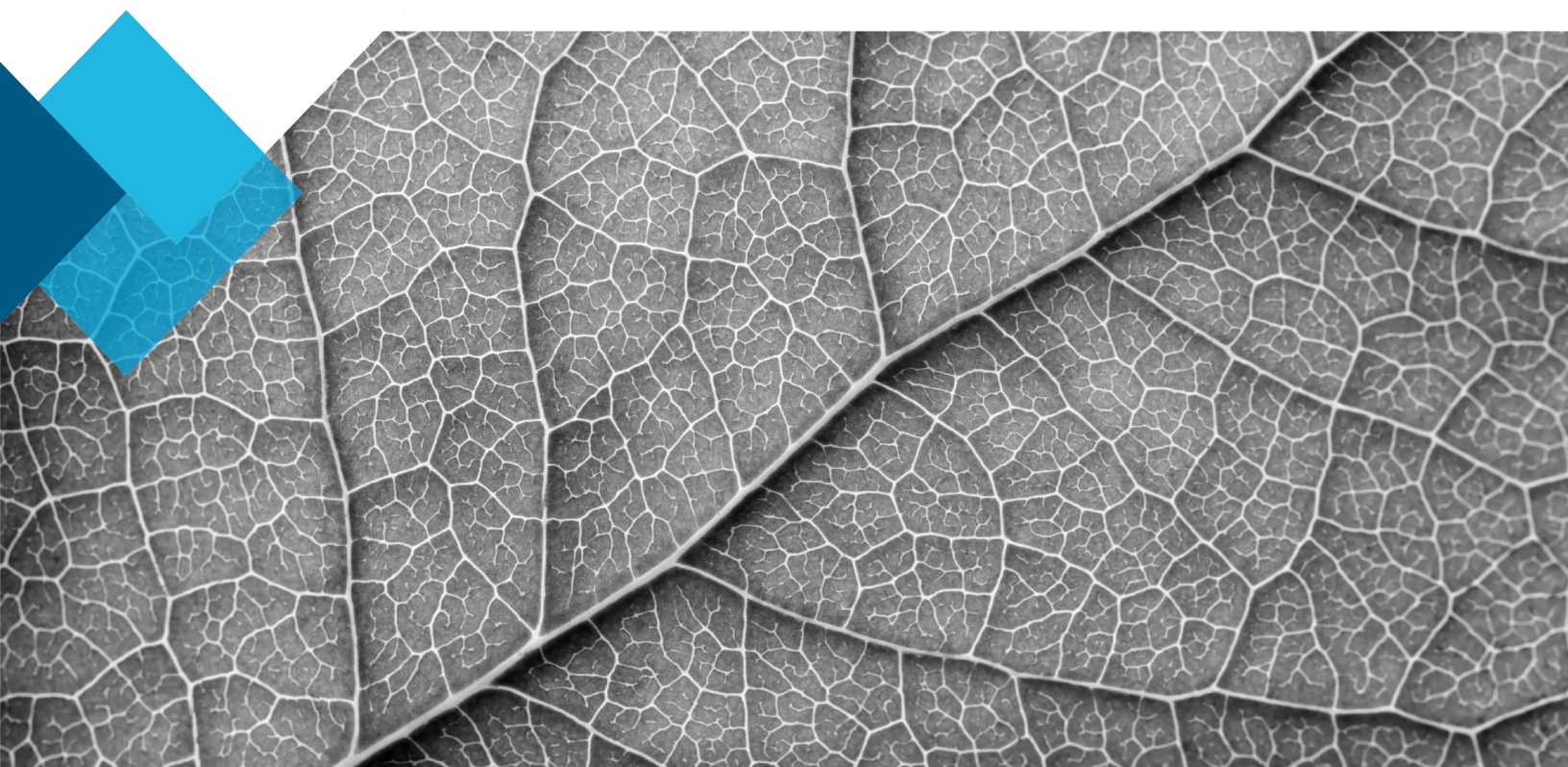




Northern Road Link

Proposed Terms of Reference

Marten Falls First Nation and Webequie First Nation



April 29, 2022
679878

NRL001-NRL-PR-RT-0004
NRL-Proposed ToR-2022-04-29

Executive Summary

ES.1 Introduction

This Proposed Terms of Reference (ToR) for the Northern Road Link Project has been prepared by SNC-Lavalin Inc. (SNC-Lavalin) on behalf of Marten Falls First Nation (MFFN) and Webequie First Nation (WFN) to meet the requirements of the Ontario *Environmental Assessment Act*, R.S.O. 1990, c.E.18 (the EA Act). The ToR establishes the framework for the planning and decision-making process for the Project's Environmental Assessment (EA) and is to be submitted by the proponent to the Ministry of the Environment, Conservation and Parks (MECP) for review and an approval decision. Should the ToR be approved by the Minister of the Ontario Ministry of the Environment, Conservation and Parks (MECP), an Environmental Assessment/Impact Assessment (EA/IA) will be undertaken and an Environmental Assessment Report/Impact Statement (EAR/IS) will be prepared for the Project, as per the detailed requirements set out in the approved ToR¹.

The Proposed ToR has been prepared in accordance with the *Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario* (ToR Code of Practice [MOE, 2014a]) and contains the information presented in **Table ES-1**, in compliance with the EA Act.

A Draft ToR was presented and made available for review to Indigenous communities, regulators, and other interested parties for consultation. Consultation input on the Draft ToR was incorporated into this Proposed ToR.

Table ES-1: ToR Code of Practice Requirements and Sections of the Terms of Reference

ToR Code of Practice Requirements	Section of the ToR
Identification of the proponent	Section 1.2 Proponent
Indication of how the environmental assessment will be prepared	Section 1.6.6 How the Environmental Assessment will be Prepared
Purpose of the study or Undertaking	Section 1.4.1 Purpose of the Project Section 1.5 Purpose of the Environmental Assessment
Description of and rationale for the Undertaking	Section 1.4.2 Rationale for the Project Section 3 Description of the Project
Description of and rationale for alternatives	Section 2 Description of and Rationale for Alternatives
Description of the existing environment and potential effects of the Undertaking	Section 7.1 Aboriginal and Treaty Rights and Interests Section 7.2 Physical Environment Section 7.3 Biological Environment Section 7.4 Socio-economic Environment Section 7.5 Cultural Heritage Resources Section 7.6 Human Health Section 8 Climate Change Assessment
Assessment and Evaluation	Section 2.2.3 Approach to the Selection of Preferred Alternative Section 6 Assessment Methods

¹ In addition to requirements under the Ontario EA Act, it is anticipated that the Project will be subject to an Impact Assessment (IA) under the federal Impact Assessment Act, S.C. 2019, c. 28, s. 1. The term "EA/IA" has been included to account for a joint provincial/federal process. The provincial/federal EA/IA reporting would be combined into a single provincial Environmental Assessment Report (EAR)/federal Impact Statement (IS) to create a single document for review. The term "EAR/IS" has been included to account for this possibility.

ToR Code of Practice Requirements	Section of the ToR
Commitments and monitoring	Section 9 Commitments Section 10 Monitoring
Consultation plan for the environmental assessment	Section 4 Consultation and Engagement
Flexibility to accommodate new circumstances	Section 11 Flexibility to Accommodate New Circumstances
Other approvals required	Section 1.6.5 Other Relevant Legislation and Permits

ES.1.1 Project Understanding

It is the intention of MFFN and WFN to prepare an EA under the EA Act for the design, construction, and operation and maintenance of a proposed all-season road called the Northern Road Link (the Project). The proposed Project is a multi-use all-season road between the proposed Marten Falls Community Access Road (MFCAR) and the proposed Webequie Supply Road (WSR) in northwestern Ontario, as shown on **Figure ES-1**.

ES.1.2 Purpose of the Project

The purpose of the Project is the design, construction, and operation and maintenance of a proposed all-season road between the proposed MFCAR and the proposed WSR. The Project will connect the Ring of Fire mineral deposits in the McFaulds Lake area to the highway network via the MFCAR, by constructing a new all-season multi-use gravel road with an approximate length of 117 km to 164 km (depending on the chosen corridor). The Project will also provide an opportunity to connect WFN to the highway network. The Project would enable a broader range of economic activity than currently exists by facilitating the transport of goods, services and resources.

ES.1.3 Rationale for the Project

The Ring of Fire in the Ontario far north is considered one of the most promising mineral development opportunities in the province in over a century (NDMNRF, 2021a). Mine development in the Ring of Fire area is currently unlikely without year-round all-weather access. MFFN and WFN are committed to the sustainable development of their traditional territories. The Project is an important step in linking the communities, the region and the province in general with the economic opportunities surrounding the Ring of Fire.

In *Building Better Lives: Ontario's Long-term Infrastructure Plan 2017* (MOI, 2017), the province acknowledges that the communities and urban centres in northern Ontario need a multimodal transportation system and that the North is especially vulnerable to the effects of climate change, particularly communities reliant on winter roads. The *Growth Plan for Northern Ontario, 2011* (MOI and MNDMF, 2011) includes a commitment by the province to work with remote communities and other orders of government towards improved access for community residents. In *Connecting the North: A Draft Transportation Plan for Northern Ontario* (MTO, 2021), the province recognizes that there is a growing demand for the expansion of all-season roads in the Far North, driven by a variety of socio-economic factors, climate change vulnerability and, in the case of the Ring of Fire region, responsible resource development. The plan further states that building a road to the Ring of Fire is a critical step to unlocking economic benefits in the region (MTO, 2021) and that Ontario will continue to support MFFN and WFN as they advance their EAs on their

individual road projects¹ for all-season roads to connect their communities and to connect their communities to the proposed Ring of Fire developments (MTO, 2021). Furthermore, improved road infrastructure in the north, including all-season roads, the cost of delivering consumer goods, fuel, and construction materials (NDMNRF, 2021a). Lastly, the construction, operation and maintenance of all-season road infrastructure will provide the proponent with opportunities to develop business, technical and project management skills that would be transferable to other projects in the region.

In summary, the NRL Project will create several important linkages, including:

- › Completing the all-season roadway link between the Ring of Fire and the highway network to the south;
- › Connecting the community of MFFN to the Ring of Fire and the associated economic opportunities by an all-season roadway;
- › Provide an opportunity to connect the community of WFN to the highway network to the south and the associated socio-economic opportunities by an all-season roadway; and
- › Provide an opportunity to interconnect the communities of MFFN and WFN by an all-season road.

¹ Marten Falls First Nation (MFFN) is the proponent of the Marten Falls Community Access Road (MFCAR) project and Webequie (WFN) is the proponent of the Webequie Supply Road (WSR) project.

ES.1.4 Regulatory Framework

The Project will likely require various additional federal and provincial approvals, licenses, permits or other authorizations, or may otherwise be affected by requirements under the federal and provincial legislation listed in **Table ES-2**. This list is not exhaustive.

Table ES-2: Federal and Provincial Legislation, Approvals and other Authorizations

Federal
<i>Impact Assessment Act</i> , S.C. 2019, c. 28, s. 1
Other federal legislation and permits
<i>Canadian Navigable Waters Act</i>
<i>Fisheries Act</i>
› Authorization
<i>Species at Risk Act</i> (2002)
› Permit under Section 73
<i>Migratory Birds Convention Act</i>
› Letter of Advice or Damage/Danger Permit
<i>Explosives Act</i>
› Blasting Explosives Purchase and Possession Permit
› Transportation of Explosives Permit
Provincial
<i>Environmental Assessment Act</i> , RSO 1990, c. E. 18
Other provincial legislation and permits
<i>Fish and Wildlife Conservation Act</i> (1997)
› Permit to Collect Fish for Scientific Purposes
› Permit to Collect Wildlife for Scientific Purposes
› Authorization to destroy/take/possess nests or eggs
› Authorization to interfere with or destroy a black bear or furbearing mammal den, beaver den or black bear in a den
<i>Crown Forest Sustainability Act</i> (1994)
› Permit to Remove or a Sale and Purchase Agreement
<i>Forest Fires Prevention Act</i> (1990)
› Burn Permit
<i>Public Lands Act</i> (1990)
› Work permits for road construction and water crossings
› Land Use Permits for activities requiring occupation of public lands (e.g., worker camps, waste areas and/or laydown yards)
<i>Far North Act</i> (2010)
› Project components and activities that affect land use will be consistent with the approved Marten Falls First Nation and Webequie First Nation CBLUPs
<i>Aggregate Resources Act</i> (1990)
› Aggregate Permit

Provincial (Cont'd)
Other provincial legislation and permits (Cont'd)
<i>Lakes and Rivers Improvement Act (LRIA)</i>
› Approval for bridges, culverts and causeways may be required where the <i>Public Lands Act</i> does not apply and the drainage area above the proposed site is greater than 5.0 sq km
<i>Provincial Parks and Conservation Reserves Act, 2006</i>
› Research Authorization
› Authorization for ROW clearing, laydown areas and related activities
<i>Ontario Water Resources Act (1990)</i>
› Permit to Take Water (PTTW) or Environmental Activity and Sector Registration (EASR)
<i>Endangered Species Act, 2007</i>
› Authorization for effects on listed species or habitat
<i>Health Protection and Promotion Act (1990)</i>
› Approval for potable water and sewage systems
<i>Environmental Protection Act (1990)</i>
› Environmental Compliance Approval (ECA) approvals/permits for waste transport, emissions, wastewater discharge, wash water systems, on-site sewage systems, noise and air effects from extraction and waste disposal.
<i>Building Code Act, 1992</i>
› Permit to Construct - Sewage System
<i>Occupational Health and Safety Act (1990)</i>
› Notice of Project
<i>Ontario Heritage Act (1990)</i>
› Part III.1 (Standards and Guidelines for Conservation of Provincial Heritage Properties)
› Part VI (Archaeological Resources) Standards and Guidelines for Consultant Archaeologists

Environmental assessment terminology varies across jurisdictions. **Table ES-3** presents terminology used in this ToR with corresponding provincial terminology.

Table ES-3: Terms of Reference Terminology

ToR Term	Provincial Term
Valued Component	Criteria
Mitigation measure	Impact management measure
Residual effect	Net effect

ES.2 Description and Rationale for Alternatives

ES.2.1 Alternatives to the Project

The ToR Code of Practice (MOE, 2014a) requires the proponent to identify and evaluate a reasonable range of alternatives to ensure that the most appropriate means of addressing the identified problem or opportunity is selected. The Ontario *Environmental Assessment Act*, RSO 1990, c. E.18, makes reference to two types of alternatives:

- › “Alternatives to” the undertaking are functionally different ways of addressing an identified problem or opportunity to arrive at the preferred planning solution.
- › “Alternative methods” of carrying out the undertaking are the different options for implementing the preferred solution.

In addition, the ToR Code of Practice (MOE, 2014a) requires that the proponent consider the “do nothing” alternative.

This Proposed ToR provides an overview of the alternatives to be considered for assessment in the EA/IA as well as the background on how the alternatives were developed. The EAR/IS will provide a detailed description of the alternatives considered and assessed and the rationale for the selection of the preferred alternatives methods that will constitute the Project. The Project (i.e., the sum of all preferred alternative methods) will then undergo a net effects assessment.

The ToR Code of Practice (MOE, 2014a) allows for proponents to limit the discussion of previously examined alternatives in the EA/IA when alternatives have been previously considered through a separate decision-making process, such as a provincial government priority initiative (MOE, 2014a). The Project is in alignment with the *Growth Plan for Northern Ontario* (MOI and MNDMF, 2011), the *Building Better Lives: Ontario’s Long-term Infrastructure Plan 2017* (MOI, 2017).

For transportation projects, “alternatives to” the undertaking typically include options such as new or improved roads, new or improved rail service or air service. However, these alternative methods of transportation would not meet the purpose of the Project, which is the design, construction, and operation and maintenance of a proposed all-season road between the proposed MFCAR and the proposed WSR. Since the Project was identified to be an all-season road before the study for this Project commenced under the EA Act, the EA/IA will not re-examine past planning processes and decisions and, therefore, will not assess “alternatives to” the Project other than the “do nothing” alternative. The “do nothing” alternative is the option of not proceeding with the Project; it provides a benchmark against which other alternatives can be compared, from a variety of perspectives, including cost/value, environmental effects, social and economic benefits. Therefore, the EA/IA will include the “do nothing” alternative as an “alternative to” the Project for a comparative evaluation of the advantages and disadvantages of proceeding with the Project.

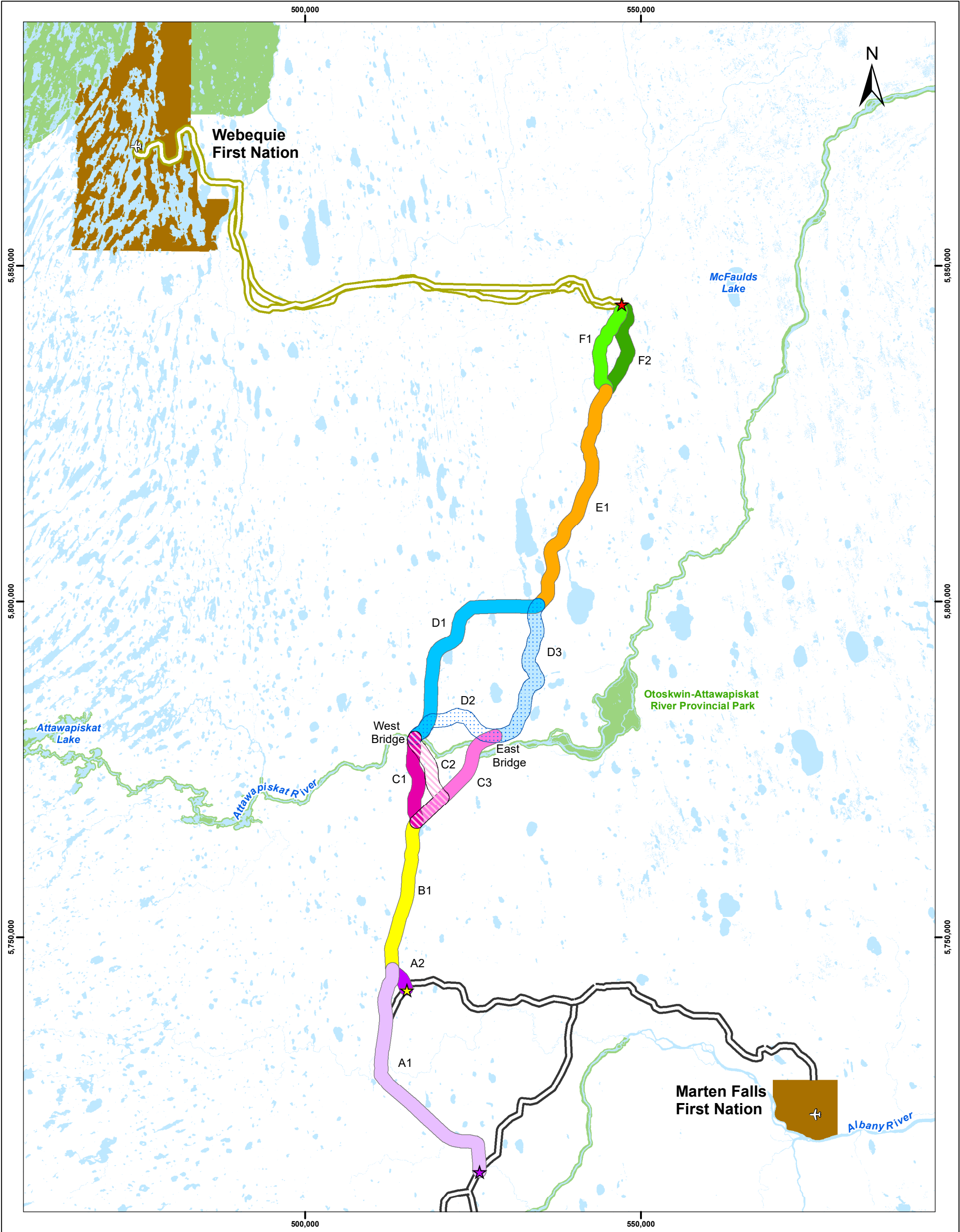
ES.2.2 Alternative Methods of Carrying Out the Undertaking

The EA/IA will consider “alternative methods” of carrying out the Project. “Alternative methods” are different ways of performing the same activity.

This Proposed ToR includes the identification of corridor alternatives to be assessed in the EA/IA and presents background information on how the corridor alternatives were developed. This was a stepwise, iterative process that considered input from members of the MFFN and other neighbouring communities

related to the crossing of the Attawapiskat River, which is the largest watercourse crossing by the Project. Several preliminary corridors were considered. Based on the results of the initial technical assessment and consideration of feedback from Indigenous communities, regulators, public and stakeholder engagement, twelve corridor alternatives segments will be carried forward for assessment in the EA/IA, as shown in **Figure ES-2**. Depending on the chosen corridor, the length of the NRL could range between 117 km and 164 km. Routing within the preferred corridor will be developed and assessed during the EA/IA. They may be refined as a result of new information becoming available during the EA/IA and design of the Project, including from environmental investigations, Indigenous Knowledge (IK) and feedback from consultation and engagement activities.

Alternative ancillary infrastructure, such as access roads, aggregate sites (pits and quarries), and other associated infrastructure required for construction of the road (e.g., camps, laydown/storage areas) will be identified and assessed in the EA/IA. In addition, alternative designs and design elements will be identified and assessed, such as for the bridge crossing of the Attawapiskat River.



Legend:

Corridor Alternatives

A1

A2

B1

C1

C2

C3

D1

D2

D3

E1

F1

F2

Proposed Webequie Supply Road (WSR) Alternatives

Proposed Marten Falls Community Access Road (MFCAR) Alternatives

Connection to WSR

Connection to MFCAR West Alternative


Connection to MFCAR East Alternative

Airports

First Nation Reserve

Provincial Park

Waterbody



NRL
Northern Road Link

30150

0

km

SCALE: 1:550,000

Northern Road Link

Corridor Alternatives

Figure Number:ES-2REV:PA

Client:Marten Falls and Webequie First NationsProject Number:679878Date:2022-03-09

DSC

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ADNDND

NOTES

1. Coordinate System: NAD 1983 CSRS UTM Zone 16N.

2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.

3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information, and Land Information Ontario (LIO) Warehouse Open Data (<https://geohub.lio.gov.on.ca/>). Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

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ES.2.3 Approach to the Selection of the Preferred Alternative Methods of Carrying Out the Project

The EAR/IS will present the detailed comparative assessment of the advantages and disadvantages of the alternative corridors and demonstrate how the preferred corridor was selected as the Project.

In addition, alternative ancillary infrastructure such as aggregate sites (pits and quarries), and other associated infrastructure will be identified and their potential effects assessed in the EAR/IS.

Criteria are being developed to assess the advantages and disadvantages of the alternative methods against a set of factors. Preliminary criteria and factors have been included in this Proposed ToR for consultation with Indigenous communities and interested persons, regulators, and other stakeholders. A comparative evaluation of alternative methods will be undertaken to yield a balanced design solution that maximizes the degree to which potential project benefits and opportunities can be realized, while minimizing adverse environmental effects. The sum of the preferred methods will constitute the Project. Once the preferred methods (i.e., the Project) have been identified, an effects assessment will be completed for the Project. Assessment methods are described in **Section 6**.

ES.3 Description of the Project

The Project will be designed in accordance with the MTO's Roadside Design Manual (MTO, 2020a), the Transportation Association of Canada's Geometric Design for Canada Roads standards, the MTO/TAC supplemental standards used for municipal roads and provincial highways, and other appropriate engineering, environmental and related provincial design criteria. The following project description is based on conceptual design and is subject to change.

The width of right-of-way (ROW) is expected to be approximately 100 m, with a cleared area of 60 m. The road top width is expected to be 11.5 m in width along the centreline, including two (2) undivided 3.5 m lanes, shoulders and ditches. It will be gravel surfaced, including shoulders, with material sourced from aggregate sites that have suitable sand and gravel deposits (e.g., eskers). The design of the underlying subgrade material and its depth below the surface of the road will accommodate the anticipated typical vehicle types (e.g., light pick-up trucks, heavy industrial/ commercial transport trucks and trailers) that are envisioned to use the road, including their weight/load. The design speed for the Project is currently anticipated at 100 km/h, with an anticipated posted speed limit of 80 km/h. The Annual Average Daily Traffic volume will be further assessed in the EA/IA and is expected to exceed 500 vehicles.

Alternative design considerations, such as those involving waterbody crossing structure types (i.e., culverts, bridges) and span lengths, road alignment, and aggregate sites (pits and quarries), will be evaluated based on site-specific environmental, technical and cost considerations, with input from Indigenous communities (e.g., Indigenous Knowledge/Indigenous Land and Resource Use [IK/ILRU]), federal and provincial regulators, the public and stakeholders.

ES.4 EA/IA Consultation and Engagement

The proponent has prepared a Consultation and Engagement Plan to meet the requirements of the EA Act, included as **Appendix B**. The plan was developed in accordance with the requirements of the EA Act and applicable codes of practice. The consultation and engagement undertaken for the Northern Road Link Project EA/IA will be meaningful, transparent, inclusive, accessible, flexible, and collaborative. In accordance with the applicable codes of practice (MOE, 2014a, 2014b, 2014c), consultation and engagement for this Project will:

- › Identify Indigenous communities and other stakeholders who may be affected by or have an interest in the undertaking;
- › Share relevant information about the proposed Project;
- › Receive guidance on the ToR and EA/IA;
- › Identify information, concerns and opportunities to be considered in the EA/IA;
- › Support the development of commitments by the proponent;
- › Encourage the submission of requests for further information and analysis early in the EA/IA; and
- › Enable MECP to make a fair and balanced decision on the ToR and the EAR/IS.

