and evaluate the likelihood and circumstances under which these events could occur. The implementation of any mitigation measures, contingency plans, and response mechanisms must also be presented in this section.

The evaluation of potential environmental effects resulting from accidents and malfunctions shall consider:

- Spills of a hazardous material (on land, ice and in water)
- Explosion and/or fire
- Use of explosives
- Transportation accidents (air, land, water)
- Failure of components
- Effects on harvesting

10 FOLLOW- UP AND MONITORING

The Developer shall describe the program(s) it proposes to undertake for monitoring the environmental effects of the development. Consistent with the commitments made in the DAR, the developer shall describe its proposed effects and compliance monitoring programs in terms of objectives, activities, responsibilities, analysis, reporting and communication.

The Developer shall submit Management Plan(s) for VCs of concern. The Management Plans shall provide the detail necessary to understand the methods for the implementation of mitigation measures, demonstrate linkages to the relevant monitoring programs, demonstrate an adaptive management approach and outline the reporting mechanism.

11 CLEAN-UP AND RECLAMATION

The Developer shall describe its plans for reclamation of sites not required for the operational phase of the development.

APPENDIX A

Draft Table of Contents for Developer's Assessment Report

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MACKENZIE VALLEY HIGHWAY DEVELOPER'S ASSESSMENT REPORT