To obtain input from diverse interested and potentially affected parties, a variety of consultation and engagement methods will be used. These methods will include notification letters, direct mail/email, notices and newspaper advertising, comment forms, newsletters, videos, radio shows and livestreams, Indigenous community open houses (in-person and/or virtual), public and stakeholder open houses, and milestone and strategic meetings as required, a Project website and social media. Virtual meetings may be needed in replacement of in-person meetings based on challenges related to the current COVID-19 pandemic. COVID-19 protocols will be observed for in-person meetings and Open Houses.

The information collected through these methods will be documented in the Project's Record of Consultation (RoC) that will include all consultation and engagement activities undertaken. The proponent expects that, during the EA/IA process, issues will arise that will need to be resolved. To manage these issues, all comments, questions and concerns will be documented in the RoC and responded to accordingly. The comments and responses will be included in the EAR/IS, as applicable, including how feedback will be incorporated into the EA/IA.

ES.5 Indigenous Knowledge

An IK Program will be conducted during the EA/IA to collect IK/ILRU for consideration and incorporation in the EA/IA. The information generated through the IK Program will be used in concert with western scientific approaches to form the foundation for characterizing baseline conditions, predicting potential project impacts, and determining appropriate mitigation and monitoring methods. The program will include collection of existing IK/ILRU information as well as completion of Project-specific studies. IK and information on ILRU shared and/or collected through the program will be governed by IK Sharing Agreements.

ES.6 Assessment Methods

This Proposed ToR provides preliminary information on assessment methods for the Project.

A comparative evaluation of alternative methods of carrying out the Project will be undertaken, and the sum of the preferred methods will constitute the Project. The criteria for the assessment of alternatives methods have yet to be developed and will be based on the EA Act and the IAA requirements, feedback from engagement with Indigenous communities and interested persons, discussion with regulators, available IK/ILRU, environmental studies, and desktop analysis of available published sources. Preliminary criteria are presented in this Proposed ToR.

Once the preferred methods (i.e., the Project) have been identified, an effects assessment will be completed for the Project. The EAR/IS will provide a description of the methods used to support the assessment of Project-related effects on Valued Components (VCs) within the following components of the environment:

- › Aboriginal and Treaty Rights and Interests;
- › Physical environment;
- › Biological environment;
- › Socio-economic environment;
- › Cultural heritage resources; and
- › Human health.

The EAR/IS will detail the effects assessment methods used to determine potential Project-related effects and cumulative effects. The methods used in the EA/IA will be consistent with available guidance documents and current best practices for EAs in Ontario and Canada. The assessment methods will include the following:

- › Selection and scoping of final VCs, including study areas and pathway of effects;
- › Establishment of existing conditions of the study areas as the baseline;
- › Identification of project interactions and potential effects;
- › Identification of effective and established mitigation measures;
- › Identification of residual effects (i.e., net effects) after applying mitigation measures;
- › Assessment of cumulative effects; and
- › Follow-up commitments and monitoring programs for the assessment.

Available IK/ILRU information will be incorporated into the EA/IA as appropriate and as it becomes available, as will information received from Indigenous groups through consultation and engagement.

ES.7 Environmental Effects Assessment

This Proposed ToR presents preliminary information on indicators, baseline characterization, and potential Project-related effects, for each VC. The environmental effects assessment will be informed, validated, and finalized through consultation and engagement with regulatory agencies, Indigenous communities, the public and other interested persons.

Table ES-4 summarizes the preliminary VCs and indicators for the Project's environmental effects assessment.

Table ES-4: Preliminary List of Valued Components and Indicators

Preliminary Valued Component	Preliminary Indicators
Aboriginal and Treaty Rights and Interests	
Indigenous Use of Land and Resources	Sites and areas used for rights-based ^(a) activities and other interests (e.g., hunting, trapping, fishing, gathering)
	Availability or quantity of resources (e.g., wildlife, fish, vegetation) for -rights-based activities and other interests (e.g., harvesting and gathering)
	Quality or perceived quality of resources for rights-based activities and other interests
	Access to sites and areas used for rights-based activities and other interests
Cultural Continuity and Well-being	Culturally important sites and areas (e.g., ceremonial sites, place names, teaching sites, archaeological sites)
	Sufficiency or perceived sufficiency of culturally significant sites, areas and/or resources
	Cultural landscapes and access to travel routes
	Environmental stewardship
	Experience of being on the land
	Cultural traditions and way of life
	Mental well-being and future outlook of community members
	Social and family interactions and community cohesion
	Diet and food security
	Cultural knowledge transfer and language protection
Physical Environment	
Air Quality	Concentrations of air contaminants:
	› NOx
	› CO
	› SO ₂
	› TSP
	› PM ₁₀
	› PM _{2.5}
	› Selected VOCs
	› PAHs (benzo(a)pyrene)
Greenhouse Gases Emissions	Quantification of GHG emissions (CO ₂ , CH ₄ , N ₂ O) expressed as CO ₂ e

Preliminary Valued Component	Preliminary Indicators
Physical Environment (Cont'd)	
Noise	<ul style="list-style-type: none"> › Continuous one-hour equivalent sound and vibration level (Leq, 1hr) › Day-night sound and vibration level (Ldn) › Day-time sound and vibration level (Ld) › Night-time sound and vibration level (Ln) › Percent highly annoyed (%HA)
Groundwater	Groundwater quantity
	Groundwater quality
Surface Water	Surface water quantity
	Surface water quality
Geology, Terrain and Soils	Terrain type and distribution
	Soil quality and distribution
	Geochemical hazards (potential for metal leaching and acid rock drainage)
	Geohazards
	Permafrost
Visual Environment	Visual contrast/character
	Visibility
	Visual sensitivity
Biological Environment	
Fish and Fish Habitat	Fish and aquatic species, including fish Species at Risk: <ul style="list-style-type: none"> › Habitat quantity › Distribution and connectivity to habitat and migration › Survival, reproduction, and abundance
	Fish habitat: <ul style="list-style-type: none"> › In-situ water quality › Physical habitat conditions (e.g., substrate, cover, depth) › Benthic invertebrate community
Wildlife and Wildlife Habitat	Abundance and distribution
	Habitat availability (quantity, quality, configuration, and connectivity)
	Species richness
	Species habitat specificity
	Predation/habitat usage (other wildlife) and human access
Birds and Bird Habitat	Abundance and distribution
	Habitat availability (quantity, quality, configuration, and connectivity)
	Species richness
	Species habitat specificity
	Predation/habitat usage (other wildlife) and human access
Plants and Vegetation Communities	Vegetation type abundance (quantity and quality)
	Vegetation biodiversity

Preliminary Valued Component	Preliminary Indicators
Biological Environment (Cont'd)	
Species at Risk	<ul style="list-style-type: none"> › Abundance and distribution › Habitat availability (quantity, quality, configuration, and connectivity) › Species richness › Species habitat specificity › Predation habitat usage (other wildlife), and human access
Socio-economic Environment	
Regional and Local Economy	Employment: <ul style="list-style-type: none"> › Employment and unemployment rates › Labour force participation rate › Jobs available
	Income: <ul style="list-style-type: none"> › Median annual income (total, after-tax, employment income) › Proportion of population with low income
	Cost of living: <ul style="list-style-type: none"> › Annual Average Consumer Price Index (CPI) › Monthly average retail prices for select products (e.g., food, fuel, transportation, health and personal care, recreation) › Average annual spending on goods and services per household
	Government finances: <ul style="list-style-type: none"> › Total Revenue by type (e.g., own source, consumption taxes, property taxes, capital taxes) › Total Expenditures by type (e.g., transportation, health, education, recreation and culture)
	Mining and forestry activity: <ul style="list-style-type: none"> › Area (ha) or number of active mines › Area (ha) or number of mining claims › Area (ha) or number of potential tenures affected
Community Services and Infrastructure	Housing and accommodation: <ul style="list-style-type: none"> › Rate of homeownership › Percent of household income on shelter costs › Vacancy rate › Average housing cost (by dwelling type) › Average rent (by dwelling type) › Total number of new housing starts and completions › Total number of individuals experiencing homelessness
	Health care services: <ul style="list-style-type: none"> › Inflow/outflow ratios › Average wait time for access to health care services (e.g., practitioner/ doctor, mental health and family services, emergency services) › Percentage of population that has a regular health care provider › Total number of physicians in region/area
	Air transportation: <ul style="list-style-type: none"> › Number of arrivals and departures by air › Passenger volume › Type of arrivals by air (e.g., non-resident/resident arrivals)

Preliminary Valued Component	Preliminary Indicators
Land Use and Recreation	Outdoor recreation: <ul style="list-style-type: none"> › Number of households participating in outdoor activities, by activity type (e.g., walking, cross-country skiing, trapping, ATV, snowmobiling, snowshoeing, hunting, fishing) › Increase of non-locals (tourists) using area for outdoor activities
	Parks and protected areas: <ul style="list-style-type: none"> › Total disturbed area (ha) of provincial parks, ANSIs, IPCAs and/or Conservation Reserves
Community Safety	Crime rate (domestic violence, sexual and physical assault) : <ul style="list-style-type: none"> › Police-reported crime rate (by population and by type) › Incarceration rate
	Substance abuse: <ul style="list-style-type: none"> › Proportion of population with an addiction problem or substance use disorder › Total number of individuals seeking treatment for substance use › Rate of overdose deaths
Cultural Heritage Resources	
Archaeological resources	Archaeological resources
Built heritage resources and cultural heritage landscapes	Built heritage resources and cultural heritage landscapes
Human Health	
Human Health	Air quality
	Noise
	Country foods
	Surface water and groundwater quality
	Soil quality

Note: (a) The term 'rights-based activities' encompasses Indigenous communities' practices such as hunting, trapping, fishing, gathering, teachings, and cultural activities and other community activities.

ES.8 Climate Change Assessment

The EAR/IS will include a climate change assessment that will incorporate three main considerations as per the MECP guide *Considering Climate Change in the Environmental Assessment Process* (MOECC, 2017):

- › The impacts of the Project on climate change (i.e., GHG emissions related to construction, commissioning, operation and maintenance);
- › The impacts of climate change on the Project (i.e., Climate Change Resilience Assessment on the access road corridor and supporting infrastructure); and
- › Identifying and minimizing negative climate change impacts during implementation of the Project (i.e., options for climate impact risk reduction for the access road corridor and supporting infrastructure).

The climate change assessment will respond to MECP's expectation that the proponent takes into account:

- › The Project's expected production of greenhouse gas emissions and impacts on carbon sinks (i.e., climate change mitigation); and
- › Vulnerability and resilience of the Project and adjacent ecosystems to changing climatic conditions (i.e., climate change adaptation).

ES.9 Commitments

The EAR/IS will include a comprehensive list of commitments made by the proponent during of EA/IA process, and how they will be addressed. These commitments may relate to the Project construction, operation and maintenance, mitigation measures, consultation and engagement with other Indigenous communities and compliance monitoring.

ES.10 Monitoring

The Project will be carried out in full compliance with federal/provincial laws and best management practices and environmental procedures for road construction and operation. The proponent will prepare a monitoring framework which will initially be developed during the EA/IA. The EAR/IS will include a description of the monitoring programs that have been recommended during the development of the EA/IA. In relation to Indigenous rights and interests, the Project will adhere to all commitments and monitoring developed during consultation and engagement with Indigenous communities. The monitoring framework will detail monitoring activities during the construction and operation phases of the Project related to Aboriginal and Treaty Rights and Interests, the Physical Environment, the Biological Environment (including Species at Risk), and Cultural Heritage Resources. The EAR/IS will include a conceptual monitoring plan which will encompass compliance monitoring and effects monitoring. Monitoring programs will be designed to monitor specific mitigation measures required by approvals needed for the Project (such as Species at Risk ESA authorizations).

Construction and operations monitoring will identify actual Project effects, assess the effectiveness of the mitigation/restoration/enhancement measures to minimize these effects, (or in the case of potential benefits optimize these effects), and evaluate the need for any additional action to meet environmental commitments and obligations, and to confirm that mitigation/restoration/enhancement measures are effective.

ES.11 Flexibility to Accommodate New Circumstances

The Project, as described in this Proposed ToR, is based upon a conceptual level of design information, and does not represent the final design, location and scope of the proposed undertaking. Changes to the Project design may be made to accommodate Indigenous community, federal and provincial regulators, public or stakeholder concerns. Changes may also be made based on ongoing engineering design, baseline characterization, and the effects assessment. Therefore, the proposed Project presented in this ToR by MFFN and WFN should be viewed as a preliminary description, which is subject to change as the Project evolves during the EA/IA.

For the purposes of preparing this Proposed ToR, flexibility is defined to include a variation or modification to the ToR itself, such as changes in approach to engagement with Indigenous communities, project description, VC/indicator selection, study area refinements, baseline characterization, and effects assessment. Any proposed minor modifications to the ToR will be discussed with MECP prior to proceeding with the change.

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List of Acronyms and Abbreviations

Term	Definition
AAQC	Ambient Air Quality Criteria
ADDT	Annual Average Daily Traffic
ANSI	Areas of Natural and Scientific Interest
ARD	acid rock drainage
ARU	Acoustic recording unit
ASCRS	All-Season Community Road Study
AZA	Animbiigoo-Zaagi'igan Anishinaabek First Nation
BTEX	benzene, toluene, ethylbenzene and xylene
CAAQS	Canadian Ambient Air Quality Standards
CANVEC	Canadian National Vector (dataset)
CBLUP	Community Based Land Use Plan
CCME	Canadian Council of Ministers of the Environment
CH ₄ ,	methane
CN	Canadian National (railway)
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSSARO	Committee on the Status of Species at Risk in Ontario
COVID-19	Coronavirus disease
CPI	Consumer Price Index
CSA	Canadian Standards Association
Dillon	Dillon Consulting Limited
DFO	Department of Fisheries and Oceans Canada
DPM	diesel particulate matter
EA	Environmental Assessment
EAR	Environmental Assessment Report
EASR	Environmental Activity and Sector Registration
ECA	Environmental Compliance Approval
ECCC	Environment and Climate Change Canada
EIA	Environmental Impact Assessment
ELC	Ecological Land Classification
END	Endangered
ENDM	Ministry of Energy, Northern Development and Mines (now NDMNRF)
ESA	Endangered Species Act
ESRI	Environmental Systems Research Institute
GHG	Greenhouse Gas

Term	Definition
GIS	Geographic Information System
GoC	Government of Canada
GPS	Global Positioning System
HA	highly annoyed
HADD	harmful alteration, disruption or destruction
IA	Impact Assessment
IAA	Impact Assessment Act
IAR	Impact Assessment Report
ICA	Initial Corridor Alternatives
ICE	Indigenous and Community Engagement
IK	Indigenous Knowledge
ILRU	Indigenous Land and Resource Use
IS	Impact Statement
ISC	Indigenous Services Canada
ISO	International Organization for Standardization
Ld	day-time sound and vibration level
Ldn	day-night sound and vibration level
Leq,1hr	continuous one-hour equivalent sound and vibration level
Ln	night-time sound and vibration level
LRIA	<i>Lakes and Rivers Improvement Act</i>
LSA	local study area
MECP	Ontario Ministry of the Environment, Conservation and Parks
MFCAR	Marten Falls Community Access Road
MFFN	Marten Falls First Nation
MHSTCI	Ontario Ministry of Heritage, Sport, Tourism and Culture Industries
MNDMF	Ontario Ministry of Northern Development, Mines and Forestry (now NDMNRF)
MNO	Métis Nation of Ontario
MNR	Ontario Ministry of Natural Resources (now NDMNRF)
MNRF	Ontario Ministry of Natural Resources and Forestry (now NDMNRF)
MOE	Ontario Ministry of the Environment (now MECP)
MOECC	Ontario Ministry of the Environment and Climate Change (now MECP)
MOI	Ontario Ministry of Infrastructure
MOU	Memorandum of Understanding
MTO	Ontario Ministry of Transportation
NAPS	National Air Surveillance Program
N ₂ O	nitrous oxide
NDMNRF	Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry
NoC	Notice of Commencement
NO _x	nitrogen oxides
NPC	Noise Pollution Control

Term	Definition
NRL	Northern Road Link
NSA	noise sensitive area
NSR	noise sensitive receptors
OME	Ontario Ministry of Energy
OPSS	Ontario Provincial Standard Specification
PCA	Preliminary Corridor Alternatives
PM _{2.5}	particulate matter of an aerodynamic diameter less than or equal to 2.5 microns
PM ₁₀	particulate matter of an aerodynamic diameter less than or equal to 10 microns
PTO	Provincial Territorial Organizations
PTTW	Permit to Take Water
RoC	Record of Consultation
ROW	right-of-way
RSA	regional study area
RSMIN	Red Sky Métis Independent Nation
RSO	Revised Statutes of Ontario
SARA	<i>Species at Risk Act</i>
SC	Species of Concern
SNC-Lavalin	SNC-Lavalin Inc.
SO ₂	sulphur dioxide
SWH	Significant Wildlife Habitat
SWOT	Strengths, Weaknesses, Opportunities, Threats
TAC	Transportation Association of Canada
SWHTG	Significant Wildlife Habitat Technical Guide
TC	Transport Canada
the Agency	Impact Assessment Agency of Canada
THR	Threatened
TISG	Tailored Impact Statement Guidelines
TNM	Traffic Noise Model
ToR	Terms of Reference
TSP	total suspended particulate – particulate matter of aerodynamic diameter less than or equal to 30 microns
US DOT	United States Department of Transportation
US EPA	United States Environmental Protection Agency
US FTA	United States Department of Transportation Federal Transit Administration
VC	Valued Component
VNS	Visual Nature Studio
VOC	volatile organic compound
WFN	Webequie First Nation
WHO	World Health Organization
WSR	Webequie Supply Road

List of Units

Term	Definition
%	percent
d	day
dB	decibel
dBA	A-weighted decibels
h	hour
km	kilometre
km ²	square kilometre
km/h	kilometre per hour
L	litre
m	metre
mm	millimetre

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Appendix B	Environmental Assessment Consultation and Engagement Plan
Appendix C	MECP Letter to Proponent on Northern Road Link Environmental Assessment (November 3, 2020)
Appendix D	Valued Components Preliminary Spatial Boundaries
Appendix E	Terms of References Commitments
Appendix F	Consultation Materials for the Initial Corridor Alternatives
Appendix G	Memorandum of Understanding

1 Introduction

This Proposed Terms of Reference (ToR) for the Northern Road Link Project (the Project) has been prepared by SNC-Lavalin Inc. (SNC-Lavalin) on behalf of the Marten Falls First Nation (MFFN) and Webequie First Nation (WFN) to meet the requirements of the Ontario *Environmental Assessment Act*, RSO 1990, c. E. 18 (the EA Act). The ToR establishes the framework for the planning and decision-making process of the Environmental Assessment (EA) and is to be submitted by the proponent to the Ministry of the Environment, Conservation and Parks (MECP) for review and an approval decision. Should the ToR be approved, an Environmental Assessment/Impact Assessment (EA/IA) will be undertaken and an Environmental Assessment Report/Impact Statement (EAR/IS) will be prepared in accordance with the approved ToR².

This Proposed ToR has been prepared following the ToR Code of Practice (MOE, 2014a). A Draft ToR was presented and made available for review to Indigenous communities, regulators, and other interested parties for consultation and engagement. Consultation and engagement input on the Draft ToR was incorporated into this Proposed ToR.

A Record of Consultation (RoC) is being released alongside the Proposed ToR, as **Appendix A**. The RoC is a stand-alone document that will be reviewed by the MECP and is one of many important elements when determining whether the ToR should be approved. The RoC describes the consultation with and engagement of Indigenous communities, federal and provincial regulators, the public, and stakeholders during the development of the ToR by the proponent, including feedback received (comments, concerns, questions) and proponent responses, and the results of that consultation and engagement. In addition, consultation and engagement activities carried out for the Project are summarized in **Section 4**.

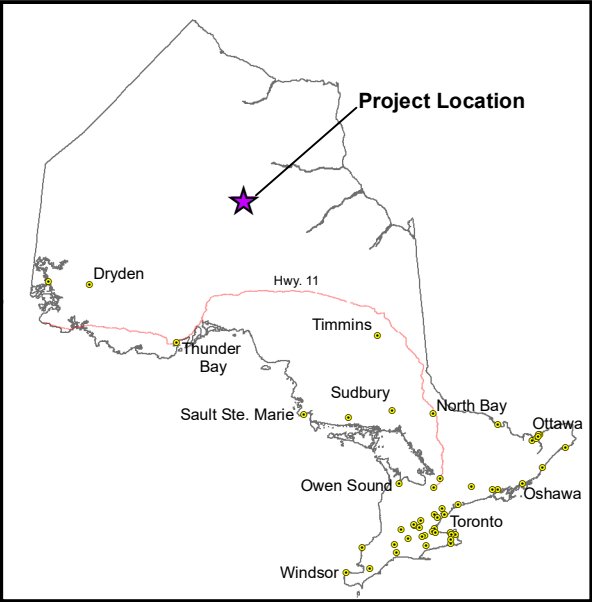
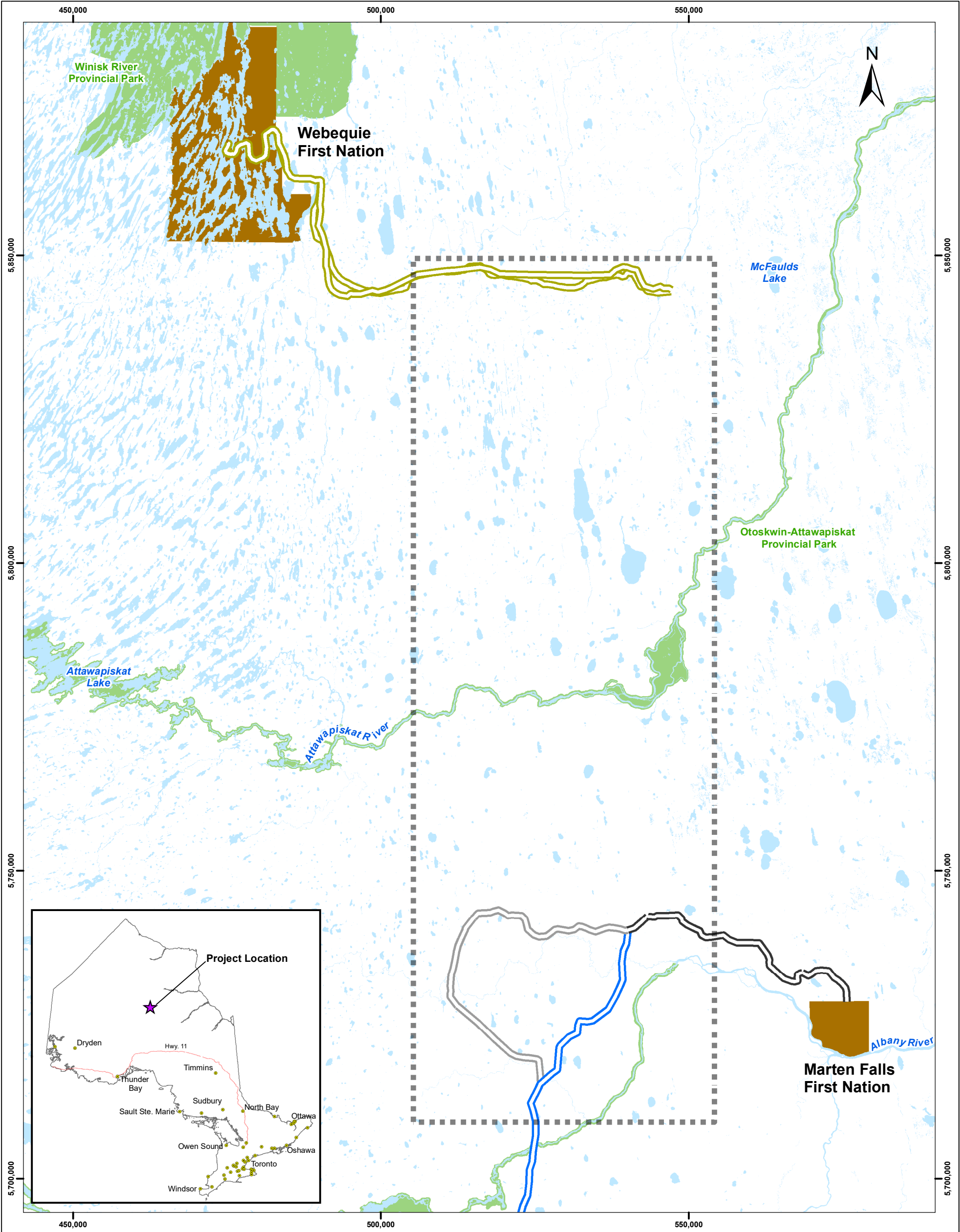
1.1 Project Understanding

It is the intention of MFFN and WFN to prepare an EA under the EA Act for the design, construction, and operation and maintenance of a proposed all-season road called the Northern Road Link (the Project). The communities of MFFN and WFN are remote Indigenous communities in northwestern Ontario and are not currently accessible by all-season roads. The proposed Project is a multi-use road between the proposed Marten Falls Community Access Road (MFCAR) and the proposed Webequie Supply Road (WSR) in northern Ontario. The Project will connect the Ring of Fire mineral deposits in the McFaulds Lake area to the highway network via the MFCAR. It will provide an opportunity to connect WFN to the highway network. The Project would enable economic activity by facilitating the transport of goods, services and resources. Development of the proposed NRL Project is dependent on development of the proposed MFCAR project, as it needs to connect to MFCAR. The Project location is shown in **Figure 1-1**.

² As explained in Section 1.6.2 of this ToR, in addition to requirements under the Ontario EA Act, the Project it is anticipated that the Project will be subject to an Impact Assessment (IA) under the federal *Impact Assessment Act*, S.C. 2019, c. 28, s. 1. The term "EA/IA" has been included to account for a joint provincial/federal process. The provincial/federal EA/IA reporting would be combined into a single provincial Environmental Assessment Report (EAR)/federal Impact Statement (IS) to create a single document for review. The term "EAR/IS" has been included to account for this possibility.

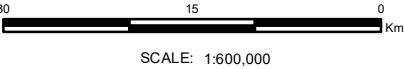
MFFN is located approximately 430 km northeast of Thunder Bay, with a population of 827 registered members including 354 on-reserve (GoC, 2021a). WFN is located approximately 540 km north of Thunder Bay with a population of 937 registered members including 326 on-reserve (GoC, 2021a). Access by winter roads is becoming more limited due to climate change; travel by airplane is expensive and limits business and economic development. **Figure 1-1** shows the locations of the MFFN and WFN communities in relation to the proposed Project.

Mine development in the Ring of Fire area is not currently feasible without year-round access. The Project will complete the necessary transportation infrastructure link between the Ring of Fire and the highway network to facilitate mine development and operations. The Project will also reduce the cost of exploration activity and is likely to help increase future exploration activity for minerals, which will further add to the ability of the proponent to participate in new economic opportunities within their traditional territories.



Legend:

- Project Location
- Proposed Webequie Supply Road (WSR) Alternatives
- Proposed Marten Falls Community Access Road (MFCAR) Alternatives
- MFCAR East/West Option Overlap
- MFCAR West Option
- MFCAR East Option
- First Nation Reserve
- Airports
- Provincial Park
- Waterbody
- Highway 11
- Cities



Northern Road Link

Project Location

Figure Number:			REV:		
1-1			PA		
Client:		Project Number:	Date:		
Marten Falls and Webequie First Nations		679878	2022-03-09		
DSC			DRN	CHK	APP
			AD	ND	ND

NOTES

1. Coordinate System: NAD 1983 CSRS UTM Zone 16N.

2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.

3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information and Land Information Ontario (LIO) Warehouse Open Data (<https://geohub.lio.gov.on.ca/>), Ontario Ministry of Natural Resources and Forestry (OMNRF). Download Date : 2021-02-04

DISCLAIMER

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1.2 Proponent

The proponents of the Project EA/IA and preliminary design are Marten Falls First Nation (MFFN) and Webequie First Nation (WFN), referred to collectively as 'the proponent' in this document. Proponent options for road ownership, maintenance activities and liability are being considered in discussion with the Province of Ontario. Funding for the costs of the EA/IA for this Project is being provided by the Province of Ontario.

Should this ToR be approved, the proponent will prepare the EAR/IS in accordance with the approved ToR. The proponent has assembled a team that consists of two Project Co-Leads and the Working Group. Each community has appointed one Project Co-Lead to manage and lead the process under the direction of the Working Group. The Working Group consists of four members, two from each community, and they provide overall strategic direction directly to the two Project Co-Leads. The Working Group also reports to the Chiefs and Councils of the two First Nations, and they are supported by the two Co-Leads in doing so.

Project Co-Leads and Working Group members are listed below:

Project Co-Leads

- › Michael Fox, Indigenous & Community Engagement (ICE), WFN Lead
- › Qasim Saddique, Suslop Inc., MFFN Lead

Working Group

- › Lawrence Baxter, MFFN Representative
- › Alanna Downey Baxter, MFFN Representative
- › Roy Spence, WFN Representative
- › Gordon Wabasse, WFN Representative

1.2.1 Proponent Contact Information

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The Project ToR and EAR/IS will be prepared by SNC-Lavalin Inc. and Dillon Consulting Limited (Dillon). The primary consultant team representative for the EA/IA is:

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1.3 Background and Context

To provide context and background for the Project and the scope of this EA/IA, it is important to understand the various road/transportation studies that have been completed in the region that are relevant to the NRL Project. Over the last 10+ years, there has been extensive examination (planning and assessment) of alternative transportation options and alternative road corridors around the McFaulds Lake area for interconnecting future mine developments and remote Indigenous communities the highway network. A brief description of the relevant studies is presented below in chronological order. These studies have contributed to the rationale for the development of the Project.

Winter Road Re-Alignment Study (2008)

On behalf of five First Nations (Marten Falls, Eabametoong, Neskantaga, Nibinamik and Webequie), the Matawa First Nations Tribal Council conducted studies to examine realigning selected sections of winter roads, and assessment of improvement needs for the entire winter road systems for all five First Nations in the study area (Neegan Burnside Ltd., 2008, 2009). A number of the winter roads for consideration in the study were in the vicinity of the proposed Project. The study included extensive consultation with the Indigenous groups, regulatory agencies and other stakeholders (e.g., forestry companies and outfitters) and identified a number of alternative solutions (e.g., improvement to road design and construction standards) to address deficiencies in the winter road system.

Cliffs Ferroalloys Black Thor Mine Integrated Transportation System (2009 – 2013)

Between 2009 and 2013, Cliffs Natural Resources (“Cliffs”) was investigating the development of a chromite deposit (i.e., Black Thor Chromite Mine) in the McFaulds Lake area of Ring of Fire. In 2011, Cliffs announced its intention to move forward with permitting and development of the open pit/underground mine as well as an on-site ore processing facility, an off-site ferrochrome production facility and an Integrated Transportation System. A detailed feasibility level analysis was completed on the Black Thor project by Cliffs Natural Resources in May 2013 (Noront, 2022a).

Ore was to be transported by truck and rail to the proposed ferrochrome processing facility. Pertinent to the Project was an all-season access road which was a key component of the Integrated Transportation System. The road would follow a north-south transportation corridor from Painter Lake Road to the Ring of Fire for the purpose of moving people, supplies and resources between the proposed mine and the highway network. According to the documentation of alternatives development prepared for MFCAR, the intention was that “Indigenous communities and other natural resource companies would be permitted users of the all-season access road” (AECOM, 2020a). Cliffs also investigated the availability of aggregate along the corridor for road construction. The identification of the north-south corridor by Cliffs “considered a range of

alternative methods for an all-season access road. Input received from consultation for the project was also used to identify the location of the corridor and alignments” (AECOM, 2020a). Cliffs suspended capital spending on the project in 2014 and terminated its federal EA in January 2015 (Northern Ontario Business, 2015) and Noront Resources acquired the Cliffs Natural Resources chromite properties in 2015 (AECOM, 2020a).

Around the same time, KWG Resources, also active in the McFaulds Lake area, studied transportation options into the Ring of Fire area (GreenForest Management Inc., 2013) and identified its preference for a rail/road link that followed a similar corridor to the Cliffs proposed road corridor.

Eagle’s Nest Project, A Federal/Provincial Environmental Impact Statement/Environmental Assessment Report (2013)

In 2013, Noront Resources issued a draft federal/provincial Environmental Impact Statement/Environmental Assessment Report (EIS/EAR) for the proposed Eagle’s Nest mine in the McFaulds Lake area (Knight-Piésold Consulting, 2013a). That report included an examination of alternative transportation corridors (i.e., east-west and north-south) and road types (e.g., winter, all-season and combined winter/all-season) that would connect the mine to the highway network.

At present, the Noront EA process is on hold until there is more certainty about a potential all-season road to be developed by others. Noront will apply to modify its project scope and Terms of Reference when road work is sufficiently advanced (Noront, 2022b). Details on the current status of Eagle’s Nest Mine Project can be found on Noront’s website (<http://norontresources.com>). In identifying transportation corridor alternatives for the Eagle’s Nest mine access road, it was Noront’s intention in 2013 to maximize the use of existing winter road corridors and thereby minimize additional clearing and environmental effects. From this assessment, the preferred corridor was identified as an east-west connection via WFN to the Northern Ontario Resource Trail North Road/Pickle Lake Road and Highway 599 near Pickle Lake. The Eagle’s Nest mine access road provided potential all-season access to the highway network for WFN and other Indigenous communities, including the Nibinamik First Nation, Neskantaga First Nation and Eabametoong First Nation.

All-Season Community Road Study (2016)

WFN, in partnership with three other Indigenous communities (Neskantaga First Nation, Nibinamik First Nation and Eabametoong First Nation), completed the All-Season Community Road Study (ASCRS) in June 2016 (Webequie First Nation, Nibinamik First Nation, Neskantaga First Nation and Eabametoong First Nation, 2016). The purpose of this study was three-fold:

- › To engage and inform communities to aide in decision-making with respect to continued further planning of an all-season community road,
- › Help to identify potential corridors for an all-season road should that be the wish of the communities,
- › Assess the business case for an all-season road.

The goal was to get a clear indication from the communities as to where to proceed with regard to development of an all-season community road. The study examined many alternatives, including those previously preferred by Noront Resources, Cliffs and KWG Resources.

From the community engagement and assessment completed, a preferred corridor was identified with a general east-west orientation that connected the four communities to the highway network. The preferred corridor/road from the 2016 ASCRS did not connect to the McFaulds Lake area due to unresolved issues and concerns expressed by some participating Indigenous communities about mining development in the Ring of Fire area.

All-Season Community Road Study – Phase 2 (2017)

In 2017, Nibinamik First Nation and WFN continued the ASCRS on their own to refine the preferred corridor analysis from the previous phase of the study (Cision, 2017). The ASCRS – Phase 2 involved many discussions with Nibinamik First Nation and WFN land users, elders and youth to refine the corridor centreline and to determine support for an east-west connection to the highway network at the Northern Ontario Resource Trail North Road/Pickle Lake Road. The Phase 2 study also (Nibinamik First Nation and Webequie First Nation, 2017) included more extensive data collection, including field studies and gathering of more Indigenous Knowledge (IK) information. The Phase 2 study identified a refined east-west all-season road corridor, which has essentially the same purpose of connecting WFN and Nibinamik First Nation to the highway network at Pickle Lake.

From the Phase 2 study, it was determined there is reasonably strong support for an all-season community road to the highway network, but not clear and full community support amongst the potentially connected and/or affected Indigenous communities for interconnection of the all-season road to mining activity in the McFaulds Lake area.

MFFN – Community Access Road Phase 2 Studies (2018 to 2021)

MFFN conducted several desktop and field investigations for a future Environmental Assessment of the MFCAR Project to support regulatory review of future applications and inform alternative route planning.. Studies included: a geotechnical investigation and aggregate sourcing; baseline studies for biology, hydrogeology, and surface water; and a strengths, weaknesses, opportunities and threats (SWOT) analysis (AECOM, 2021; KBM, 2019a and 2019b; KBM and EDI, 2019; KGS, 2020a and 2020b; Zoetica, 2019). These studies have informed the proposed Project.

1.4 Purpose and Rationale of the Project

This section provides a brief description of the purpose and rationale for the Project, and of studies or other works carried out to determine the need for the Project.

1.4.1 Purpose of the Project

The purpose of the Project is the design, construction, and operation and maintenance of a proposed all-season road between the proposed MFCAR and the proposed WSR.

The Project will connect the mineral deposits in the McFaulds Lake area in the Ring of Fire to the highway network via the MFCAR, by constructing a new all-season multi-use gravel road with an approximate length of 117 km to 164 km (depending on the chosen corridor). The Project will also provide an opportunity to connect WFN to the highway network. The Project would enable a broader range of economic activity than currently exists by facilitating the transport of goods, services and resources.

To accommodate changes and/or new circumstances arising during the environmental planning and design process, the purpose statement will be reviewed and modified as necessary throughout the Environmental Assessment/Impact Assessment (EA/IA).

The objectives of the Project include:

- › Stimulate sustainable regional economic activity by facilitating all-season road movement of materials, supplies, and people to and from the mineral deposit area during Ring of Fire exploration and mine development.
- › Provide employment and other economic opportunities to MFFN, WFN and local Indigenous community members, while residing in or near their communities, preserving their language and culture.
- › Enable experience and training opportunities for youth to encourage pursuit of additional skills through post-secondary education.

1.4.2 Rationale for the Project

The Ring of Fire in the Ontario far north is considered one of the most promising mineral development opportunities in the province in over a century, with potential for multi-generational chromite production and significant production of nickel, copper and platinum (NDMNRF, 2021a). Mine development in the Ring of Fire area is currently unlikely without year-round access. MFFN and WFN are committed to the sustainable development of their traditional territories. The NRL Project will be a multi-use road between the proposed MFCAR and the proposed WSR. By providing an opportunity to connect the MFCAR to the WSR, the NRL Project will complete the necessary transportation infrastructure link between WFN, the Ring of Fire and the highway network to facilitate economic development in the region. The Project is an important step in linking the communities, the region and the province in general with the economic opportunities surrounding the Ring of Fire.

MFFN and WFN are remote Indigenous communities in northwestern Ontario and are not currently accessible by all-season roads. Each of these communities has initiated their own separate all-season road development projects (**Figure 1-1**). MFFN is undertaking the development of the MFCAR to connect its community to the highway network to the south and to improve the community's well-being by facilitating the transport of goods, services, and resources. WFN is undertaking the development of the WSR between its community and the McFaulds Lake area of the Ring of Fire to facilitate the movement of materials, supplies and people from the Webequie Airport to the proposed mine development and mineral exploration activities. Each proponent is undertaking a federal-provincial coordinated EA/IA for these road projects. The ToRs for the MFCAR project (AECOM, 2020a) and the WSR project (SNC-Lavalin, 2020) have both been approved by the Province of Ontario.

MFFN is an Anishinaabe community located on the north bank of the Albany River, approximately 175 km southeast of WFN, 160 km northeast of the Municipality of Greenstone (i.e., approximately 70 km north of Highway 11) and 430 km northeast of the city of Thunder Bay. WFN is an Ojibway community, located approximately 540 km north of Thunder Bay and 175 km northwest of MFFN. These communities are only accessible by winter road or air transportation. The operational season for winter roads has become shorter and less reliable due to climate change and no longer meets the needs of the communities. Transportation by air is expensive, impacted by weather and has limited availability, so severely limits employment, business, economic and social development opportunities for community residents.

In *Building Better Lives: Ontario's Long-term Infrastructure Plan 2017* (MOI, 2017), the province acknowledges that the communities and urban centres in northern Ontario need a multimodal transportation system and that the North is especially vulnerable to the effects of climate change, particularly communities reliant on winter roads. The *Growth Plan for Northern Ontario, 2011* (MOI and MNDMF, 2011) includes a commitment by the province to work with remote communities and other orders of government towards improved access for community residents. In *Connecting the North: A Draft Transportation Plan for Northern Ontario* (MTO, 2021), the province recognizes that there is a growing demand for the expansion of all-season roads in the Far North, driven by a variety of socio-economic factors, climate change vulnerability and, in the case of the Ring of Fire region, responsible resource development. The plan further states that building a road to the Ring of Fire is a critical step to unlocking economic benefits in the region (MTO, 2021) and that Ontario will continue to support MFFN and WFN as they advance their EAs on their individual road projects³ for all-season roads to connect their communities and to connect their communities to the proposed Ring of Fire developments (MTO, 2021). Furthermore, improved road infrastructure in the north, including all-season roads, can reduce the cost of delivering consumer goods, fuel, and construction materials (NDMNRF, 2021a). Lastly, the construction, operation and maintenance of all-season road infrastructure will provide the proponent with opportunities to develop business, technical and project management skills that would be transferable to other projects in the region.

In summary, the NRL Project will create several important linkages, including:

- › Completing the all-season roadway link between the Ring of Fire and the highway network to the south;
- › Connecting the community of MFFN to the Ring of Fire and the associated economic opportunities by an all-season roadway;
- › Provide an opportunity to connect the community of WFN to the highway network to the south and the associated socio-economic opportunities by an all-season roadway;
- › Provide an opportunity to interconnect the communities of MFFN and WFN by an all-season road.

1.5 Purpose of the Environmental Assessment

The purpose of the study (i.e., EA/IA) is to fulfill the requirements for a Comprehensive EA (previously known as an 'Individual EA') for the Project under the EA Act. The Project may also be subjected to an Impact Assessment under the Federal *Impact Assessment Act*, S.C. 2019, c.28, s.1 (IAA).

The EA/IA will assess and identify the preferred alternative methods that will constitute the Project, identify the potential effects of the Project, identify and recommend measures to avoid or minimize potential environmental effects, and identify opportunities to enhance benefits to the environment.

³ Marten Falls First Nation (MFFN) is the proponent of the Marten Falls Community Access Road (MFCAR) project and Webequie (WFN) is the proponent of the Webequie Supply Road (WSR) project.

1.6 Regulatory Framework

This section outlines the provincial and federal regulatory context relevant to the Project, as well as other provincial and federal regulatory requirements that may be applicable to the Project.

1.6.1 Ontario Environmental Assessment Act, RSO 1990, c. E. 18

The EA Act embodies and enables a planning and decision-making process to ensure the protection, conservation, and wise management of the environment. Projects can be classified as falling under either a Class Environmental Assessment process or a Comprehensive Environmental Assessment process.

Comprehensive EAs are completed for those projects that are complex in nature, with the potential for significant environmental effects and require a decision by the Minister of the Environment, Conservation and Parks under the Act.

The Project is subject to the EA Act. On October 28, 2020 MFFN and WFN entered into a Voluntary Agreement with the Minister of the Environment, Conservation and Parks (MECP, MFFN and WFN, 2020), thereby confirming the environmental planning process to be undertaken for the Project, including the need to prepare a Comprehensive EA. The Comprehensive EA process is considered appropriate for addressing the Project's scale, complexity and potential effects. Accordingly, the Project is following a Comprehensive EA process.

The following guidance documents will inform the requirements and preparation of the EAR/IS under the EA Act:

- › *Code of Practice: Preparing and Reviewing Environmental Assessments in Ontario (EA Code of Practice [MOE, 2014b]);*
- › *Code of Practice: Consultation in Ontario's Environmental Assessment Process (MOE, 2014c); and*
- › *Considering Climate Change in the Environmental Assessment Process (MOECC, 2017).*

Table 1-1 provides a summary of provincial regulatory milestones for the Project and estimated dates.

Table 1-1: Provincial Regulatory Milestones

Milestone	Provincial Process Estimated Dates
Notice of Commencement of Terms of Reference	May 4, 2021
Circulation and Notice of Draft Terms of Reference	November 24, 2021
Submission of Proposed Terms of Reference to MECP	April 29, 2022
Minister's Decision on Proposed Terms of Reference	Summer 2022
Notice of Commencement of EA	Summer 2022
Submission of Draft EAR/IS	TBD
Notice of Draft EA/IA for Review	TBD
Submission of Final EAR/IS	TBD
Minister issues Decision on EA	TBD
Consultation and engagement	Throughout the duration of the Project
Other permits and approvals	TBD

EA = Environmental Assessment, EAR/IS = Environmental Assessment Report/Impact Statement, MECP = Ontario Ministry of the Environment, Conservation and Parks.

1.6.1.1 Class Environmental Assessments

Class Environmental Assessments apply to those projects that are deemed approved subject to compliance with an approved standardized planning process. This standardized planning process is for classes or groups of projects that are carried out routinely and have predictable environmental effects that can be largely mitigated. No formal approval under the EA Act is required, provided the procedural requirements of Class EA parent documents are followed, and a request to the Ontario Minister of the Environment, Conservation and Parks to make the Undertaking subject to Part II of the EA Act (the preparation of a Comprehensive EA [i.e., Part II Order]) is not granted.

The Project may require the completion of Class EAs prior to proceeding with construction. The Province of Ontario is undergoing a modernization process for Class EAs, where a new set of legislative, regulatory and policy changes have been proposed and are currently being consulted on (Government of Ontario, 2021a). Required Class EAs for the Project will be identified in consultation with provincial regulators, including the potential application of a Class EA for Resource Stewardship and Facility Development projects. The Comprehensive EA, and appropriate notices, will specify the intent to meet some or all of the Class EAs applicable to the Project in conjunction with the Comprehensive EA requirements, in consultation with relevant provincial ministries.

Class EAs under NDMNRF-NRF

Class EA requirements identified by NDMNRF-NRF for aggregate resources include

- › Describe how aggregate resources required to implement the project will be sourced/secured, including identifying the location of all new aggregate pits.
- › Identify and describe activities and infrastructure associated with accessing, extracting and transporting aggregate (e.g., tree clearing, new or upgraded access or haul roads).
- › Document evaluation of alternatives for sourcing/accessing/transporting aggregate.
- › Describe potential effects / impacts associated with these alternatives and proposed measures to avoid and / or mitigate these impacts.
- › Demonstrate that these components of the project have been consulted on with other government agencies, the public, stakeholders and Indigenous communities, document any concerns raised and how these have been addressed.

If there are deficiencies or gaps in the preparation of the Comprehensive EA (EAR/IS) – for example, enough detail is not provided in the EA/IS to enable future permitting, additional EA Act requirements may apply to the dispositions.

NDMNRF-NRF's Class EA for Resource Stewardship and Facility Development (Class-RSFD) projects applies when NRF disposes of rights to Crown land and/or resources. In order to implement the NRL Project, a number of dispositions of land and/or resources will be required from NDMNRF-NRF. The completion of a Comprehensive EA does not relieve the Ministry of its own Class EA-RSFD responsibilities associated with the dispositions; however, information presented in, and consultation conducted during the EA/IA process, can be used by NDMNRF-NRF to fulfill its Class-RSFD responsibilities.

The EAR/IS must clearly describe all aspects of the Project that will require dispositions of land and/or resources from NDMNRF-NRF, evaluate alternatives considered for the components, describe potential effects/impacts associated with these activities, and proposed measures to avoid and/or mitigate these

impacts. The EAR/IS should also clearly demonstrate that these components of the Project have been consulted on with other government agencies, the public, stakeholders and Indigenous communities, document any concerns raised and how these have been addressed. Including this information will strongly support NRF's fulfillment of its Class EA-RSFD responsibilities as well as enable timely and efficient permitting following completion of the EA/IA process.

The Ministry intends to provide feedback through the EA/IA process to identify areas in the EAR/IS where additional information and/or consultation are needed. The proponent will endeavour to make the recommended changes to the EAR/IS in order to avoid potential delays in the permitting stage of the Project.

In addition to the provision of information about activities involving dispositions and the conduct of consultation on them through the EA/IA process, at the conclusion of the process the NDMNRF-NRF will require a letter from the proponent describing how the Project proponents have met their own EA Act obligations before granting any dispositions to Crown resources.

The NDMNRF-NRF may have Class EA-RSFD responsibilities associated with Project activities that are carried out in order to complete the Comprehensive EA (i.e., where those activities require dispositions of rights to land and/or resources); examples include authorizations to collect fish, clear trees or occupy Crown land. NDMNRF-NRF should be made aware of any such proposed activities as early as possible to enable sufficient lead time to complete applicable RSFD (and permitting) processes and any associated consultation that may be required.

1.6.2 Federal Impact Assessment Act, S.C. 2019, c. 28, s. 1

The Project is scheduled under the Physical Activities Regulations, SOR/2019-285 under the federal IAA, which includes:

51 The construction, operation, decommissioning and abandonment of a new all-season public highway that requires a total of 75 km or more of new right-of-way.

Scheduled projects are required to prepare Initial and Detailed Project Descriptions for submission to the Impact Assessment Agency of Canada (the Agency) for a determination of whether or not a federal IA is required. It is anticipated that a federal IA will be required for the Project, and will include the following phases:

› Planning Phase (180 days):

- Initial Project Description.
- The Agency prepares Summary of Issues.
- Detailed Project Description with Response to the Summary of Issues.
- The Agency determines if an Impact Assessment is required and posts Notice of Impact Assessment Decision with Reasons.
- The Agency engages with Indigenous groups, the public, other jurisdictions, and federal expert agencies and departments in order to develop the Tailored Impact Statement Guidelines (TISG), as well as the Cooperation Plan, Indigenous Engagement and Partnership Plan, Permitting Plan, and Public Participation Plan. Once finalized, the Agency provides the TISG and related impact assessment process plans to the proponent and posts the documents to the Impact Assessment Registry with the Notice of Commencement.

› **Impact Statement Phase (3 years):**

- The proponent has up to three years to prepare and submit a satisfactory Impact Statement (IS) in accordance with the TISG.

› **Impact Assessment Phase (300 days):**

- Once the Agency is satisfied with the content of the IS, the 300-day Impact Assessment phase begins, and the Agency prepares a draft Impact Assessment Report (IAR). The Agency considers comments received on the draft IAR, finalizes the IAR and potential conditions, and provides the IAR, potential conditions, and Consultation Report to the Minister of Environment and Climate Change for a decision.

Table 1-2 provides a summary of federal regulatory milestones for the Project and estimated dates.

Table 1-2: Federal Regulatory Milestones

Milestone	Federal Process Estimated Dates
Submission of Initial Project Description	May 2022
The Agency posts Public Notice and News Release to the Canadian Impact Assessment Registry and engages with Indigenous groups, the public, other jurisdictions, and federal expert agencies and departments on the Initial Project Description	May 2022
The Agency prepares Summary of Issues	Spring/Summer 2022
Submission of Detailed Project Description with Response to the Summary of Issues	Summer 2022
The Agency determines if an Impact Assessment is required and posts Notice of Impact Assessment Decision with Reasons	Summer/Fall 2022
The Agency engages on the Draft Tailored Impact Statement Guidelines and the draft planning documents (Cooperation Plan, Indigenous Engagement and Partnership Plan, Permitting Plan, and Public Participation Plan)	Fall 2022
The Agency issues final Tailored Impact Assessment Guidelines and Plans, along with the Notice of Commencement of an Impact Assessment	Fall 2022
Submission of Draft EAR/IS	TBD
The Agency engages on the Draft EAR/IS and requires the proponent to provide missing information or clarifications, as necessary	TBD
Submission of EAR/IS	TBD
The Agency engages on the EAR/IS and requires the proponent to provide missing information or clarifications, as necessary	TBD
Submission of Final EAR/IS	TBD
The Agency accepts the Final EAR/IS and issues notice that the Final EAR/IS contains all the required information and studies	TBD
The Agency prepares and engages on the draft Impact Assessment Report (IAR) and draft potential conditions	TBD
The Agency provides the IAR and potential conditions to the Minister for consideration	TBD
The decision-maker (Minister or Governor in Council) issues a Decision Statement with the reasons for the determination and any conditions	TBD
Consultation and Engagement	Throughout the duration of the Project
Other permits and approvals	TBD

The Agency = Impact Assessment Agency of Canada, EAR/IS = Environmental Assessment Report/Impact Statement.

1.6.3 Regional Assessment

On February 10, 2020, the federal Minister of Environment and Climate Change decided to undertake a regional assessment on an area centred around the Ring of Fire mineral deposits in northern Ontario. The Agency and the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry have been in discussions on a potential agreement that describes how the Regional Assessment in the Ring of Fire Area would be conducted.

The draft Agreement for the Regional Assessment in the Ring of Fire area was released December 3, 2021 for a 60-day engagement and comment period. The goal of the Regional Assessment is “To provide information, knowledge and analysis regarding mine development activities and other existing and future physical activities in the Ring of Fire and their potential effects, in order to enhance the effectiveness and efficiency of future impact assessments for these activities in a way that helps protect the environment and health, cultural, social and economic conditions while also creating opportunities for sustainable economic development” (the Agency, 2021a).

The draft agreement indicates in section 2.1 that “...the Regional Assessment will focus on future mine development activities and their potential effects, as these types of activities are considered the most likely future physical activities to be proposed and carried out in this region in the foreseeable future... In doing so, the Regional Assessment will also consider the relationship of, and potential interactions between, the potential effects of future mine development activities with those of other existing and future activities, including the potential for resulting cumulative effects...” (the Agency, 2021a).

The draft agreement indicates in section 2.5 that “It is acknowledged that there are ongoing impact and environmental assessments for proposed road developments in Northern Ontario that are not linked to specific mine development activities, which will continue according to their separate legislated processes and timelines. Therefore, the scope, conduct and outcomes of the regional assessment will not duplicate those of these ongoing assessments, including their project-specific assessments of effects, analyses of the purpose of and need for these projects, or other factors and components.”

The Draft Agreement to Conduct the Regional Assessment can be found on the Canadian Impact Assessment Registry.

1.6.4 Process for Federal-Provincial Coordinated EA

Projects subject to both the EA Act and the IAA may have different environmental assessment/impact assessment approval requirements under each Act. Such projects need a coordinated process to meet the requirements of both Acts concurrently. To guide this coordinated process, Canada and Ontario entered into an agreement entitled “Canada-Ontario Agreement on Environmental Assessment Cooperation (2004)” (Minister of the Environment [Ontario] and Minister of the Environment [Canada], 2004). It is anticipated that the Project may undergo a coordinated Federal-Provincial assessment process. If so, the proponent will produce one body of documentation, referred to as the EAR/IS. The EAR/IS will address the requirements of both the provincial ToR and the federal TISG. To help facilitate a coordinated process, an “EA/IA Coordination Team” has been established for this Project that includes representatives of both the federal and provincial governments. The purpose of this team is to address and coordinate the requirements of both processes in an efficient manner.

The EA/IA Coordination Team consists of representatives from the following provincial and federal agencies:

- › Ontario Ministry of the Environment, Conservation and Parks (MECP);
- › Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNR);
 - Northern Development and Mines
 - Natural Resources and Forestry
- › Ontario Ministry of Transportation (MTO); and
- › Impact Assessment Agency of Canada (the Agency).

The EA/IA Coordination Team meets with the proponent on a regular basis, in a forum where team members can exchange information, including providing each other with updates on the EA/IA process; explore issues and collectively try to resolve them; work on coordinating and keep the processes moving forward in lockstep to the greatest possible extent; and seek feedback on Indigenous, public and stakeholder consultation and engagement. Meetings with the EA/IA Coordination Team are scheduled to occur every two weeks via teleconference, and in-person when it is determined to be of assistance.

As part of the coordinated federal-provincial process, the EA/IA will include the following process milestones:

- › Pre-EA/IA Planning;
- › EA/IA commencement;
- › Environmental baseline studies and preparation of the EAR/IS;
- › EA/IA decision; and
- › Monitoring and follow-up.

Projects undergoing a coordinated federal-provincial process are subject to two separate decisions, one for the EA from the province and one for the IA from the federal Agency.

Guidance and tools that may help inform the EA/IA requirements and process will include but not be limited to:

- › Practitioner's Guide to Federal Impact Assessments under the *Impact Assessment Act* (the Agency, 2021b);
- › Regional Assessment in the Ring of Fire Area;
- › Cumulative Effects Assessment Practitioners Guide (Hegmann et al., 1999); and
- › Assessing Cumulative Environmental Effects under the *Canadian Environmental Assessment Act, 2012* (Canadian Environmental Assessment Agency, 2018 [interim guidance until new guidance is released under the *Impact Assessment Act*]).

1.6.5 Other Relevant Legislation and Permits

The EAR/IS will include a detailed list of other approvals that may be needed for the Project.

The Project will likely require various additional federal and provincial permits, licences, approvals, authorizations and other forms of clearance in order to implement the Project, for activities related to the construction and operations phases. The proponent and relevant authorities will discuss applicable approvals with potentially affected Indigenous communities and other affected parties, as required, through the EA/IA process. Depending on the status of consultation and engagement efforts through the EA/IA process, additional consultation on permits and approvals may be required following completion of the EAR/IS. A summary of these potential permits and approvals is presented in the following sections and is based on the current concept for the Project. This preliminary list of permits/approvals is not exhaustive and will be refined as the Project design is further advanced through the EA/IA, with input provided by applicable authorities.

1.6.5.1 Federal

In addition to approval under the IAA, the Project may require permits and approvals under the federal legislation as identified in **Table 1-3**.

Table 1-3: Federal Legislation, Permits and other Authorizations

Regulator	Legislation/Permit/Act	Applicability to the Project
Transport Canada	<i>Canadian Navigable Waters Act</i>	Consult with Transport Canada on any work in or over a navigable waterbody that may interfere substantially with navigation (e.g., construction of a bridge, boom, dam or causeway, dumping of fill in or excavation of materials from the riverbed, placement of any power cable, wire, structure or device). There are no crossings of waterbodies listed in the Schedule to the Act designating Navigable Waters, but there will be major, minor and other works on unlisted waterways deemed to be navigable that will be subject to the Act's provisions.
Department of Fisheries and Oceans (DFO)	Authorization under <i>Fisheries Act</i>	Work or undertaking that may result in harmful alteration, disruption or destruction (HADD) of fish or fish habitat.
ECCC	Permit under <i>Species at Risk Act</i> (2002) <i>Section 73</i>	Work that causes a specified effect to a terrestrial, avian or aquatic species listed under SARA Schedule 1, or its habitat, and which contravenes the Act's general or critical habitat prohibitions (includes intrusive methods for sampling).
ECCC	Letter of Advice or Damage/Danger Permit under the <i>Migratory Birds Convention Act</i>	Prohibits the disruption or loss of active migratory nests, or harm or loss of eggs, young, and breeding adults. Mitigation required when working during nesting periods.
Natural Resources Canada	Blasting Explosives Purchase and Possession Permit under the <i>Explosives Act</i> Transportation of Explosives Permit under the <i>Explosives Act</i>	Purchase, use, storage or transportation of explosives.

1.6.5.2 Provincial

In addition to approval under the EA Act, the Project may require approvals, permits or other authorizations, or may otherwise be affected by requirements under the provincial legislation as identified in **Table 1-4**.

Table 1-4: Provincial Legislation, Permits and Other Authorizations

Regulator	Permit/Act	Corresponding Applicability to the Project
NDMNRF	Permit to Collect Fish for Scientific Purposes under the <i>Fish and Wildlife Conservation Act</i> (1997)	A Permit is required to allow the capture and transfer of fish during in-water works, such as cofferdam construction and/or dewatering.
	Permit to Collect Wildlife for Scientific Purposes under the <i>Fish and Wildlife Conservation Act</i> (1997)	A Permit is required to allow the capture and transfer of wildlife.
	Authorization under the <i>Fish and Wildlife Conservation Act</i> (1997)	Project construction, operation and maintenance activities, including clearing, grubbing dewatering and damming of water, could impact the nests or eggs of birds, or beaver dams, or the dens of black bears or some furbearing wildlife, or interfere with black bears in their dens. During operations, some maintenance activities in particular, also could have an effect on wildlife, including nests and dens. Authorization to destroy/take/possess nests or eggs under the <i>Fish and Wildlife Conservation Act</i> may be required. Authorization under the <i>Fish and Wildlife Conservation Act</i> is also required to interfere with or destroy a black bear or furbearing mammal den, beaver den or black bear in a den.

Regulator	Permit/Act	Corresponding Applicability to the Project
NDMNRF (Cont'd)	A Permit to Remove or a Sale and Purchase Agreement under the <i>Crown Forest Sustainability Act</i> (1994)	A Permit to Remove or a Sale and Purchase Agreement will be required to harvest and/or cut timber. Either instrument can only be obtained where the activity for which trees must be harvested (ex. road construction, aggregate extraction) has received prior approval under the appropriate legislation.
	Burn Permit under <i>Forest Fires Prevention Act</i> (1990) and Ontario Regulation 207/96	A Burning Permit is required to allow burning of materials from forest clearing, if required.
	<i>Public Lands Act</i> (1990)	The Project includes works on Crown lands and/or shore lands, including geotechnical investigations, construction/upgrade of access roads and trails, and culverts/bridges. Road construction is typically authorized via a Work Permit under the <i>Act</i> . Water crossings (culverts, bridges, snowfill) are authorized via a Work Permit under the <i>Act</i> .
	Land Use Permits under the <i>Public Lands Act, 1990</i>	Activities requiring occupation of public lands (e.g., worker camps, waste areas and/or laydown yards) are typically authorized by a Land Use Permit under the <i>Act</i> . A Land Use Permit may be required for roads where access restrictions are applied.
	<i>Far North Act</i> (2010)	Amendments to the <i>Far North Act</i> were approved December 9, 2021. Amendments include the removal of Section 12 (Development if no community based land use plan). The Project will not require a Lieutenant Governor In Council Order or Minister's Order under the <i>Far North Act</i> before proceeding. CBLUPs have not yet been finalized for the area where NRL corridor alternatives are proposed. Marten Falls First Nation and Webequie First Nation are currently developing Draft CBLUPs for this area and will ensure there are no conflicts between the NRL and CBLUPs. Project components and activities that affect land use will be consistent with the approved CBLUPs
	Aggregate Permit under <i>Aggregate Resources Act</i> (1990)	A Permit will be required to extract aggregate on all provincial Crown land and on all private land in areas designated under the <i>Aggregate Resources Act</i> .
	Approval under <i>Lakes and Rivers Improvement Act (LRIA)</i>	Approval for bridges, culverts and causeways may be required where the <i>Public Lands Act</i> does not apply and the drainage area above the proposed site is greater than 5.0 km ² .
MECP	Research Authorization in Provincial Parks and Conservation Reserves, under the <i>Provincial Parks and Conservation Reserves Act</i> (2006)	For proposed research and field investigations (e.g., ecology, geotechnical, groundwater, surface water) in the Otonkwin/Attawapiskat River Provincial Park.

Regulator	Permit/Act	Corresponding Applicability to the Project
MECP (Cont'd)	Permit to Take Water (PTTW) or Environmental Activity and Sector Registration (EASR) under the <i>Ontario Water Resources Act</i> (1990)	Where Project construction requires water taking – pumping, draining, dewatering, wells. Takings up to 50,000 litres per day (L/d) require no permit/registration. Dependent upon meeting specific criteria (e.g., water source, purpose) of the Water Taking EASR Regulation – O. Reg. 63/16, some takings between 50,000 and 400,000 L/d may qualify for registry (EASR), while other takings (e.g., associated with aggregate sites) may require a PTTW. Takings over 400,000 L/d require a PTTW.
	Authorization under the <i>Endangered Species Act, 2007</i>	Potential for corridor/road construction to have effects on listed species or habitat.
	Approval under the <i>Health Protection and Promotion Act</i> (1990)	Facilitates provision of potable water and on-site sewage treatment and disposal systems at temporary construction camp(s).
	Environmental Compliance Approval (ECA) under the <i>Environmental Protection Act</i> (1990)	Permits waste to be transported by haulers from the Project work site and permits emissions from on-site equipment. An ECA may be required for the discharge and treatment of wastewater generated from some water takings. An ECA will be required for aggregate wash water systems with capacity greater than 10,000 L/d. An ECA will be required for on-site sewage systems with a design capacity in excess of 10,000 L/d. An ECA will be required for activities related to noise and air effects resulting from aggregate extraction. An ECA may be required for waste disposal if the proponent establishes a waste disposal site for final disposal, or a transfer station to collect and store waste from other sites (with a volume no greater than 1,000 tonnes per day of waste for final disposal).
	Authorization under the <i>Provincial Parks and Conservation Reserves Act, 2006</i>	Authorizations for construction may be required for clearing of ROW, laydown areas, and related activities.
Ministry of Health and Long-Term Care	Permit to Construct – Sewage System under the <i>Building Code Act</i>	A district Health Unit permit will be required for on-site sewage systems with a design capacity of up to 10,000 L/d.
Ontario Ministry of Labour	<i>Occupational Health and Safety Act</i> (1990)	Notice of Project under Section 23(2).
Ministry of Heritage, Sport Tourism and, Culture Industries	<i>Ontario Heritage Act</i> (1990): Part III.1 (Standards and Guidelines for Conservation of Provincial Heritage Properties) Part VI (Archaeological Resources) Standards and Guidelines for Consultant Archaeologists	Letters for archaeological and other cultural heritage assessment(s) as part of environmental assessment and <i>Ontario Heritage Act</i> due diligence.

1.6.6 How the Environmental Assessment is to be Prepared

Under the EA Act, a proponent may prepare the EA under section 6.1(2), which includes an assessment of “alternatives to” the Undertaking and “alternative methods” of carrying out the Undertaking, or it can proceed in accordance with subsections 6(2)(c) and 6.1(3) of the EA Act, which allow focusing of the EA on a more defined range of alternatives and the use of information other than the generic requirements outlined in subsection 6.1(2). The following excerpts present the subsections of the EA Act:

Subsection 6.1(2):

6.1(2) Subject to subsection (3), the environmental assessment must consist of,

- (a) a description of the purpose of the Undertaking;
- (b) a description of and a statement of the rationale for;
 - (i) the Undertaking;
 - (ii) the alternative methods of carrying out the Undertaking; and
 - (iii) the alternatives to the Undertaking;
- (c) a description of,
 - (i) the environment that will be affected or that might reasonably be expected to be affected, directly or indirectly;
 - (ii) the effects that will be caused or that might reasonably be expected to be caused to the environment; and
 - (iii) the actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment, by the Undertaking, the alternative methods of carrying out the Undertaking and the alternatives to the Undertaking;
- (d) an evaluation of the advantages and disadvantages to the environment of the Undertaking, the alternative methods of carrying out the Undertaking and the alternatives to the Undertaking; and
- (e) a description of any consultation about the Undertaking by the proponent and the results of the consultation. 1996, c. 27, s. 3.

Section 6.1(3):

- 6.1(3) The approved terms of reference may provide that the environmental assessment consists of information other than that required by subsection (2). 1996, c. 27, s. 3.

Section 6(2):

- 6(2) The proposed terms of reference must,
- (a) indicate that the environmental assessment will be prepared in accordance with the requirements set out in subsection 6.1 (2);
 - (b) indicate that the environmental assessment will be prepared in accordance with such requirements as may be prescribed for the type of undertaking the proponent wishes to proceed with; or
 - (c) set out in detail the requirements for the preparation of the environmental assessment. 1996, c. 27, s. 3.

Proponents may engage in the use of subsections 6(2)(c) and 6.1(3) of the Act if there is a more defined planning process and more details of the Project are already known. This is generally referred to as a “focused EA”.

As described in **Section 1.3** and **Section 2.2.1**, over the last several years, there have been previous investigations of alternatives for interconnecting future mine developments and remote Indigenous communities to the network, as well as alternative road corridors in and around the McFaulds Lake area in the Ring of Fire.

This Proposed ToR proposes that “alternatives to” the undertaking have been considered to the point where a planning solution for fulfilling the Project purpose, as identified by the proponent (**Section 1.4.1**), has been identified (i.e., an all-season road). “Alternative methods” for carrying out the Project (i.e., different ways of implementing the all-season road) have also been initially identified in the ToR and will be carried forward in a focused evaluation in the EAR/IS in accordance with EA Act Subsections 6(2)(c) and 6.1(3) and ToR Code of Practice (MOE, 2014a).

Therefore, the EA/IA for the Project will be prepared in accordance with the Proposed ToR, as approved by the MECP, and in accordance with Subsections 6(2)(c) and 6.1(3) of the EA Act. As such, the EAR/IS will include:

- › A description of the purpose of the Project (**Section 1.4.1**);
- › A description of and a statement of the rationale for the Project (**Section 1.4.2**);
- › Identification of other/future permits, licences, approvals and other authorizations required to implement the Project (**Section 1.6**);
- › A description of the Project (**Section 3.0**);
- › A description of and a statement of the rationale for the “alternatives to” the Project, including the “do nothing” (**Section 2.1**);
- › A description of and a statement of the rationale for identified reasonable “alternative methods” of carrying out the Project (**Section 2.2**);
- › A description of the Indigenous community, public, federal and provincial regulators, and stakeholder engagement and consultation undertaken during the EA/IA (**Section 4**);
- › A description of the environment that will be affected, or might reasonably be expected to be affected directly or indirectly by the Project (**Section 7**);
- › An evaluation of the potential environmental effects and related advantages and disadvantages of the Undertaking and alternative methods to the environment, including measures to mitigate potential adverse effects; net effects; and identification of the preferred alternative method(s) (the Project) (**Section 7**);
- › Commitments to mitigation and environmental protection measures that are expected to reduce the effects of the Project on valued environmental components, as well as other commitments and assurances, including follow-up environmental monitoring plans, technical investigations, and engagement and consultation programs (**Section 9** and **Section 10**);
- › The flexibility to accommodate new circumstances that may arise (**Section 11**); and
- › Supporting documentation, including baseline surveys, mapping, technical memoranda and reports, and a Record of Consultation.

Environmental assessment terminology varies across jurisdictions. **Table 1-5** presents terminology used in this ToR with corresponding provincial terminology.

Table 1-5: Terms of Reference Terminology

ToR Term	Provincial Term
Valued Component	Criteria
Mitigation measure	Impact management measure
Residual effect	Net effect

2 Description of and Rationale for Alternatives

The ToR Code of Practice (MOE, 2014a) requires the proponent to identify and evaluate a reasonable range of alternatives to ensure that the most appropriate means of addressing the identified problem or opportunity is selected. The Ontario *Environmental Assessment Act*, RSO 1990, c. E.18, makes reference to two types of alternatives:

- › “Alternatives to” the undertaking are functionally different ways of addressing an identified problem or opportunity to arrive at the preferred planning solution.
- › “Alternative methods” of carrying out the undertaking are the different options for implementing the preferred solution.

In addition, the ToR Code of Practice (MOE, 2014a) requires that the proponent consider the “do nothing” alternative.

This Proposed ToR provides an overview of the alternatives to be considered for assessment in the EA/IA as well as the background on how the alternatives were developed. The EAR/IS will provide a detailed description of the alternatives considered and assessed and the rationale for the selection of the preferred alternatives methods that will constitute the Project. The Project (i.e., the sum of all preferred alternative methods) will then undergo a net effects assessment, as described in **Section 6.2**.

2.1 Description of and Rationale for “Alternatives to” the Project Considered

2.1.1 “Do Nothing”

In accordance with the MECP Codes of Practice for Preparing and Reviewing ToRs and EAs, the EA/IA will include an assessment and evaluation of the advantages and disadvantages of proceeding with undertaking (i.e., the Project) against the “do nothing” or null alternative.”

The “do nothing” alternative is the option of not proceeding with the Project. The “do nothing” alternative provides a benchmark against which other alternatives can be compared. The EA/IA will include the “do nothing” alternative as an “alternative to” the Project, to assess the overall advantages and disadvantages of proceeding with the preferred methods of implementing the Project where a net effect is identified against maintaining the status quo, from a variety of perspectives, including cost/value, environmental effects, social and economic benefit.

If the “do nothing” alternative is chosen as the preferred alternative, there would be no undertaking and environmental assessment approval would not be required. “The ‘do nothing’ alternative, compared to the preferred alternative, would not result in any impacts to the environment; nor would the proponent need to undergo an EA/IA if the do nothing was selected”. The “do nothing” alternative, however, does not address the stated purpose of the undertaking described in **Section 1.4.1**. If the “do nothing” alternative is selected, the Ring of Fire mineral deposits in the McFaulds Lake area may remain undeveloped and there would be a loss of potential social and economic benefits to MFFN and WFN, as well as to other Indigenous communities and other levels of government. With the “do nothing” alternative, WFN would not have a connection to the highway system and would continue to be vulnerable to climate change due to the community’s reliance on seasonal winter roads as the only alternative to costly air transportation. Finally, if the “do nothing” is selected, the communities of MFFN and WFN would not have the benefit of being connected to each other by an all-season roadway.

2.1.2 Other “Alternatives to” the Project

For transportation projects, “alternatives to” the undertaking typically include options such as new or improved roads, new or improved rail service or air service. However, these alternative methods of transportation would not meet the purpose of the Project, which is the design, construction, and operation and maintenance of a proposed all-season road between the proposed MFCAR and the proposed WSR, as described in **Section 1.4.1**.

The need to build all-season road access to northern communities, was identified in the following provincial planning processes prior to commencement of the Project:

- › *25-year Growth Plan for Northern Ontario, 2011* (MOI and MNDMF, 2011)
- › *Building Better Lives: Ontario’s Long-term Infrastructure Plan 2017* (MOI, 2017), which includes a commitment by the Province to work with remote communities and other levels of government towards improved access for residents of these communities. The Plan (MOI, 2017) also considers an all-season road to the Ring of Fire a critical step towards realizing the economic benefits of the McFaulds Lake region mineral deposits for people of the region.
- › *Connecting the North: A Draft Transportation Plan for Northern Ontario* (MTO, 2021), where the province recognizes that there is a growing demand for the expansion of all-season roads in the Far North.

The NRL would be linking two roads, the proposed MFCAR and the proposed WSR. As such, the NRL is also proposed to be a road.

In addition, MFFN and WFN have entered into a Voluntary Agreement with the Minister of the Environment, Conservation and Parks under which the two First Nations have agreed to undertake an EA for the Project, as an all-season road (MECP, MFFN and WFN, 2020).

2.1.3 “Alternatives to” to be Assessed in the EA/IA

The ToR Code of Practice (MOE, 2014a) allows for proponents to limit or focus the discussion of previously examined alternatives when alternatives have been previously considered through a separate planning and decision-making process such as the provincial government priority initiatives listed in **Section 2.1.2**.

Since the Project was identified to be an all-season road before the study for this Project commenced under the EA Act, EA/IA process will not re-examine past planning processes and decisions and therefore will not assess “alternatives to” the Project other than the “do nothing” alternative, which will be included for comparison against the proposed undertaking (i.e., the Project).

2.2 Description of and Rationale for “Alternative Methods” of Carrying Out the Project

“Alternative methods” are different ways of performing the same activity. The proponent will consider “alternative methods” of carrying out the Project, including:

- › Corridor alternatives, for evaluation and selection of a preferred corridor for the Project.
- › Ancillary infrastructure alternatives for the preferred corridor.

2.2.1 Corridor Alternatives

2.2.1.1 Background

Section 1.3 provides a summary of relevant previous studies that have contributed to the development of the corridor alternatives for the NRL Project. The identification of corridor alternatives for the Project has evolved from these previous studies.

- › Cliffs Chromite Project Environmental Assessment: Integrated Transportation System (Golder, 2013a-l).
- › Marten Falls First Nation to Muketui Airstrip Winter Road Project Description (KBM, 2014).
- › Marten Falls First Nation All-Season Community Access Road - Preferred Route Selection and Preliminary Environmental Work - Project Proposal (MFFN, 2017).
- › Marten Falls First Nation All-Season Community Road Project Baseline Report: 2018 Winter Woodland Caribou and Moose Population and Distribution Surveys, Phase 2 (Zoetica, 2019).
- › Marten Falls First Nation Industrial Supply Road Hydrogeology Baseline Study (KBM, 2019a).
- › Marten Falls First Nation Industrial Supply Road Surface Water Quantity and Quality Baseline Studies (KBM, 2019b).
- › Marten Falls First Nation Industrial Supply Road Fish Habitat Baseline Study (KBM and EDI, 2019).
- › Environmental Assessment and Preliminary Design Services for Marten Falls Community Access Road Aggregate Resources Report (KGS, 2020a).
- › Environmental Assessment and Preliminary Design Services for Marten Falls Community Access Road Geotechnical Report (KGS, 2020b).
- › Northern Link Road Terrestrial Existing Conditions Report (AECOM, 2020b).
- › Northern Road Link (Phase 2) – Analysis of Route Alternatives (AECOM, 2021).

Cliffs Chromite's Integrated Transportation System and the majority of the above-listed studies proposed a north-south transportation corridor along a natural ridge of sand and gravel (i.e., esker) extending from the existing highway network in the south to the McFaulds Lake area in the Ring of Fire. Data for the Integrated Transportation System is presented in a series of baseline reports (Golder, 2013a-l). The Muketui Airstrip Winter Road study followed different routing originating from MFFN.

There have been previous studies focused on an east-west transportation corridor (e.g., the transportation corridor proposed for the Eagle's Nest Project [Knight-Piésold Consulting, 2013a]). However, an east-west corridor would not meet the purposes of the NRL Project, which is the design, construction, and operation and maintenance of a proposed all-season road between the proposed MFCAR and the proposed WSR, as described in **Section 1.4.1**.

2.2.1.2 Development of Corridor Alternatives

This section describes the three steps taken to identify the proposed corridor alternatives that will be considered in the alternatives assessment in the EA/IA:

- › Step 1: Initial Corridor Alternatives (ICA)
- › Step 2: Preliminary Corridor Alternatives (PCA)
- › Step 3: Corridor Alternatives

The development of corridor alternatives for the NRL Project was needed to meet the purpose of the Project as stated in **Section 1.4.1**. The northern terminus of the NRL will connect to the eastern terminus of the WSR. The southern terminus of the NRL will connect to MFCAR; however, the proposed MFCAR project is currently assessing two options for that project - an east option and a west option. The NRL Project will need to connect to the preferred MFCAR option once it has been determined. The alternatives for WSR and MFCAR are shown on **Figure 1-1**.

The development of alternative corridors for the Project involved the consideration and weighting of many (often conflicting) technical and environmental factors. During the steps taken to identify alternative corridors to be considered in the alternatives assessment, the proponent considered the following questions from the ToR Code of Practice (MOE, 2014a):

- › Do they provide a viable solution to the problem or opportunity to be addressed?
- › Are they proven technologies?
- › Are they technically feasible?
- › Are they consistent with other relevant planning objectives, policies and decisions?
- › Are they consistent with provincial government priority initiatives?
- › Could they affect any sensitive environmental features?
- › Are they practical, financially realistic and economically viable?
- › Are they within the ability of the proponent to implement?
- › Can they be implemented within the defined study area?
- › Are they appropriate to the proponent doing the study?
- › Are they able to meet the purpose of the *Environmental Assessment Act*?

Several of these questions speak to the need for alternative corridors to be viable, technically feasible, practical, and financially reasonable solutions. Locating alternatives proximal to aggregate sources while avoiding wetlands, and other key features and sensitives, was key in addressing these questions, hence the terrain mapping as well as opportunities and constraints played a large role in the identification of alternative corridors.

Aggregate sources are needed to construct the Project hence availability of suitable aggregate was an important consideration to develop technically feasible alternative corridors. The predominant sources of aggregate in the region are present within the esker which is within a number of the alternative corridors being considered. Bedrock sources for making aggregate will also be considered, however, there are fewer bedrock options and they generally are located further away from the Project location.

There are numerous challenges associated with designing, constructing and operating roads through wetlands/peatlands including: construction season, foundations, settlement, aggregate consumption, and hauling distances. Since the soil and terrain are expected to have such a significant bearing on development, assessment and selection of a preferred corridor for the road, various existing data sources were compiled to interpret and map the terrain conditions within the project area to identify reasonable corridor alternatives from a geotechnical perspective. Terrain mapping involved the interpretation of remotely sensed imagery and elevation data, supplemented with existing surficial geology maps, to characterize the landforms, surficial materials, topography, and hydrology. Based on the terrain mapping, general geotechnical conditions and potential construction issues and risks were considered, including the

characteristics of materials that will form the roadbed foundation (including groundwater and permafrost conditions), availability of aggregates for construction and operation, and topographic considerations to optimize vertical alignment and reduce cut/fill volumes. In this context, corridor alternatives were identified with a view to: minimizing the total route length; following routes that maximize terrain units of favourable constructability (e.g., glacial till); minimizing traversing units of poor constructability (e.g., fens); minimizing the number and widths of stream crossings; and minimizing aggregate haul distances.

Although viable, technically feasible, practical, and financially reasonable solutions are important considerations, and there are proven technologies for construction of all-season roads in the challenging geographical conditions that will be encountered on this project (e.g., use of geotextile/geogrid in peat/muskeg soils), the proponent also understands the Project is located in an area that contains many environmentally sensitive features (e.g., Species at Risk) and land and resource use areas of importance to Indigenous communities also need to be considered in developing and evaluating corridor alternatives.

The following sections present more details on the development of alternative corridors for the Project. All alternative corridors considered were selected to be 2 km wide to provide flexibility for identification of alternative route alignments within the corridors that may be needed to avoid sensitive environmental features.

2.2.1.2.1 Step 1: Initial Corridor Alternatives

The “Northern Road Link (Phase 2) – Analysis of Route Alternatives” (AECOM, 2021) contains the most recent and relevant examination of corridor alternatives for the NRL Project. This analysis considered six conceptual alternatives between the proposed MFCAR and the Ring of Fire, shown in **Figure 2-1**. For the purposes of this narrative, these alternatives are named Initial Corridor Alternatives (ICA). There are six ICAs and they can be generally grouped into west (ICA No. 1 and 2) and east alternatives (ICA No. 3, 4, 5, and 6). In general, the east ICAs would connect to the MFCAR project through the MFFN community.

A strengths, weaknesses, opportunities and threat (SWOT) analysis was conducted by MFFN (AECOM, 2021). A SWOT analysis “is a simple, high-level strategic project planning tool that allows for a quick comparison of multiple options by highlighting the relative benefits and risks that come inherent with each option.” The SWOT analysis is summarized in **Table 2-1**.

Table 2-1: SWOT Analysis of Initial Corridor Alternatives (AECOM, 2021)

SWOT Evaluation Indicator	Initial Corridor Alternatives (ICAs)					
	ICA No. 1	ICA No. 2	ICA No. 3	ICA No. 4	ICA No. 5	ICA No. 6
Total area of 5-km Corridor (ha)	74,883	74,781	86,353	82,546	82,856	88,398
Constructability/Engineering Considerations						
Route Alternative Lengths (km)	143	142	166	163	164	173
Travel Time (hrs)	2.10	2.09	2.44	2.40	2.41	2.54
Route Alternative Lengths (km) – MFFN to Ring of Fire	197	196	149	146	147	156
Waterbody Crossings – Culverts (#)	9	8	10	3	1	5
Waterbody Crossings – Clear Span Bridges (#)	8	9	16	18	16	18
Waterbody Crossings – Multi-Span Bridges (#)	1	1	2	1	1	2
Waterbody Crossings – Total (#)	18	18	28	22	18	25

SWOT Evaluation Indicator	Initial Corridor Alternatives (ICAs)					
	ICA No. 1	ICA No. 2	ICA No. 3	ICA No. 4	ICA No. 5	ICA No. 6
Class D Cost Est: Roads (\$M)	229	228	332	325	327	271
Class D Cost Est: Bridges (\$M)	68	69	114	74	75	70
Class D Cost Est: Roads and Bridges (\$M)(+20%)	356	356	535	479	482	409
Environmental/Socio-Economic Considerations						
Area of study corridor within MFFN CBLUP (%)	100	100	100	100	100	100
Area of study corridor within WFN CBLUP (%)	16.6	16.5	14.4	15.1	15.6	14.1
Area of Reserve Land (ha)	0	0	0	0	0	0
Area of Trap Lines (ha)	74,883	74,781	86,353	82,546	82,856	88,398
Length of Historic Trail Segments (km)	0	0	0	0	0	0
Area of Provincial Parks (ha)	940	940	467	2,826	506	467
Areas of Natural and Scientific Interest (ha)	0	0	0	0	0	0
Environmentally Sensitive Areas (ha)	0	0	0	0	0	0
Proximity to MFFN (km)	54	54	18	18	18	18
Area Covered by Upland Vegetation (ha)	35,910	36,718	34,004	30,784	28,934	34,982
Area Covered by Wetlands (ha)	60,140	59,863	74,567	71,145	70,543	75,492
Area Covered by Rock Barren (ha)	0	0	0	0	0	0
Number of Groundwater Wells (#)	7	7	7	7	10	7
Known SAR Species within Alternative (type)	Caribou	Caribou	Caribou	Caribou	Caribou	Caribou
Area of Caribou Habitat and Range (ha)	74,883	74,781	86,353	82,546	82,856	88,398
Number of General Habitat Description (GHD) Caribou Calving/Nursery Sites (#)	2	2	0	0	1	0
Area of Mineral Claims (ha)	26,072	26,601	20,096	18,694	15,260	21,425
Area of Forest Management Units (ha)	0	0	0	0	0	0
Indigenous Knowledge Considerations^(a)						
Proximity to Identified Traditional Use Lakes	√	√	√	X	X	X
Proximity to an Identified Traditional Use River	√	X	√	√	√	√
Attawapiskat River Crossing Location	X	X	X	√	√	X
Proximity to Valued Hunting and Trapping Areas	√	√	X	√	X	X
Proximity to Valued Moose Habitat	√	√	X	X	X	X
Amount of Muskeg Disturbed	√	√	X	X	X	X
Proximity to an Identified Traditional Use Area	√	√	√	X	√	√

SWOT Evaluation Indicator	Initial Corridor Alternatives (ICAs)					
	ICA No. 1	ICA No. 2	ICA No. 3	ICA No. 4	ICA No. 5	ICA No. 6
Summary of Preferences (number) (source: derived by SNC-Lavalin on basis of above analysis)^(b)						
Constructability/Engineering	7	7	0	1	2	1
Environment/Socio-Economic	6	6	1	0	1	1
Indigenous Knowledge	6	5	3	3	3	2
Total	19	18	4	4	6	4

Notes:




Source: AECOM, 2021, with summary derived by SNC-Lavalin on the basis of AECOM's analysis

SWOT: Strengths, weaknesses, opportunities, threats

CBLUP: Community Based Land Use Plan

Class D cost estimates allow for a 20% contingency allowance.

Cell shading:

	Green shaded cells denote alternative routes that are noticeably favourable for that indicator
	Yellow shaded cells denote alternative routes that are noticeably unfavourable for that indicator
	No shading denotes that the value of the indicator is in the middle range for all route alternatives and therefore the preference for that alternative is indifferent.

(a) Indigenous Knowledge considerations (AECOM, 2021): IK considerations are high-level feedback on the benefits and concerns of the alternative routes, where 'X' denotes a concern and/or area to be avoided, and '✓' denotes a perceived benefit. These considerations include:

- Proximity to identified Traditional Use Lakes: three lakes and the area between two of the lakes have been identified as highly valued areas. Therefore, route alternatives that avoid these areas are preferred.
- Proximity to identified Traditional Use River: A particular river has been identified as a valued river and so route alternatives that are further away would be preferred.
- Attawapiskat River Crossing Location: Route alternatives that cross the Attawapiskat River further to the west, avoiding valued moose habitat and other valued sites, would be preferred.
- Proximity to Valued Hunting and Trapping Areas: Route alternatives that minimize disturbance to valued hunting and trapping areas would be preferred.
- Proximity to Valued Moose Habitat: Route alternatives that minimize disturbance to valued moose habitat would be preferred.
- Amount of Muskeg Disturbed: Route alternatives that minimize disturbance to muskeg would be preferred.
- Proximity an identified Traditional Use Area: a specific area has been identified as a valued hunting and fishing area so route alternatives that are further from this Traditional Use Area, would be preferred.

(b) The score for each category is the count of favourable indicators in the category (i.e., Constructability//Engineering, Environment/Socio-Economic and Indigenous Knowledge). The total score is the sum of category scores.

In summary, the SWOT analysis, indicated that ICA No. 1 and 2 were the most preferred for:

- › Environment and socio-economic, including Aboriginal and Treaty Rights, , aquatic environment, wildlife/wildlife habitat, Caribou habitat, land cover, Indigenous community health and well-being and economic development opportunities.
- › Route alternatives that minimize the overall disturbance to Caribou habitat would be preferred. Since all corridors fall within Caribou habitat range, the shorter route alternatives would be more favourable.
- › Indigenous Knowledge. One exception is that Alternative 2 is closer and therefore not preferred for proximity to a Traditional Use River, which “*is a valued river that carries importance to MFFN*” (Bob Baxter, MFFN pers com, June 15, 2021).” Also, ICAs No. 4 and 5, which cross the Attawapiskat River much further to the east and downstream of the other crossings, are preferred for that river crossing as “*valued Moose habitat and other valued sites exist*” (Bob Baxter, MFFN, pers com, June 15. 2021) in proximity to the two other crossings of the Attawapiskat River (i.e., ICA No. 1/2 and ICA No. 3/6).

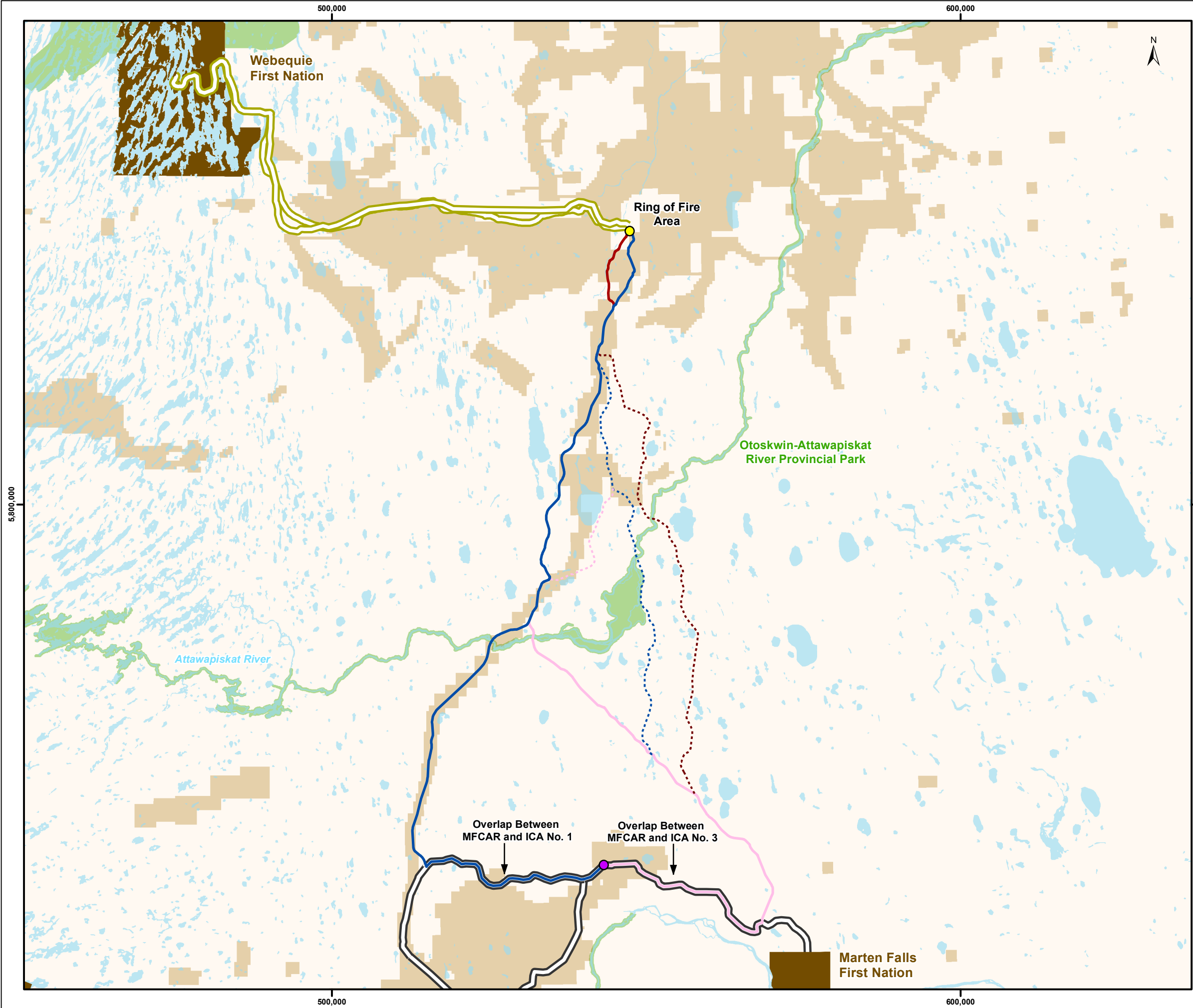
- › Constructability and engineering, including being shortest in length, having the shortest travel time between the Ring of Fire and the community of MFFN, crossing the fewest number of waterbodies and being lower cost to construct than ICA No. 3 to 6, including fewer constructability challenges.

It was concluded that the westerly ICAs (ICA No. 1 and 2) “are highly preferred over the others.” (Bob Baxter, Lawrence Baxter, MFFN, pers com, June 15, 2021).

MFFN retained AECOM to support their “Phase 2 all-season road studies/Wawang Wijang Road”, which encompassed preliminary studies for the proposed road connecting MFFN to the Ring of Fire. The alternative routes for this proposed road represent the “ICAs” as described in this ToR. These studies are identified in **Section 2.2.1.2.1**. The ICAs⁴ were presented at information/open house sessions to the general public and Indigenous communities in Thunder Bay, Geraldton and Longlac by MFFN and their consultant AECOM dating back to 2018 (**Appendix F**). More recently, the ICAs were presented at consultation and engagement events with MFFN, WFN, and Aroland First Nation community members.. **Appendix F** includes notices, comments and a meeting summary.

As described in the MFCAR ToR (AECOM, 2020b), the east options for the MFCAR project were eliminated through a Band Council resolution in response to MFFN community concerns about the road running through the community, including health and safety concerns related to industrial traffic as well as the route being a less direct access route to the Ring of Fire (AECOM, 2020b). ICA No. 3 to 6, which also ultimately connect to the MFFN community, were also eliminated primarily due to changes to the MFCAR project but also due to similar concerns. ICA. No. 1 and 2 were carried forward and ICA No. 3 to 6 were eliminated.

⁴ The ICAs presented in these events did not show overlapping alternatives that are common to NRL and MFCAR.



Legend

- Common End Point
- Common Start Point
- ICA No. 1 (143 KM)
- ICA No. 2 (142 KM)
- ICA No. 3 (166 KM)
- ICA No. 4 (163 KM)
- ICA No. 5 (164 KM)
- ICA No. 6 (173 KM)
- Proposed Marten Falls Community Access Road (MFCAR) Alternatives
- Proposed Webeque Supply Road (WSR) Alternatives
- First Nation Reserve
- Waterbody
- Mining Claims
- Provincial Park
- Province of Ontario

Northern Road Link

Initial Corridor Alternatives

Figure Number:	2-1	REV	PA
Client:	Marten Falls and Webeque First Nations	Project Number:	679878
		Date:	2022-03-02
DSC		DRN	CHK
ICA - Initial Corridor Alternative		AD	ND

94.500

4.500

0

4.500

9

SCALE: 1:600,000

NOTES

1. Coordinate System: NAD 1983 CSRS UTM Zone 16N.

2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.

3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and, Land Information Ontario (LIO) Warehouse Open Data (<https://geohub.lio.gov.on.ca/>), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

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2.2.1.2.2 Step 2: Preliminary Corridor Alternatives

ICA No. 1 and 2 were carried forward from Step 1 and renamed as Preliminary Corridor Alternatives (PCA) No. 1 and 2 respectively, for the next step of development of alternative corridors. During Step 2, two new alternative corridors were identified through a terrain suitability analysis and named PCA No. 1A and 3A.

Figure 2-2 presents PCA No. 1, 1A, 2 and 3A against a terrain suitability map. **Table 2-2** provides descriptions of the colour coding for the terrain suitability. The terrain suitability analysis was conducted to guide the identification of new preliminary corridor alternatives routed along more suitable terrain units while avoiding the less suitable terrain units to the extent possible. The gradation ranges from less suitable (red) to more suitable (green) terrain. The terrain analysis was based on technical characteristics which could be evaluated using available information including large scale terrain information, including Ontario Geological Survey surficial geology maps and previous terrain and geotechnical studies, orthophotos, stereoscopic air photos, satellite imagery, and LiDAR digital elevation data. Each PCA is 2 km wide to provide flexibility for identification of alternative route alignments within the corridors that may be needed to avoid environmental constraints, which will be identified through baseline studies, Indigenous Knowledge/Indigenous Land and Resource Use (IK/ILRU) and consultation and engagement.

The four PCAs shown on **Figure 2-2** formed the basis of the study area published in the Notice of Commencement of Terms of Reference on May 4, 2021 (MFFN and WFN, 2021).

Table 2-2: Terrain Suitability Colour Coding

Red	Orange	Yellow	Green
<i>Less suitable</i>		<i>More Suitable</i>	
Major Watercourses and Waterbodies: Attawapiskat River is the only major watercourse. Waterbodies including lakes and fens (i.e., wetlands interconnected to other waterbodies and/or watercourses). Permafrost	Organic Deposits , including wetlands (excluding fens covered under Major Watercourses and Waterbodies). Wetlands , including peatlands. Minor watercourses: smaller creeks and streams (all creeks/streams with the exception of the Attawapiskat River)	Non-Organic Deposits, as specified: Marine beach and near-shore deposits; glaciolacustrine beach and near-shore deposits; glaciolacustrine basin deposits; and glacial deposits.	Non-Organic Deposits, as specified: Metamorphic and igneous rocks; glaciofluvial ice-contact deposits; and glacial deposits and bedrock, including eskers.

In addition to terrain suitability, the length of potential corridors was also considered in identification of PCA corridors. Generally shorter corridor lengths are more preferable with all other factors considered because:

- › A smaller area of land would be disturbed;
- › Less aggregate would be required for construction;
- › Shorter driving distances would likely result in reduced driving times, less fuel usage and costs, lower traffic related air quality emissions, and potentially fewer collisions; and
- › Lower costs for both construction and maintenance.

PCA No. 1 (formerly ICA No. 1) largely follows a natural gravel and sand ridge (esker) that trends across the area in a southwest to northeast direction along the historical corridor previously identified and investigated by Cliffs Natural Resources (now Noront Resources) as part of their Integrated Transportation System.

PCA No.2 (formerly ICA No. 2) follows PCA No. 1, with the exception at the north end, where it veers westerly to avoid Bald Eagle and Osprey nests in this area (Golder, 2013g).

PCA No. 1A was identified as a new preliminary corridor alternative using terrain suitability mapping. It veers east off PCA No. 1 just south of the Attawapiskat River to cross the river at the same location as PCA No. 3A to take advantage of the narrower crossing at this location. PCA No. 1A follows PCA No. 1 except for the Attawapiskat River crossing.

PCA No. 3A was also identified as a new preliminary corridor alternative using terrain suitability mapping. This alternative lies west of the original ICA No. 3. It crosses the Attawapiskat River at the same location as the original ICA No. 3 crossing, however, the corridor was routed further to the east to avoid the MFFN community.

The four PCAs are generally characterized from a terrain analysis perspective in **Table 2-3**. Overall, the most easterly PCA (PCA No. 3A) traverses less inorganic terrain, including esker, and crosses more wetlands than the westerly PCAs (PCA No. 1, 1A and 2), making it a less viable option.

Table 2-3: Preliminary Corridor Alternatives – Terrain Characterization

Criteria	PCA No. 1	PCA No. 1A	PCA No. 2	PCA No. 3A
1 Total estimated length (km)	117	118	117	112
2 Length (km) through organic deposits, including wetland	45.3	49.3	44.8	62.5
3 Number of watercourse crossings	15	16	15	21
4 Length (km) along esker	48.4	46.8	49.6	23.2
5 Length (km) on inorganic terrain, including esker	71.3 Predominantly esker and high relief with known aggregate sources	68.6 Similar to PCA No. 1, except south of Attawapiskat River, has no visible esker or known/ visible aggregate sources	71.6 Similar to PCA No. 1, with good drainage, good subgrade, several confirmed aggregate sources	49.8 Passes through some potential aggregate sources and some esker zones
6 Length (km) (% on permafrost)	20.9 km (17.8%) sporadic 60.5 km (51.7%) isolated 35.6 km (30.4%) no permafrost	20.9 km (17.7%) sporadic 61.5 km (52.2%) isolated 35.6 km (30.2%) no permafrost	20.6 km (17.6%) sporadic 60.5 km (51.7%) isolated 35.6 km (30.4%) no permafrost	20.9 km (18.6%) sporadic 61.9 km (55.3%) isolated 29.7 km (26.5%) no permafrost

Notes: Permafrost is “isolated” if less than 10% of the surface has permafrost under it. “Sporadic” means 10% to 50% of the surface has permafrost under it. Source: National Snow & Ice Data Center, 2022.

PCA No. 1, PCA No. 1A and PCA No. 2 generally have the least impact on wetlands, provide good foundational conditions, better access to aggregates, and fewer watercourse crossings. However, these alternatives parallel the esker for greater lengths and the esker is a known wildlife corridor and may be used for denning by some wildlife species. PCA No. 2 parallels to PCA No. 1 and PCA No. 1A to the north end, where it veers to the north-west to avoid osprey and eagle habitat/nesting and bat habitat. PCA No. 3A crosses the most wetland and has the greatest number of watercourse crossings, both presenting environmental concerns and construction challenges. **Table 2-4** provides a high-level comparison of the four PCAs recommended for further study. PCA No. 1, PCA No. 1A and PCA No. 2 are the most preferred for constructability/engineering, while PCA No. 3A is the most preferred for environment/socio-economic considerations. PCA No. 1 is the most preferred for IK and land and resource use considerations. The four PCAs were advanced for further development.

Table 2-4: Comparison of Preliminary Corridor Alternatives

Indicator	Preliminary Corridor Alternatives (PCAs) ^(a)			
	PCA No. 1	PCA No. 1A	PCA No. 2	PCA No. 3A
Total area of 2-km corridor (ha)	23,681.97	23,949.72	23,631.28	22,762.98
Constructability/Engineering Considerations				
Total estimated length (km)	117	118	117	112
Length (km) through organic deposits, including wetland	45.3	49.3	44.8	62.5
Number of watercourse crossings	15	16	15	21
Length (km) along esker	48.4	46.8	49.6	23.2
Length (km) on inorganic terrain, including esker	71.7	68.9	72.0	55.9
Length (km) on permafrost	20.9 km sporadic 60.5 km isolated 35.6 km no permafrost	20.9 km sporadic 61.5 km isolated 35.6 km no permafrost	20.6 km sporadic 60.5 km isolated 35.6 km no permafrost	20.9 km sporadic 61.9 km isolated 29.7 km no permafrost
Environmental/Socio-Economic Considerations				
Area of study corridor within MFFN CBLUP (%)	100	100	100	100
Area of study corridor within WFN CBLUP (%)	21.1	20.9	20.9	22.0
Area of Reserve Land (ha)	0	0	0	0
Area of Trap Lines (ha)	23,681.97	23,949.72	23,631.28	22,762.98
Length of Historic Trail Segments (km)	0	0	0	0
Area of Provincial Parks (ha)	210.29	272.72	210.29	158.86
Areas of Natural and Scientific Interest (ha)	0	0	0	0
Environmentally Sensitive Areas (ha)	0	0	0	0
Proximity to MFFN (km)	55.33	55.33	55.33	29.67
Proximity to WFN (km)	116.06	116.06	116.06	125.39
Area Covered by Upland Vegetation (ha)	4,575.38	4,663.26	4,620.82	3,294.48
Area Covered by Wetlands (ha)	17,564.35	17,959.24	17,551.00	19,429.61
Area Covered by Rock Barren (ha)	0	0	0	0
Number of Groundwater Wells (#)	3	3	4	3
Known SAR Species within Alternative (type)	Caribou	Caribou	Caribou	Caribou
Area of Caribou Habitat and Range (ha)	23,681.97	23,949.72	23,631.28	22,762.98
Number of Caribou Calving/Fawning Sites (#)	2	2	2	0
Area of Mineral Claims (ha)	16,252.48	15,274.94	15,884.7	9,440.73

Indicator	Preliminary Corridor Alternatives (PCAs) ^(a)			
	PCA No. 1	PCA No. 1A	PCA No. 2	PCA No. 3A
Area of Forest Management Units (ha)	0	0	0	0
Cost ranking (Qualitative) <i>1 to 4, where 1 = less expensive, 4 = most expensive</i>	2	3	1	4
Indigenous Knowledge and Land and Resource Use Considerations^(b)				
Proximity to Identified Traditional Use Lakes	√	X	√	X
Proximity to an Identified Traditional Use River	√	X	X	X
Attawapiskat River Crossing Location	X	X	X	X
Proximity to Valued Hunting and Trapping Areas	√	X	√	X
Proximity to Valued Moose Habitat	√	X	√	X
Amount of Muskeg Disturbed	√	X	√	X
Proximity to an Identified Traditional Use Area	√	X	√	X
Summary of Preferences^(c)				
<i>Constructability/Engineering</i>	4	4	4	1
<i>Environment/Socio-Economic</i>	2	2	3	4
<i>Indigenous Knowledge and Land and Resource Use</i>	6	0	5	0
Total	12	6	12	5

Notes:

Cell shading:

	Green shaded cells denote alternative routes that are noticeably favourable for that indicator
	Yellow shaded cells denote alternative routes that are noticeably unfavourable for that indicator
	No shading denotes that the value of the indicator is in the middle range for all route alternatives and therefore the preference for that alternative is indifferent.

- (a) PCA No. 1A deviates from PCA No. 1 for a short distance south of the Attawapiskat River. PCA No. 3A deviates from PCA No. 1 south of the Attawapiskat River but follow the same route north of the Attawapiskat River.
- (b) Indigenous Knowledge and Land and Resource Use Considerations (adapted from AECOM, 2021): IK and land and resource use considerations are high-level feedback on the benefits and concerns of the alternative routes, where 'X' denotes a concern and/or area to be avoided, and '√' denotes a perceived benefit. These considerations include:
- Proximity to identified Traditional Use Lakes: three lakes and the area between two have been identified as highly valued areas. Therefore, route alternatives that avoid these areas would be preferred.
 - Proximity to identified Traditional Use River: a particular river has been identified as a valued river and so route alternatives that are further away would be preferred.
 - Attawapiskat River Crossing Location: Route alternatives that cross the Attawapiskat River further to the west, avoiding valued moose habitat and other valued sites, would be preferred.
 - Proximity to Valued Hunting and Trapping Areas: Route alternatives that minimize disturbance to valued hunting and trapping areas would be preferred.
 - Proximity to Valued Moose Habitat: Route alternatives that minimize disturbance to valued moose habitat would be preferred.

- Amount of Muskeg Disturbed: Route alternatives that minimize disturbance to muskeg would be preferred.
 - Proximity to an identified Traditional Use Area: a specific area has been identified as a valued hunting and fishing area so route alternatives that are further from this Traditional Use Area would be preferred.
- (c) The score for each category is the count of favourable indicators in the category (i.e., Constructability//Engineering, Environment/Socio-Economic and Indigenous Knowledge). The total score is the sum of category scores.

Sources:

- Draft Webequie First Nation Community Plan (Webequie Lands and Resources Department, 2021);
- Marten Falls Community Based Land Use Plan Terms of Reference (MFFN and MNRF, 2013)
- MNRF Natural Heritage Information Centre (Geohub Ontario, 2021) – various layers
 - Indian Reserve (2021)
 - Provincial Park Regulated (2018)
 - Areas of Natural and Scientific Interest (2021)
 - Far North Land Cover V 1.4 (2014)
 - Wetlands (2019)
 - Forest Management Unit (2021)
 - Ontario Trail Network (2008)
 - Well Records (MECP, 2020)
- Mining Lands Administration System Operational Data (NDMNRF, 2021b)

2.2.1.2.3 Step 3: Corridor Alternatives

The corridor alternatives were further developed and refined in response to changes in the potential Attawapiskat River crossings. In June 2021, community members from MFFN expressed concerns with the location of the Attawapiskat River crossings (i.e., potential sites for the bridges) including:

- › PCA No. 1 crossing, which is in the vicinity of the esker, was described as a known crossing site for Moose;
- › PCA No. 1A/3A crossing, which is approximately 7 km east and downstream of PCA No. 1, encroaches into a hunting area associated with an identified Traditional Use Area. In addition, this Traditional Use Area has been historically occupied by MFFN and contains community values such as Moose hunting areas and Lake Sturgeon habitat; and
- › Much of the Attawapiskat River in the region, including the identified crossing sites, was described as both sensitive moose habitat and spawning habitat for Lake Sturgeon. A bridge sited at either PCA No. 1 and 1A/3A could also facilitate access by hunters to the Moose, including hunters coming from other areas and place pressure on the moose populations.

The members of the MFFN community suggested a new upstream crossing site on a narrow river stretch with fast moving waters and rapids. This site is located approximately 9.5 km west and upstream of PCA No. 1. The rapids at this location are expected to discourage Moose from moving upstream as well as hunters from launching their boats to access the sensitive downstream habitat. This effective separation is expected to reduce the impact on Moose, including pressure from hunting, compared to the PCA No. 1 crossing and the PCA 1A/3A crossing. Additionally, MFFN community members indicated that according to their lifelong experience fishing on the river, this specific location has traditionally not supported Lake Sturgeon spawning. The PCA No. 1A/3A crossing was eliminated in response to these community concerns and the new proposed crossing was added. This new crossing was named the “West Bridge”.

The PCA No. 1 crossing was retained because it follows suitable terrain and there is considerable existing information about this crossing. This crossing was named the “East Bridge”.

The two crossings (East and West Bridges) will be further evaluated during the alternatives assessment to be conducted during the EA/IA.

Due to the changes in the location of the Attawapiskat River crossings, routing of the corridor alternatives needed to be revisited, refined and further developed.

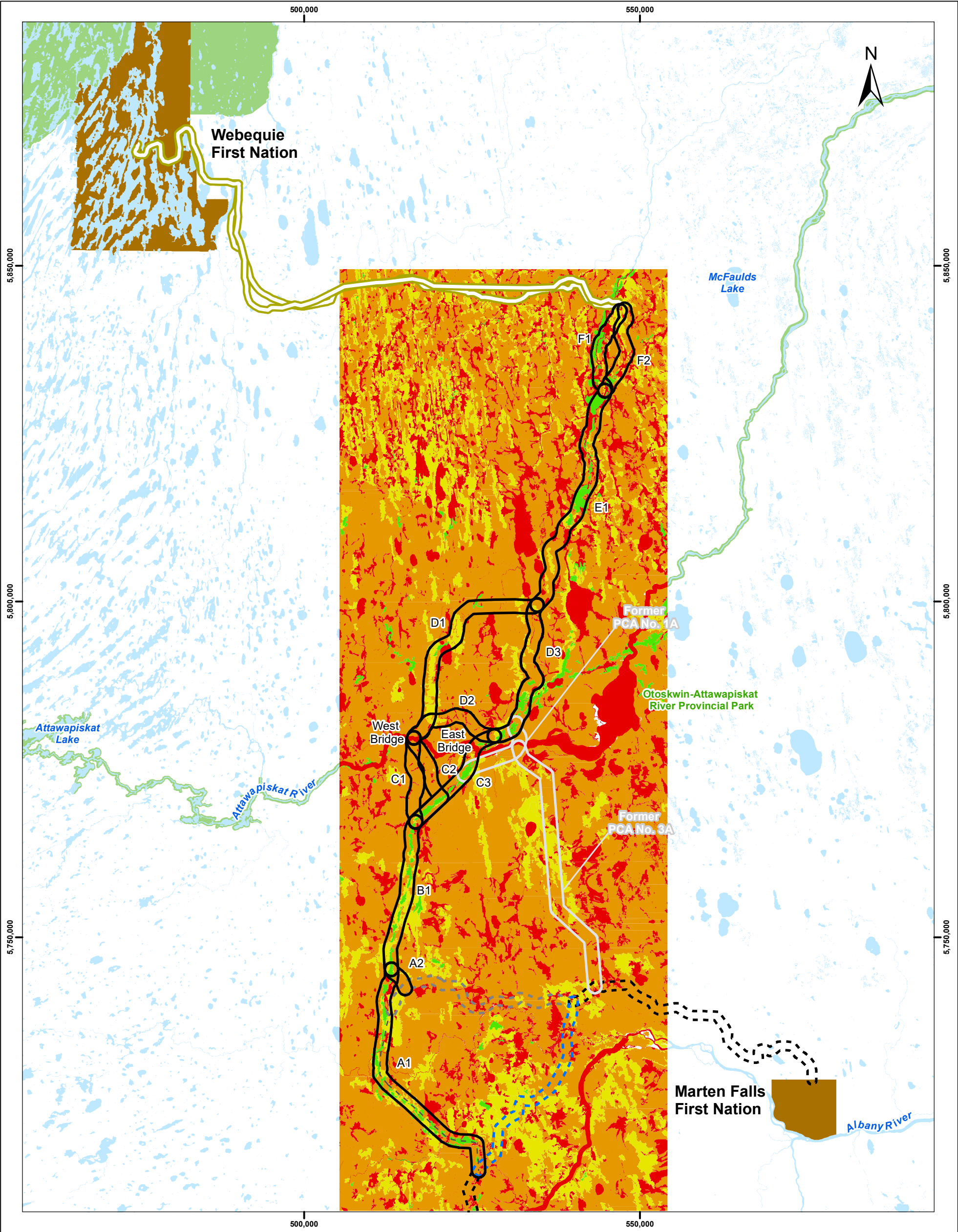
The original rationale for identifying PCA No. 1A was to take advantage of the shorter river crossing at PCA No. 3A. With the removal of the associated river crossing, PCA No. 1A was no longer viable and therefore eliminated. Likewise, with the removal of the river crossing, PCA No. 3A was no longer viable and therefore eliminated. With the elimination of PCA No. 3A, the Project however would no longer have a connection to the MFCAR's east option in the event that the MFCAR project selected its east option.

Given the identification of the new crossing of the Attawapiskat River (i.e., West Bridge), new corridors needed to be developed to connect to the crossing. A desktop terrain suitability analysis was conducted to identify potential corridor alternatives to and from the West Bridge crossing. Other considerations for the development of corridor alternatives included Species at Risk (i.e., avoid Lake Sturgeon spawning areas) and environmental and socio-economic considerations such as avoiding sensitive Moose concentration areas and hunting areas along river. Several iterations were carried out to avoid paralleling the river and its sensitive habitat, as well as to maximize the separation between the corridor and the river, with the exception of the crossing itself. These iterations considered input from MFFN community members.

The outcome of these iterations was the development of 12 alternative corridor segments: A1, A2, B1, C1, C2, C3, D1, D2, D3, E1, F1, F2. The alternative corridor segments are shown on **Figure 2-3**. Corridor alternatives segments were divided into those south of the river and those north of the river:

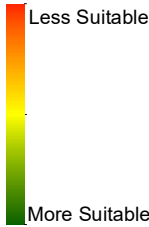
- › South of the Attawapiskat River, new corridor alternatives segments (**C1** and **C2**) to access the new West Bridge:
 - C1 leaves PCA No. 1 at the north end of B1 and continues directly north to access the new West Bridge, thereby leaving the esker.
 - C2 follows PCA No. 1 further northeast along the C3 and the esker, before branching northwest off C3 to access the West Bridge.
- › North of the Attawapiskat River, new corridor alternatives segments (**D1** and **D2**) return from the new West Bridge to rejoin PCA No. 1:
 - D1 moves northwards before veering towards PCA No. 1 to join at the start of E1.
 - D2 parallels the river but at a distance veering eastwards towards PCA No. 1, to join at the start of D3.

Figure 2-4 shows the location of the West and East Bridge crossings of the Attawapiskat River in greater detail.



Legend:

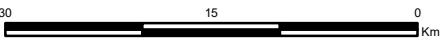
Terrain Suitability



- Corridor Alternatives
- Proposed Webeque Supply Road (WSR) Alternatives

Proposed Marten Falls Community Access Road (MFCAR) Alternatives

- NRL Corridor and MFCAR West Option Overlap
- MFCAR East Option
- MFCAR East/West Option
- MFCAR West Option
- First Nation Reserve
- Provincial Park
- Waterbody



SCALE: 1:550,000

Northern Road Link

Terrain Suitability - Revisions to Attawapiskat River Crossings and Corridor Alternatives

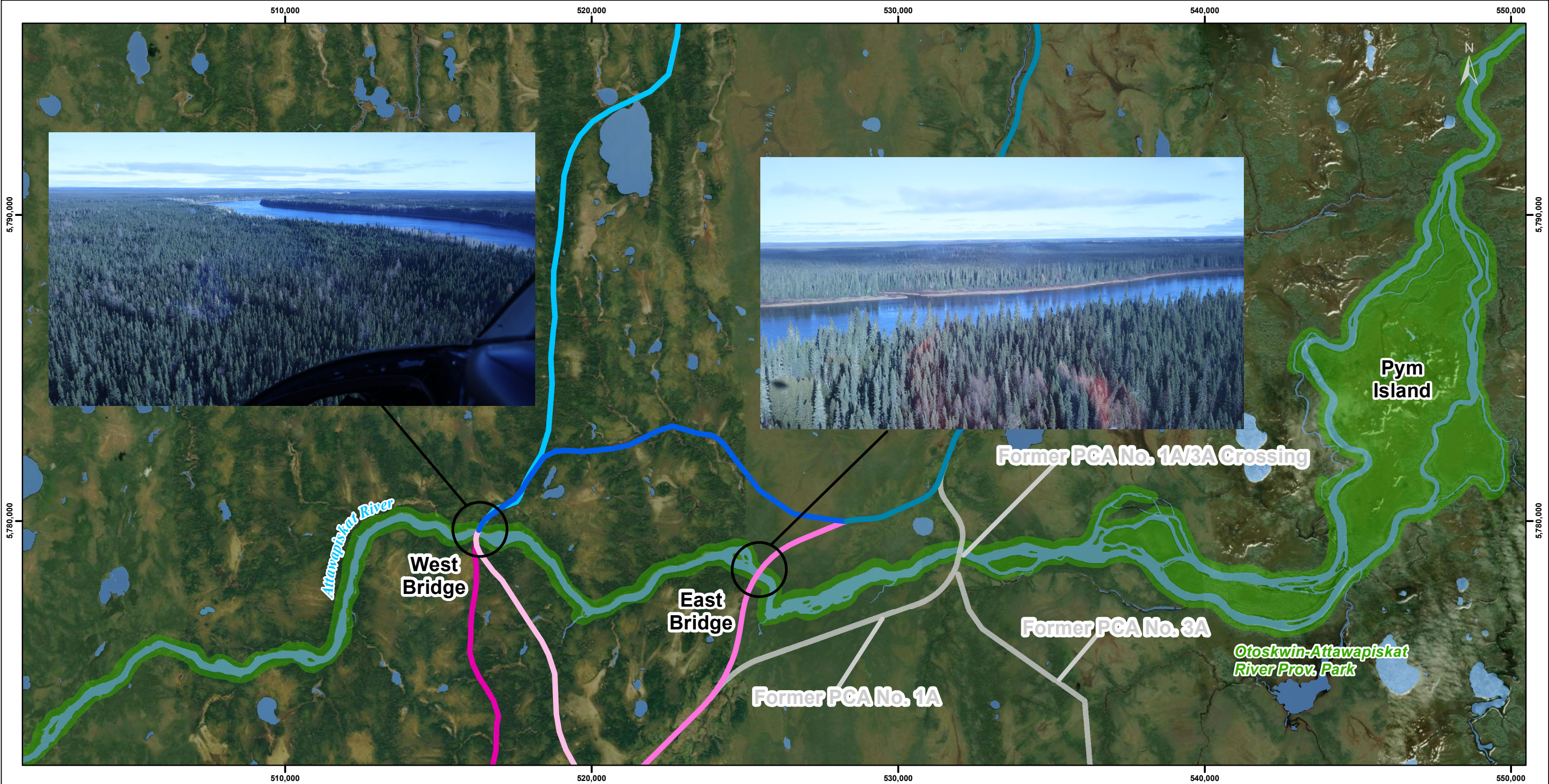
Figure Number: 2-3			REV: PA		
Client: Marten Falls and Webeque First Nations		Project Number: 679878	Date: 2022-03-21		
DSC			DRN	CHK	APP
			AD	ND	ND

NOTES

1. Coordinate System: NAD 1983 CSRS UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information, and Land Information Ontario (LIO) Warehouse Open Data (<https://geohub.lio.gov.on.ca/>), Ontario Ministry of Natural Resources and Forestry (OMNRF). Download Date : 2021-02-04

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Legend:

NRL Corridor Alternatives

- Alternative C1
- Alternative C2
- Alternative C3
- Alternative D1
- Alternative D2
- Alternative D3

Waterbody

Provincial Park

NOTES

1. Coordinate System: NAD 1983 CSRS UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; and Land Information Ontario (LIO) Warehouse Open Data (https://github.io.gov.on.ca/), Ontario Ministry of Natural Resources and Forestry (OMNRF). Download Date: 2021-02-04

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Northern Road Link

Attawapiskat River Crossings - Location of West Bridge and East Bridge

Figure Number: 2-4		REV: PA	
Client: Marten Falls and Webequie First Nations	Project Number: 679878	Date: 2021-11-15	
DSC		DRN	CHK
PCA - Preliminary Corridor Alternative		AD	MS

As a result of the elimination of the PCAs No. 1A and PCA No. 3A and associated Attawapiskat River crossing, there was no longer a way for the NRL project to connect to the MFCAR east option. Therefore, alternative corridor segment A1 was identified through the terrain suitability analysis to provide a connection to the MFCAR east option.

Alternative corridor segment A1 extends southerly from alternative corridor segment B1 to the MFCAR “Y” junction, well south of the Attawapiskat River, and it would only be considered for the NRL project if the MFCAR project selects its east option. If the MFCAR project selects its west option, the alternative corridor segment A2 would be required to connect to MFCAR.

2.2.1.3 Corridor Alternatives for the Assessment of “Alternative Methods” of Carrying Out the Project

As described in **Section 2.2.1.2.3**, twelve alternative corridor segments were identified for the NRL Project. Each alternative corridor segment is 2 km wide. The alternative corridor segments have been named from south to north to allow reference to specific segments, as well as a direct comparison. The alternative corridor segments are listed from south to north in **Table 2-5**, with their lengths, including lengths for overlapping segments.

Table 2-5: List of Alternatives Corridor Segments and Lengths

Alternative Corridor Segment	Length (km)	Overlaps With	Overlap Length (km)
A1	38.4	N/A	N/A
A2	3.6	N/A	N/A
B1	22.6	N/A	N/A
C1	12.9	N/A	N/A
C2	15.4	C3	5.3
C3	17.9	C2	5.3
D1	32.8	D2	3.4
D2	38.0	D1	3.4
		D3	23.6
D3	23.6	D2	23.6
E1	35.5	N/A	N/A
F1	13.4	N/A	N/A
F2	13.6	N/A	N/A

Various combinations of six (6) or seven (7) alternative corridor segments are available to put together a full corridor for NRL between the start point connecting to MFCAR and the end point connecting to WSR. Accordingly, the potential length of the NRL Project can vary by approximately 47 km (40 %), depending on the starting point, where the shortest combination of segments is 117 km and the longest combination of segments is 164 km.

Alternative corridor segments A1, B1, C3, D3, E, F1 and F2 have been subject to previous studies and are being retained for further consideration in the alternatives assessment. Alternative corridor segments **A1 → B1 → C3 → D3 → E1 → F2** make up the historical corridor that follows the esker and that was originally identified and investigated by Cliffs (ICA No.1/PCA No.1). Alternative corridor segments **A1 → B1 → C3 → D3 → E1 → F1** is essentially the same historical corridor with the exception of the north end, where the corridor swings out to the northwest (F1) to go around an area with Bald Eagle and Osprey nests (ICA No. 2/PCA No. 2).

The 12 alternative corridor segments were identified based on a high-level analysis, focusing on terrain units and known information about SAR, sensitive habitat and community values. They may be refined as a result of new information becoming available during the EA/IA and design of the Project, including from environmental investigations, IK and feedback from consultation and engagement activities. Although multiple segment combinations are possible, there are some restrictions:

- › The choice between segments A1 and A2 is entirely dependent on the preferred corridor selected for the MFCAR project.
- › Segments B1 and E1 remain the same in all potential combinations.
- › Segments C1 and C2 can only connect with segments D1 or D2 to the north.
- › Segment C3 can only connect with segment D3 to the north.
- › Segment D3 can only connect with segment E1 to the north.

As such, the assessment of “alternative methods” to carry out the Project will evaluate the following combinations of segments to determine the preferred corridor for the NRL project:

- › A1/A2 – B1 – C1/C2 – D1 – E1 – F1/F2;
- › A1/A2 – B1 – C1/C2 – D2 – D3 – E1 – F1/F2; and
- › A1/A2 – B1 – C3 – D3 – E1 – F1/F2.

The specific routing within the corridors will be determined during the EA/IA process. Throughout the planning and design phase, modifications to Project design are anticipated to occur based on information that arises through advancement of design, environmental investigations, and the IK and consultation programs. Therefore, it is possible that additional viable alternative routes may be identified during the EA/IA that warrant consideration. Information that becomes known may also suggest all of or portions of the proposed alternative segments are no longer considered reasonable. Should modifications to the alternative corridors be identified during the EA/IA, these will be brought forward for further consultation and engagement.

In keeping with the ToR Code of Practice (MOE, 2014a), the selection of alternative corridor segments for the Project included consideration of the following questions.

Do the alternatives provide a viable solution to the problem or opportunity to be addressed?

YES. Pursuant to the assessment of alternatives to the Project presented in **Section 2.1**, construction of an all-season road constitutes the most viable solution for realizing the opportunities identified by MFFN and WFN.

Are they proven technologies?

YES. Although winter roads have historically been the primary means of establishing ground travel corridors in Ontario’s Far North, they are becoming less reliable/safe due to climatic changes (i.e., they may only be operational for a few weeks/year), and First Nation communities have started to participate in the planning and implementation of all-season roads (e.g., Wa-Pik-Che-Wanoog Bridge and North Caribou Lake segment of Northern Ontario Resource Trail). There are proven technologies for construction of all-season roads in the challenging geographical conditions that will be encountered on this project (e.g., use of styrofoam slabs and geotextile/geogrid in peat/muskeg soils).

Are they technically feasible?

YES. Although more costly to build and maintain, as noted above, there are various technically feasible design and construction solutions for implementing all-season roads in Canada's northern regions.

Are they consistent with other relevant planning objectives, policies and decisions?

YES. As stated in **Section 1.4**, the NRL Project is relevant in the context of broader, long-term provincial growth, development and multimodal transportation initiatives in the region, including: *25-year Growth Plan for Northern Ontario, 2011* (MOI and MNDMF, 2011), *Building Better Lives: Ontario's Long-term Infrastructure Plan 2017* (MOI, 2017), *Connecting the North: A Draft Transportation Plan for Northern Ontario* (MTO, 2021).

Are they consistent with provincial government priority initiatives?

YES. The all-season road alternatives under consideration during the ToR phase accounted for such initiatives as source water protection, resource (mineral) development, reducing greenhouse gas emissions, protection of endangered species and their habitat, enhancing communications links and reducing reliance on fossil fuels.

Could they affect any sensitive environmental features?

YES. The development and screening of alternative road concepts accounted for potential effects on natural, cultural, and socio-economic environmental features and values deemed important by MFFN, WFN, and other First Nation communities in the immediate vicinity of the Project including Caribou habitat, wolverine habitat, culturally important natural and built features/landforms, areas used intensively for traditional activities, fish spawning areas, seasonal hunting areas, moose mating areas, and community spring water sources. Other potential effects across the broader environment were also accounted for, such as effects on businesses, archaeological sites and areas with archaeological potential, other sensitive land uses in the context of the MFFN and WFN community based land use plans, air quality and noise.

Are they practical, financially realistic and economically viable?

YES. In terms of, geographical location/extent and configuration, (117 to 164 km 2-lane all-season road within an approximately 100 m right-of-way), development of the alternative road concepts recognized and addressed existing physical constraints and opportunities, as well as financial limitations imposed by existing community resources and external public funding sources and mechanisms. In this context, they are considered practical, feasible and economically viable.

Are they within the ability of the proponent to implement?

YES. Within the financial limitations imposed by existing community resources and potential external public funding sources and mechanisms, the proponent believes that it is capable of implementing the proposed all-season road concept. MFFN and WFN are the proponents of the Project's EA/IA. The proponent of road construction will be determined later in the project development process. MFFN and WFN continues to have discussions with the Province on roles and responsibilities with respect to ownership and construction of the NRL.

Can they be implemented within the defined study area?

YES. The practicality of implementing the Project within its established geographic bounds is addressed above (i.e., the Project can be physically constructed within the defined study area). The proposed project road corridor is compatible with the plan objectives and permitted uses for the designated areas within which it is situated. Therefore, there should be no conflicts in implementing the Project from an administrative perspective.

Are they appropriate to the proponent doing the study?

YES. Marten Falls First Nation and Webequie First Nation are the project proponents. Other First Nations in Ontario's Far North and in other Northern regions of Canada have participated in similar all-season road initiatives, although not as the primary proponent.

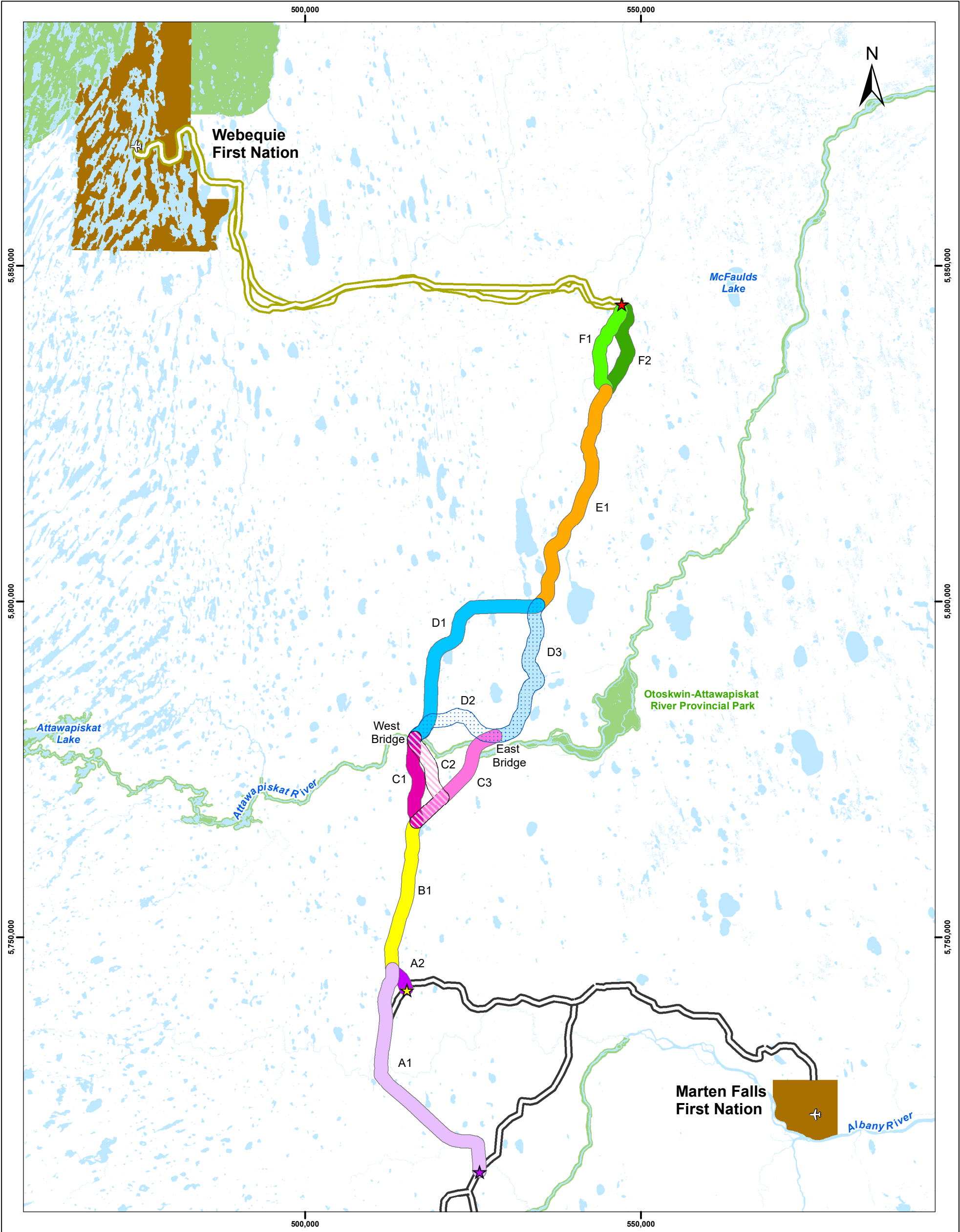
The Project is situated within the MFFN and WFN traditional lands and the Project will connect the MFCAR and WSR of which they are the respective proponents of, therefore, it is appropriate for MFFN and WFN to be the proponent of this Project.

Are they able to meet the purpose of the *Environmental Assessment Act*?

YES. The purpose of the *Environmental Assessment Act* is "the betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment" (R.S.O. 1990, c. E.18, s. 2). There is a high degree of alignment between the purpose of the Act and purpose of the Project as stated in **Section 1.4.1** of the ToR, particularly with respect to bettering the quality of life for WFN and MFFN community members by fostering employment and economic development opportunities. Development of the road alternatives is consistent with these purpose statements.

Further, the corridor alternative segments have been developed with a view to protecting environmental components of value to MFFN and WFN community members and other First Nations that share territory with MFFN and WFN.

The location of the proposed road corridor within MFFN and WFN traditional lands provides the opportunity for the community to assume and maintain a prominent role in managing the road facility in an environmentally responsible and sustainable manner.



Legend:

Corridor Alternatives

A1

A2

B1

C1

C2

C3

D1

D2

D3

E1

F1

F2

Proposed Webeque Supply Road (WSR) Alternatives

Proposed Marten Falls Community Access Road (MFCAR) Alternatives

Connection to WSR

Connection to MFCAR West Alternative


Connection to MFCAR East Alternative

Airports

First Nation Reserve

Provincial Park

Waterbody



NRL
Northern Road Link

30150

0

km

SCALE: 1:550,000

Northern Road Link

Corridor Alternatives

Figure Number:2-5REV:PA

Client:Marten Falls and Webeque First NationsProject Number:679878Date:2022-03-09

DSC

DRN

CHK

APP

AD

ND

ND

NOTES

1. Coordinate System: NAD 1983 CSRS UTM Zone 16N.

2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.

3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information, and Land Information Ontario (LIO) Warehouse Open Data (<https://geohub.lio.gov.on.ca/>), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

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Document Path: I:\E&W\Projects\679878 - Northern Road Link\40_Execution\45_GIS_Dwgs\MXD\TOR\679878_NRL_PLN_TOR_CorridorAlternatives_0001_0001.mxd

SIZE 11X17

2.2.2 Ancillary Infrastructure Alternatives

The proponent will consider and assess ancillary infrastructure alternatives for the preferred corridor in the EA/IA. This will include but not be limited to:

- 1) Alternative sites for temporary and/or permanent aggregate sites (pits and quarries) and crushing/production facilities needed for construction and operation and maintenance of the road, including access roads to these sites;
- 2) Alternative sites for temporary and/or permanent ancillary infrastructure for construction and operation, including access roads to these sites (e.g., temporary and/or permanent laydown, storage areas and maintenance facilities/yards; construction camps; rest areas; snow plow turnarounds)
- 3) Watercourse crossing structure types (i.e., culverts, bridges), span length, lifecycle, construction staging methods at waterbody crossings, hydrological and aquatic environment, and long-term maintenance;
- 4) Road attributes, including roadbed foundation; horizontal alignment, vertical alignment (elevation/profile), and adjustments to the cross-section and ROW width of the corridor; and
- 5) Construction timing (seasonal) and staging along the ROW to facilitate construction and minimize potential effects on the natural environment and traditional ILRU.

2.2.3 Approach to the Selection of Preferred “Alternative Methods” of Carrying Out the Project

In terms of “alternative methods” of carrying out the Project, the alternatives assessment will analyze the advantages and disadvantages of:

- › The corridor alternatives presented in **Figure 2-5**, to determine the preferred corridor.
- › Ancillary infrastructure alternatives for the preferred corridor, outlined in **Section 2.2.2**, to determine the preferred options.

This analysis will incorporate input from Indigenous communities, the public, stakeholders, and federal and provincial regulators, to be obtained through consultation and engagement process, as well as IK/ILRU and other baseline data. The preferred methods will be determined and the sum of the preferred methods will constitute the Project. The Project will then be subjected to the assessment of potential project-related effects on selected VCs.

The principles for evaluating “alternative methods” are intended to yield a balanced design solution that maximizes the degree to which potential project benefits and opportunities can be realized, while minimizing adverse environmental effects. It is anticipated that modifications to the project design may occur throughout the project planning process. Evaluation methods will be fully documented within the EAR/IS.

As per the MECP Code of Practice, the EAR/IS will document the decisions that lead to the selection of alternatives to be assessed considering key environmental factors, such as potential effects on the natural environment, cultural and socio-economic effects, and potential effects on Aboriginal and Treaty Rights and Interests, including consultation and engagement during the decision-making process (MOE, 2014a).

Criteria are being developed to assess the advantages and disadvantages of the “alternative methods” against a comprehensive set of factors that will be identified based on mandatory requirements under the EA Act, as cited in the ToR Code of Practice (MOE, 2014a) and feedback from engagement with Indigenous communities and interested persons, discussion with regulators, available IK/ILRU, and information collected during the baseline characterization.

Preliminary criteria and factors for the assessment of “alternative methods” are presented in **Table 2-6**. The EA/IA process includes the flexibility to refine/modify the evaluation criteria as additional information on project sensitivities and study participants’ values becomes available during both the ToR and the development of the EA/IA. Consultation and engagement will include opportunities for participants to provide input to the proponent to finalize the criteria for the evaluation of “alternative methods”.

Table 2-6: Preliminary Criteria and Factors for the Evaluation of “Alternative Methods”

Criteria	Rationale	Factors
Aboriginal and Treaty Rights and Interests		
Indigenous land and resource use	There may be areas that are used intensively and regularly by community members for right-based activities, such as hunting, fishing, and resource harvesting/gathering and are important due to other established or asserted rights. .	Avoid or minimize effects to areas used intensively for right -based activities
Physical Environment		
Source water	Source water is untreated water taken from rivers, lakes or underground aquifers to supply private and public drinking water systems. The <i>Ontario Clean Water Act, 2006</i> is part of the multi-barrier approach to ensure clean, safe and sustainable drinking water for Ontarians, by protecting sources of municipal drinking water such as surface water and groundwater. Surface water is water that lies on the Earth’s surface in the form of lakes, rivers and streams. It is drawn into a drinking water system through an intake pipe. Surface water is easily contaminated by pollution flowing over the land or directly into lakes, rivers and streams. Groundwater is the water beneath the Earth’s surface, found in the cracks and spaces between soil, sand and rock particles. It is drawn into a drinking water system through a well. Surface water and groundwater can be interconnected, with pollutants finding their way from one to another. Groundwater can also be contaminated by pollutants that are deposited on the surface soil or underground. Groundwater contamination can be much more difficult than surface water pollution to remediate. Spring water is used by the communities for ceremonial purposes, and some community members use this as a potable water source. Community members recognize the importance of protecting its sources of drinking water, and the potential for the road construction and operation to adversely affect the spring water source area, either directly through excavation activities, or through connections with surface water runoff.	Avoid or minimize effects to community sources of spring water
Biological Environment		
Fish and fish habitat	The Project area is situated within tertiary watersheds of the Attawapiskat River and Albany River. Fish species that inhabit the river systems include Brook Trout, Cisco, Northern Pike and Walleye (known colloquially as Pickerel). Lake species include Smallmouth Bass, Lake Whitefish, Yellow Perch, Lake Sturgeon and Common White Sucker, as well as many smaller forage fish species. Protection of areas where these fish spawn is critical to the preservation of this important resource. Timing considerations are required to avoid impacting during sensitive fish spawning and rearing windows. Overwintering and feeding areas will also be considered as these are important factors in maintain fish populations.	Avoid or minimize disturbing fish habitat, including spawning, rearing, feeding, and overwintering habitat

Criteria	Rationale	Factors
Biological Environment (Cont'd)		
Caribou (Boreal population) and Caribou (Eastern Migratory population)	<p>The Missisa and Ozhiski Caribou ranges is considered continuous and spans the ecotone between the Ontario Shield Ecozone and Hudson Bay Lowland Ecozone (MNR, 2014a). The minimum Caribou population in the Missisa Range was estimated at 745 based on winter distribution surveys completed from 2009 through 2013 (MNR, 2014). A combined low mean annual survival estimate (80%) and low calf recruitment indicates the population was on a declining trend at the time of data collection (MNR, 2014a). For the Ozhiski range, a minimum animal count of 148 was observed based on winter distribution surveys. Annual survival trends are not estimated in this range, but the range is thought sufficient to sustain a Caribou population (MNR, 2014a). Caribou (Boreal population) is a 'Threatened' species under the Ontario <i>Endangered Species Act</i> and the federal <i>Species at Risk Act</i>. Only the boreal population of Caribou is listed as a Species at Risk in Ontario. Caribou (Eastern Migratory population) are also expected to overlap with the project. These are listed as Endangered under COSEWIC, but have not yet been listed as endangered under the <i>Species at Risk Act</i>. These Caribou are unique in their long-distance migration through the area, and their migration routes likely include parts of the NRL route.</p> <p>Caribou require large undisturbed areas of old and mature conifer upland forest and lowlands dominated by jack pine and/or black spruce. They are also found in bogs and fens. Both of these habitat types exist in proximity to the corridor alternatives, as do known Caribou travel corridors and nursery areas. Caribou habitat disturbance has become a systemic problem across Canada, which is a significant issue given the amount of time it takes for habitat recovery.</p>	Avoid or minimize effects to Caribou habitat
Moose	<p>Moose are an important subsistence species for MFFN and WFN. During the moose rutting (mating) season (September-October) Moose are found in different areas than during other seasons. Before the bull moose go into rut, they are usually found in the higher elevation areas. They will seek out cooler and thicker areas of the forest, trying to escape insects and predators. Cow moose and their calves will stay in the lowlands near water. The cows seek out water for food and safety. Calves are vulnerable, especially to wolves and bears; a cow with calf will use the water as an escape when threatened by predators. The amount of daylight (or lack thereof) triggers the rut. When the moose rut begins, and likely for a few weeks before the beginning of the cow moose estrous, the bulls will move down out of the higher elevations to seek out the cows. The bulls will stay in the lower and wetter areas within proximity of the cows to engage in mating. The moose gestation period is in the order of 243 days. The rutting/mating areas are well known to MFFN and WFN community members, who understand that the areas have unique habitat characteristics and play a major role in supporting the breeding process.</p> <p>Moose habitat features in addition to the rutting/mating areas, such as those identified in the Significant Wildlife Habitat Technical Guide (SWHTG, [MNR, 2000]) and associated habitat schedules will also be considered. These will include but are not limited to calving areas, mineral licks, and aquatic feeding areas.</p> <p>The importance of the Attawapiskat River as being a sensitive area for moose has already been taken into account to a certain extent through the identification of a new crossing site (West Bridge) for comparative evaluation and the identification of corridor alternatives to and from the West Bridge that avoid closely paralleling the river.</p>	Avoid or minimize effects to moose rutting/mating areas and other habitat features identified in the SWHTG and associated schedules

Criteria	Rationale	Factors
Biological Environment (Cont'd)		
Subsidence wildlife and waterfowl species	<p>Wildlife in the project area comprises a number of terrestrial and waterfowl species that are hunted/trapped by members of Indigenous communities for subsistence use. These include Moose, Caribou, Beaver, Snowshoe Hare, Pine Marten, ducks and geese. Certain areas have habitat characteristics that make them popular seasonally for hunting, such as areas where waterfowl will stage during the period of early spring when open water begins to appear. MFFN and WFN community members may frequent these areas and have established infrastructure to facilitate hunting activities (e.g., blinds, campsites). Community members recognize that the noise and movement of vehicles during waterfowl staging periods could impact these areas significantly.</p> <p>Other habitat features, such as those identified in the SWHTG (MNR, 2000) and associated habitat schedules will also be considered in the alternative methods evaluation, as these are important to the sustainability of subsidence wildlife species in the area.</p>	Avoid or minimize effects to seasonal hunting areas and other habitat features identified in the SWHTG and associated schedules
Species at Risk	<p>There are a number of provincially and/or federally listed Species at Risk that could potentially be affected by the Project. SAR with the potential to be present within or near the Project may include but not be limited to:</p> <ul style="list-style-type: none"> › Northern Myotis; › Little Brown Myotis; › Tri-coloured Bat; › Caribou (Boreal population) – also assessed as a separate criterium; › Wolverine; › Barn Swallow; › Bank Swallow; › Chimney Swift; and › Eastern Whip-poor-will. 	Avoid or minimize SAR habitat and avoid sensitive time periods
Socio-economic Environment		
Known mineral resource/areas of high mineral potential	The Project will connect the mineral deposits in the McFaulds Lake area in the Ring of Fire to the highway network, hence it is important to avoid areas of known mineral resources/areas of high mineral potential that may lead to future mine development.	Avoid or minimize effects to known mineral resources/areas of high mineral potential
Land Use and Recreation	A variety of commercial and non-commercial land use activities have the potential to interact with the Project. Commercial land use includes mining activity and mining claims, oil and gas, forestry, trapping and guide outfitting, while non-commercial land use includes activities such as hunting, fishing, and canoeing.	Reduced area of commercial and non-commercial land uses is preferred
Local and Regional Economy	The economic benefits of local and regional communities through increased local business and employment during construction and operation of the Project, including flow of goods and services, and expediting transport of persons.	Enhanced economic benefits are preferred
Cultural Heritage Resources		
Cultural heritage resources	There are archaeological resources, built heritage resources and cultural heritage landscapes of importance to individual community members, or to the community as a whole. These may serve as locations for ceremonial rites, storytelling, spiritual reflection, or recreational activities; they may be the site of a historically important event; or they may provide shelter during periods when individuals or groups are away from the main community area for several days at a time.	Avoid or minimize disturbance of archaeological resources, built heritage resources and cultural heritage landscapes

Criteria	Rationale	Factors
Engineering/Constructability		
Length (km)	The length of a corridor influences construction costs and duration of construction. Generally shorter routes are preferred as requiring a smaller total area of habitat removal for construction purposes and having less overall environmental impacts. During operations, shorter driving distances typically result in reduced driving times, lower fuel costs, lower traffic related air quality emissions, potentially fewer collisions and reduced maintenance requirements. Also, shorter roads are typically less costly to maintain.	Shorter length is preferred
Number and type of waterbody crossings	<p>Watercourses are sensitive environmental features, which support aquatic life, including fisheries which can be important food sources for Indigenous community members. Construction of bridges and culverts at a watercourse can change its morphology (shape), increase sediment loading and composition (increased percentage of inorganic) downstream and alter flow patterns over the long-term.</p> <p>The constructability of waterbody crossings can be challenging. The hauling and erection of longer and heavier girder sections for multi-span bridges requires considerable effort. In addition, less multi-span bridges or clear span bridges will result in fewer effects to the environment as there are fewer piers or caissons required below the high water mark.</p> <p>During operations, culverts can create local flooding and impede the passage of fish, including spawning fish during high water conditions. Spills at bridges and culverts are more difficult to contain and can release contaminants downstream extending beyond the footprint of development. Icy conditions are more likely to develop at bridges and culverts during the winter, making driving more hazardous. Also, bridges and culverts are more costly to maintain than other road segments.</p>	Fewer waterbody crossings are preferred
Terrain	<p>Terrain type influences the constructability of the road. For example, eskers are preferred for technical and constructability, as they generally have the highest elevation in the region, thereby providing a well-drained location for the road construction, as well as potential aggregate resources. However, the sensitivities associated with eskers (e.g., unique natural features) must also be considered.</p> <p>Wetlands (peatlands) are a predominant terrain type in the general area and cannot be entirely avoided. Wetlands generally support high levels of biodiversity, provide critical habitat and play an important role in managing ground and surface waters. Wetlands help sequester and store carbon over the long-term, thereby protecting against climate change. Construction through wetlands, particularly through open fens, generally has greater environmental impacts and poorer construction conditions. During operations, there may be more maintenance requirements.</p> <p>Permafrost represents challenges for the design, construction, and maintenance of a roadway; therefore, less permafrost is generally preferred.</p>	<p>More stable ground is preferred</p> <p>Avoid or minimize changes and/or degradation to physical, chemical and biological characteristics of permafrost, terrain, topography and soils</p> <p>Avoid or minimize changes and/or degradation to the amount and continuity of terrain units (e.g., eskers, etc.) in the landscape</p>
Cost	Funding for the Project will be provided by the Province of Ontario.	Efforts will be made to minimize costs where appropriate; however, lower cost is not the main driver. The proponent seeks an effective and well-balanced solution between cost and Project effects.

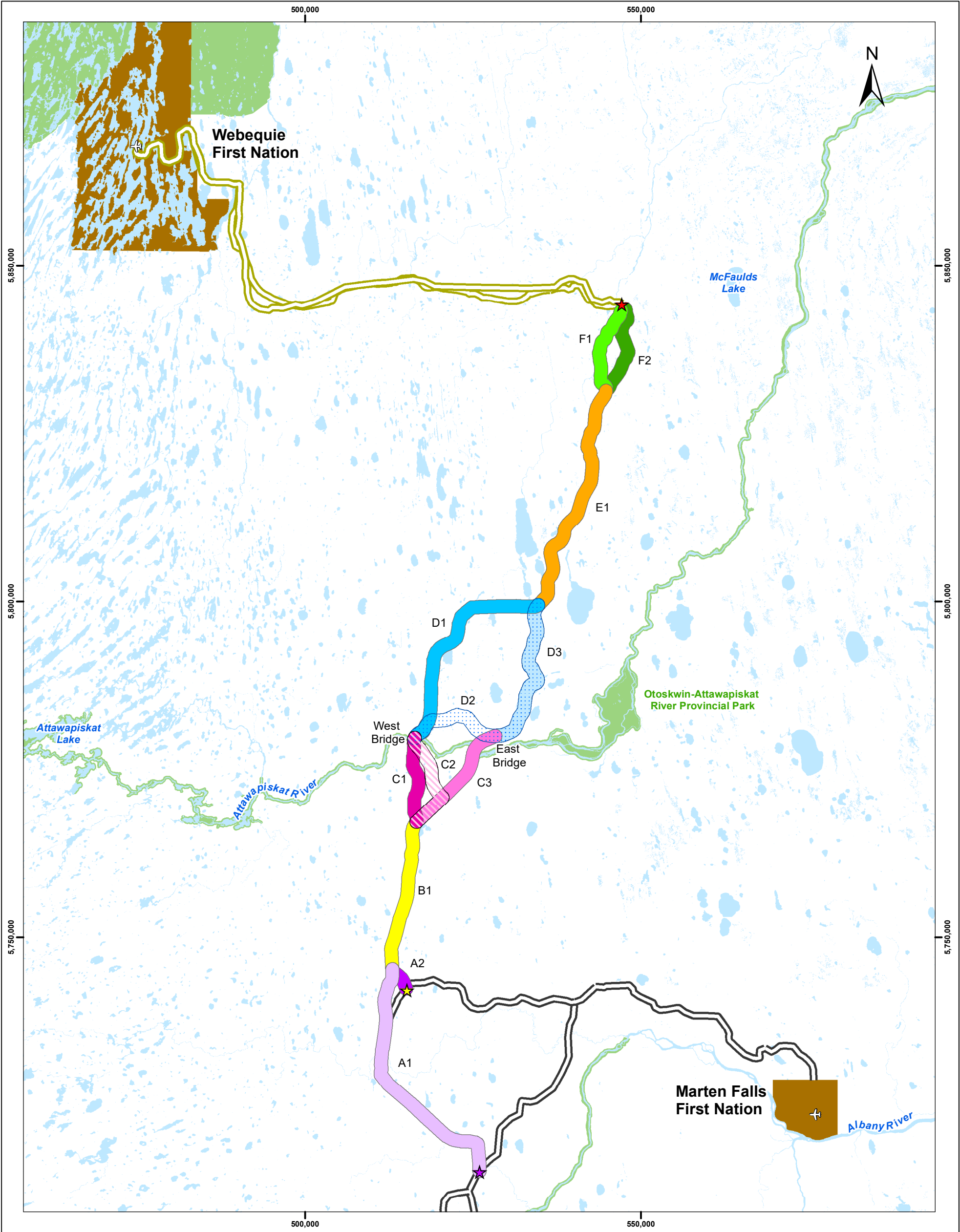
3 Description of the Project

This section provides a general description of the Project. This description is based on conceptual design and is subject to change. The EAR/IS will include a more detailed description of the proposed Project based on the preliminary engineering design for the preferred alternative.

3.1 Site Location

The Project is located between the proposed MFCAR and the eastern terminus of the proposed WSR in northern Ontario (**Figure 3-1**). The south end of the Project is approximately 150 km north of the Municipality of Greenstone, 480 km northeast of Dryden, 400 km northeast of Thunder Bay, 510 km northwest of Timmins and 1,040 km northwest of Toronto. The north end of the Project is approximately 386 km northwest of Hearst, 300 km northeast of the Township of Pickle Lake, 283 km north of Nakina, and 260 km south of Peawanuck.

The Project is generally bookended by the proposed WSR to the north and the proposed MFCAR to the south. The proposed WSR has a defined east terminus in the McFaulds Lake in the Ring of Fire area to which the Project's north terminus will connect to. The south terminus of the Project will connect to the proposed MFCAR. The proposed MFCAR has two alternative corridors currently under assessment. The point where the Project needs to connect to the MFCAR will be based on the preferred MFCAR corridor, which is yet to be selected. **Figure 3-2** shows the Project corridor alternatives within the context of these other proposed connected road projects (i.e., MFCAR and WSR). The width of the proposed corridors for the Project is approximately 2 km and their length ranges from 117 km to 164 km. Alternative corridors are further discussed in **Section 2.2.1.3**, with **Section 2.2.3** describing the approach to the selection of a preferred corridor for detailed assessment in the EA/IA.



Legend:

Corridor Alternatives

A1

A2

B1

C1

C2

C3

D1

D2

D3

E1

F1

F2

Proposed Webeque Supply Road (WSR) Alternatives

Proposed Marten Falls Community Access Road (MFCAR) Alternatives

Connection to WSR

Connection to MFCAR West Alternative

Connection to MFCAR East Alternative

Airports

First Nation Reserve

Provincial Park

Waterbody

NRL

Northern Road Link

30150

0

km

SCALE: 1:550,000

Northern Road Link

Corridor Alternatives

Figure Number:

3-2

REV:

PA

Client:

Marten Falls and Webeque First Nations

Project Number:

679878

Date:

2022-03-10

DSC

AD

CHK

APP

ND

ND

NOTES

1. Coordinate System: NAD 1983 CSRS UTM Zone 16N.

2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.

3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information, and, Land Information Ontario (LIO) Warehouse Open Data (<https://geohub.lio.gov.on.ca/>), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

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SIZE 11X17

3.2 Design Consideration and Criteria

Design considerations will be incorporated and evaluated in the EA/IA and will be aligned with the purpose of the Project. Alternative design considerations, such as those involving waterbody crossing structure types (i.e., culverts, bridges) and span lengths, topography, road alignment, and aggregate sites (pits and quarries), will be evaluated based on site-specific environmental, technical and cost considerations, with input from Indigenous communities (e.g., IK/ILRU), federal and provincial regulators, the public and stakeholders. Further discussion on design alternatives for consideration, and the approach for their evaluation, is included in **Section 2**.

Basic elements to be included in the road design, or that may be considered to mitigate potential environmental effects, include but are not limited to:

- › Structure types (i.e., culverts, bridges), span length, lifecycle, and construction staging methods at waterbody crossings;
- › Road attributes, including horizontal alignment (straight sections and curves), vertical alignment (elevation and profile) and adjustments to the cross-section and right-of-way (ROW) width of the corridor;
- › Alternative sites for ancillary infrastructure for construction (i.e., temporary laydown and storage areas, construction camps, including access roads to these areas) and ancillary infrastructure for operation and maintenance;
- › Alternative sites for temporary and/or permanent aggregate extraction pits and production facilities needed for construction and long-term operation of the road, including access roads to these sites; and
- › Construction timing (seasonal) and staging along the ROW to minimize potential effects on the natural environment and traditional ILRU.

3.2.1 Preliminary Design Criteria

For the purposes of developing the preliminary design criteria for the Project, it is assumed the Annual Average Daily Traffic volume will exceed 500 vehicles however this will be further evaluated in the EA/IA. The design standards for the Project with respect to vertical curvature, maximum grade and minimum road shoulder width will adhere to those established by the Ontario Ministry of Transportation (MTO) for an RCU100 functional highway classification (**Table 3-1**). The design speed for the Project is 100 km/h, with an anticipated posted speed limit of 80 km/h.

The road will be gravel surfaced, including shoulders, with material sourced from aggregate sites (pits and quarries) that have suitable sand and gravel deposits (e.g., eskers). The design of the underlying subgrade material and its depth below the granular surface of the road will have consideration for the typical vehicle types (e.g., light pick-up trucks, heavy industrial/commercial transport trucks and trailers) and volumes that are envisioned to use the road, including their weight/load. Traffic operations may also include mineral ore or mine product hauling. The specific traffic mix (%) of heavy vehicles (e.g., trucks) versus light vehicles will be further examined in the EA/IA.

The gravel surface of the road will have a cross-fall of 4% for the purposes of drainage. All roadside ditches will be sized for the 10-year Minor System Design Flow and a minimum 100-year Major System Design Flow in accordance with MTO Drainage Standards (MTO, 2008). Culverts at waterbody crossings will be sized to accommodate a minimum 25-year return period design flow for structures with a total span less than or equal to 6.0 metres (m), and a minimum 50-year return period design flow for structures with a total

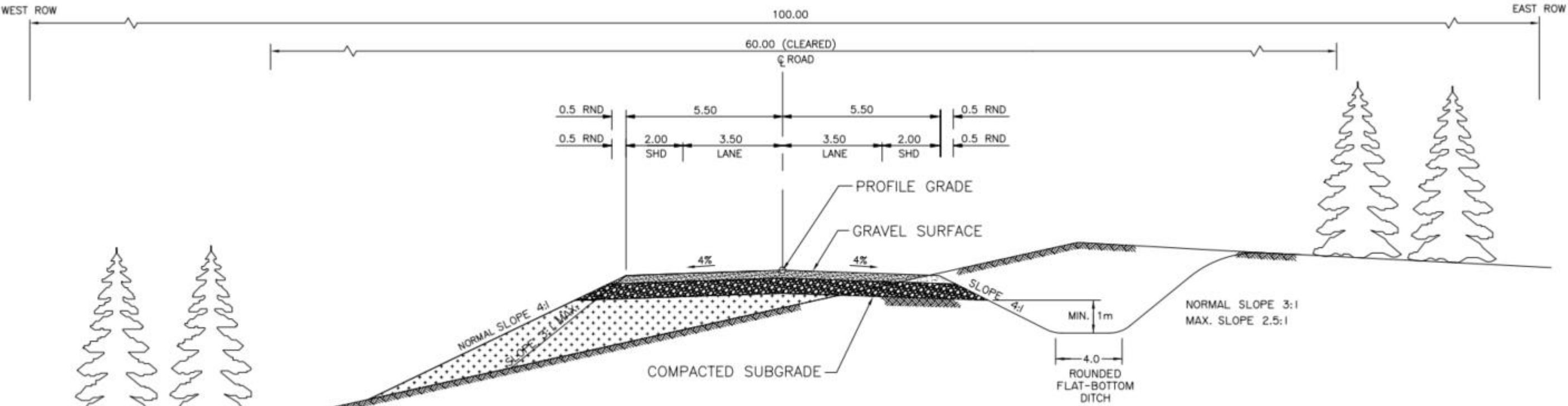
span greater than 6.0 m (MTO Drainage Standards WC-1, WC-7). A minimum culvert diameter or rise of 900 millimetres (mm) will be provided for circular, elliptical or arch culverts. A minimum 900 mm rise will be provided for box culverts (MTO Drainage Standards WC-8). Structural design for bridges and culverts at waterbody crossings will be carried out upon selection of a preferred road alignment and will take into consideration remote access constraints, material availabilities and the Canadian Highway Bridge Design Code (CSA, 2019) as well as environmental considerations. A typical cross-section for the Project is provided in **Figure 3-3**.

Road intersections will be designed in accordance with the MTO's Roadside Design Manual (MTO, 2020a), the Transportation Association of Canada's Geometric Design for Canadian Roads standards, the MTO/TAC supplemental standards used for municipal roads and provincial highways, and other appropriate engineering, environmental and related provincial design criteria. Road intersections, as well as other design elements, such as signage, illumination, and commercial/recreational entrances, will be considered during detail design of the Project.

Table 3-1: Preliminary Design Criteria

Preliminary Design Criteria	Value
Functional Highway Classification	RCU100
Annual Average Daily Traffic (AADT)	Assumed >500 vehicles per day
Design Speed	100 km/h
Posted Speed Limit	80 km/h
Right-of-Way	100 m
Surface	Gravel surface, including shoulders
Road Top Width	Approximately 11.5 m

Note: Preliminary Design Criteria are subject to change.



NORTHERN ROAD LINK GENERAL CROSS SECTION
N.T.S.



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Northern Road Link
Typical Cross-Section for the Project

Figure Number: 3-3			REV: PA		
Client: Marten Falls and Webequie First Nations		Project Number: 679878	Date: 2021-10-22		
DSC			DRN	CHK	APP
			AD	ND	ND

3.3 Project Components and Related Activities

The EAR/IS will include a detailed description of the Project components and related activities for each phase of the Project. A preliminary description of Project components and activities is presented in the following sections.

3.3.1 Project Components

The Project is expected to include the following components:

- › Approximate length of 117 km to 164 km (depending on the chosen corridor) of all-season gravel road with a 60 m cleared area and a 100 m ROW.
- › Approximately 11.5 m wide (top width) multi-use road, including undivided lanes (two 3.5 m wide lanes), shoulders and ditches (when required).
- › Water crossings, including one large bridge crossing at the Attawapiskat River, several smaller bridges, and numerous culvert installations.
- › Culverts for water flow connectivity and to balance water levels.
- › Ancillary infrastructure including:
 - Aggregate sites (pits and quarries), and crushing/production facilities.
 - Storage/laydown areas, maintenance facilities/yards, construction camps, rest areas, snow plow turnarounds.
 - Temporary/permanent access roads and temporary/permanent water crossings.

3.3.2 Project Activities

3.3.2.1 Construction Activities

Project activities are described below and summarized in **Table 3-2**. The construction phase will encompass all the activities associated with the initial development of the road and ancillary infrastructure. The construction and commissioning of the Project are expected to have a duration of 3 to 10 years (subject to possible seasonal limitations to site access), after securing all the necessary approvals, permits, licences, authorizations and clearances to construct. Pre-construction activities will include field delineation of vegetation buffers and known nearby features of cultural or environmental importance that may require specialized application of mitigation measures or monitoring during construction. Construction activities might be executed year-round (depending on selected alignment and terrain). All construction activities will consider potential effects to the environment and will be implemented in a way that avoids or minimizes these effects.

The detailed construction staging and sequencing of the Project will be determined during detail design through discussions with Indigenous communities, provincial and federal agencies and the construction contractor. Commissioning of the road for operation will occur shortly after construction is deemed substantially complete.

The main construction activities of the Project that may interact with the natural, socio-economic, human health and cultural environment will include:

- › Land surveying, staking and layout;
- › Vegetation clearing and grubbing, as required within the 100 m ROW;

- › Construction of ancillary infrastructure that includes storage and laydown areas, access roads/trails, construction camps, and aggregate sites (pits and quarries);
- › Earth excavation, grading and hauling operations;
- › Aggregate extraction, processing and hauling operations;
- › Blasting, as required for aggregate extraction and/or road development;
- › Construction of the road, including;
 - Excavation for roadway and ditches, roadway aggregate placement, grading and compaction;
 - Construction of waterbody crossings; and
 - Installation of culverts for water balance, to minimize ponding either side of the road.
- › Emissions, discharges and waste:
 - Transport, handling and storage of fuel for equipment and vehicles;
 - Handling and disposal of waste oil, lubricants and other fluid products used for the maintenance of equipment and vehicles;
 - Storage, handling and disposal of solid waste generated at temporary construction camps/work sites and during operations and maintenance activities (e.g., construction waste, domestic waste, wood, cardboard, plastics, foods, metals);
 - Management and/or disposal of wastewater and sewage, both hazardous and non-hazardous, in the form of liquid effluent generated by the temporary workforce/construction camps and construction;
 - Sediment mobilization and discharges from earthwork activities; Noise emissions from equipment and vehicles;
 - Air emissions from the operation of equipment and vehicles, including engine exhaust and dust generation;
 - Vibrations, for example if blasting is required in discrete locations; and
 - Greenhouse gas (GHG) emissions as result of the construction and operation of the Project;
- › Clean-up and site restoration, including the decommissioning and removal of temporary infrastructure (e.g., access roads), excluding those which may be formalized and used for the operations phase of the Project.

3.3.2.2 Operation Activities

Project activities are described below and summarized in **Table 3-2**. The operations phase will include all activities associated with operation and maintenance of the road and any other permanent ancillary infrastructure (e.g., operation and maintenance yard, aggregate sites) that will be needed for the life of the road.

During the operations phase of the Project, activities such as the assessment of the condition and operating performance of the road surface, drainage system and structures at waterbody crossings will be conducted regularly along the road corridor. The objective of these routine inspections will be to ensure the road meets the minimum standards for roadside safety and is a reliable connection to allow for the movement of materials, supplies, and people.

The operator of the Project is unknown at this time and is part of future discussions and agreement on the ownership and governance of the facility. However, it is expected that the designated operator of the Project will develop specific operational and maintenance procedures and standards for the road that will be consistent with provincial guidelines for level of service. It is anticipated that the operating and maintenance activities of the Project will include:

- › Visual inspections of the road and structures (bridges/culverts) at waterbody crossings;
- › Localized surface repairs, resurfacing, and repairs to shoulder as required;
- › Use of aggregate sites for road maintenance/repairs;
- › Dust control;
- › Control of vegetation/brush within the ROW within the cleared zone;
- › Winter maintenance – snow clearing and de-icing;
- › Road drainage system maintenance work – clean-out/repairs to culverts, ditches and outfalls or ditch inlet structures. This will also include a wildlife monitoring and management component for wildlife (such as beaver), as their activities may impact the drainage network;
- › Road traffic;
- › Collection and disposal of animal carcasses that may result from vehicle collisions, which may require an *Endangered Species Act* authorization for Species at Risk; and
- › Clean-up and site restoration, including the decommissioning and removal of temporary infrastructure (e.g., access roads), excluding those which may be formalized and used for the operations phase of the Project.

There will also be consideration of a number of road use controls that will be discussed between WFN, MFFN, and the Province of Ontario during the EA/IA. How these controls will be executed and enforced will be a function of road ownership and jurisdictional aspects of road operation. Some of the road control elements to be discussed include:

- › Road access;
- › Access to and use of adjacent lands for traditional uses or other activities (e.g., mineral exploration, outfitters);
- › Vehicle and operator licensing requirements;
- › Insurance coverage requirements and general liability;
- › Enforcement/policing responsibility; and
- › Emergency response capabilities.

3.3.2.3 Decommissioning Activities

The Project will be operated indefinitely and decommissioning of the Project is not anticipated. Should decommissioning activities eventually be considered for some or all Project components, decommissioning will be planned and conducted in accordance with the relevant standards and regulatory requirements in effect at that time. If decommissioning activities are required, a detailed review of the potential environmental effects and mitigation measures will be conducted. Consideration of the permanency or temporary nature of supporting infrastructure will be incorporated in the EA/IA. In addition, a description and consideration of Project lifecycle phases (i.e., pre-construction, construction, maintenance and monitoring, decommissioning) will be addressed within the EAR/IS.

3.3.3 Summary of Project Activities

Table 3-2 summarizes Project activities by Project phase.

Table 3-2: Summary of Project Activities by Phase

Activity	Associated Activities
Construction Phase	
Road construction within an approximately 100 m ROW width over a distance of 117 km to 164 km	<ul style="list-style-type: none"> › Vegetation clearing and grubbing of road ROW and ancillary infrastructure (access road, camps, laydown areas, aggregate sites) › Earth excavation and grading activities, including drainage ditches › Construction/installation of permanent culverts and bridges at minor and major waterbody crossings › Possible dewatering for culvert installations and bridge construction › Water taking for construction activities such as concrete making, dust suppression, ice roads, ice bridges, and others › Multi-span bridge waterbody crossings ranging in length from 20 m to 250 m › Single-span bridge waterbody crossings ranging in length from 5 m to 20 m › Culverts for waterbody crossings and non-permanent stormwater flows/creeks for length less than 5 m › Placement, grading and compaction of aggregate material for roadbed › Post-construction clean-up and site restoration › Development of aggregate sites (pits and quarries) with crushing/processing facilities which are subject to receiving an Aggregate Permit. One or more aggregate sites may be retained for use during the operations phase of the Project
Construction of ancillary infrastructure	<ul style="list-style-type: none"> › Storage and laydown yards › Temporary access roads, of which some may remain and be formalized as permanent access roads for use during the operations phase of the Project › Post-construction clean-up and site restoration › Construction camps
Emissions, discharges and waste	<ul style="list-style-type: none"> › Transport, handling and storage of fuel for equipment and vehicles › Handling and disposal of waste oil, lubricants and other fluid products used for the maintenance of equipment and vehicles › Storage, handling and disposal of solid waste generated at temporary construction camps/work sites and during operation and maintenance activities (e.g., construction waste, domestic waste, wood, cardboard, plastics, foods, metals) › Management and/or disposal of wastewater and sewage, both hazardous and non-hazardous, in the form of liquid effluent generated by the temporary workforce/construction camps › Air emissions from the operation of equipment and vehicles, including engine exhaust and dust generation › Greenhouse gas (GHG) emissions as result of the construction of the Project › Noise emissions from equipment and vehicles › Vibrations, particularly in the event that blasting is required in discrete areas for road development and/or for obtaining aggregates › Sediment mobilization and discharges from earthwork activities
Decommissioning	<ul style="list-style-type: none"> › Decommissioning of temporary ancillary infrastructure

Activity	Associated Activities
Operations Phase	
Road operation and maintenance	<ul style="list-style-type: none"> › Inspection and maintenance/repairs of road and structures at waterbody crossings, including emergency repairs › Use of aggregate pits for road maintenance/repairs › Localized surface repairs and full granular resurfacing of road base and shoulder › Winter maintenance – snow clearing and de-icing › Management of vegetation/brush within the corridor › Road drainage system – clean-out/repairs to culverts, ditches and outfalls or ditch inlet structures › Management of vegetation/brush within the corridor › Road drainage system – clean-out/repairs to culverts, ditches and outfalls or ditch inlet structures › As required, collection and disposal of animal carcasses resulting from vehicle collisions, in compliance with any ESA authorizations which may be required for disposal/handling/euthanasia of injured Species at Risk › Operational use (traffic)
Emissions, discharges and waste	<ul style="list-style-type: none"> › Transport, handling and storage of fuel for equipment and vehicles › Handling and disposal of waste oil, lubricants and other fluid products used for the maintenance of equipment and vehicles › Air emissions from the operation of equipment and vehicles, including engine exhaust and dust generation › Greenhouse gas (GHG) emissions as result of the operation of the Project › Noise emissions from equipment and vehicles transiting the road
Decommissioning	<ul style="list-style-type: none"> › Decommissioning of temporary ancillary infrastructure

3.3.4 Workforce Requirements

The Project's workforce requirements have not yet been determined. The EAR/IS will present estimated workforce requirements for each Project phase.

3.4 Project Schedule

The Project schedule is yet to be determined and will be included in the EAR/IS. Preliminary Project phases and timelines include:

- › Environmental assessment (3 to 5 years)
- › Permitting and detail design (12 months)
- › Site preparation (6 months)
- › Construction (3 to 10 years)

The Project will be operated for an indeterminate time period; therefore, decommissioning of the Project is not anticipated.

4 Consultation and Engagement

This section describes the consultation and engagement approach to be followed during the EA/IA for the Project. This section also summarizes the consultation and engagement activities carried out for the Project activities to date, as well as the input received for the development of the Proposed ToR. The proponent has prepared a Consultation and Engagement Plan to meet the requirements of the EA Act, included as **Appendix B**. The plan was developed in accordance with the requirements of the EA Act, the ToR Code of Practice (MOE, 2014a), the EA Code of Practice (MOE, 2014b)] and the *Code of Practice: Consultation in Ontario's Environmental Assessment Process* (MOE, 2014c). Opportunities to provide feedback to the proponent on the EA/IA will occur at key milestones in the process.

In the provincial context, the terms consultation and engagement are used to describe activities with Indigenous communities and other interested persons to fulfill the requirements of the provincial EA process. Consultation and engagement activities are described in the EA Code of Practice (MOE, 2014b) and the *Code of Practice: Consultation in Ontario's Environmental Assessment Process* (MOE, 2014c). In addition, a Memorandum of Understanding (MOU) between MECP, NDMNRF and the MFFN and WFN has been signed and sets out which procedural aspects of consultation are being delegated by Ontario to the proponent. The MOU on shared consultation responsibilities outlines the roles and responsibilities of the proponent and Ontario. The MOU is provided as **Appendix G**.

Consultation and engagement activities will include relationship-building activities that extend beyond the statutory and procedural requirements of consultation, where possible based on the interest and willingness of other parties. It is noted that consultation and engagement activities conducted within a provincial EA process may be relied on by Ontario towards fulfilling its constitutional Duty to Consult with Indigenous peoples.

4.1 Consultation and Engagement Purpose, Objectives, Principles

4.1.1 Purpose

The purpose of consultation and engagement is to promote effective two-way communication between the proponent and members of potentially affected Indigenous communities, Indigenous organizations, federal and provincial regulators, the public and other stakeholders; to present and receive information and to identify and address issues and concerns related to the Project through mitigation and/or accommodation. Furthermore, in accordance with the applicable Codes of Practice (MOE, 2014a, 2014b, 2014c), consultation is intended to:

- › Identify Indigenous communities and other stakeholders who may be affected by or have an interest in the undertaking;
- › Share relevant information about the proposed Project;
- › Receive guidance on the ToR and EA/IA;
- › Identify information, concerns and opportunities to be considered in the EA/IA;
- › Support the development of commitments by the proponent;
- › Encourage the submission of requests for further information and analysis early in the EA/IA; and
- › Enable MECP to make a fair and balanced decision on the ToR and the EAR/IS.

Additionally, the MECP provided consultation requirements as part of a letter dated November 3, 2020 (**Appendix C**). While outlining that the Project must adhere to the ToR Code of Practice (MOE, 2014a) and the EA Code of Practice (MOE, 2014b), the MECP also indicated the following minimum requirements for the consultation program:

- › Notification to the public about the Project at key milestones;
- › Provide information about the Project;
- › Consider and provide responses to comments; and
- › Maintain a Record of Consultation for each community/organization.

The Record of Consultation must contain all related non-confidential communications including letters/emails (outgoing and incoming), publication of notices, meetings (i.e., agendas, meeting summaries), issues raised and how they have been addressed/considered.

4.1.2 Objectives

Consultation and engagement with Indigenous communities and organizations, stakeholders, federal agencies, provincial Ministries, the public is integral to creating and maintaining relationships and open communication. The Crown has a legal obligation to consult with Aboriginal people where it contemplates decisions or actions that may adversely impact asserted or established Aboriginal or treaty rights. Our consultation and engagement efforts will provide opportunities for Indigenous peoples as well as stakeholders, federal agencies, provincial Ministries, the public to be meaningfully engaged, as well as share IK/ILRU so that it that may be incorporated into the EA/IA, as described in **Section 5**.

The proponent is committed to conducting a comprehensive, and meaningful consultation and engagement process for the Project. The process has been developed, and will be executed in respect of the following:

- › General engagement principles;
- › Elders' guiding principles;
- › WFN's Three-Tier approach to Indigenous community consultation and engagement; and
- › Requirements of applicable legislation, policies and guidelines.

4.1.3 Guiding Principles

4.1.3.1 General Engagement Principles

Consultation and engagement activities will embrace the following general engagement principles:

- › **Meaningful** – The proponent will link participation and engagement directly to the Project objectives to inform the ToR and EA/IA. The engagement process will provide meaningful opportunities for early involvement of Indigenous communities and organizations, regulatory agencies, the public and stakeholders to support their continued participation throughout all stages of the ToR and EA/IA. This includes engagement that allows for back-and-forth discussion about issues and responding to concerns and questions raised about the Project through certain venues such as written documentation and open houses (virtual and in-person), surveys, livestream sessions, and radio call-in shows. The proponent may respond to some comments by updating of frequently asked questions on the project website, and will respond in writing to all comments received in writing where the name and contact information of the commenter is provided. This will be documented in the Record of Consultation.

- › **Transparent** – Opportunities to participate will be communicated through multiple channels to share information appropriately and effectively. Feedback received will be documented and the proponent will demonstrate how the input from Indigenous communities and organizations, federal and provincial regulators, the public and stakeholders were used and incorporated into the ToR and the EA/IA, and documented in the Record of Consultation.
- › **Inclusive and Accessible** – The proponent will provide different opportunities for diverse members of Indigenous communities and organizations, the general public and interested stakeholders to learn about and be involved in the Project. This includes providing and reasonably adjusting timeframes where necessary to consider working schedules, community meetings, in-person engagements as well as call-in options for those without a computer or reliable internet connection. Documents and materials will use language that is easy to understand and free of technical jargon and, where feasible, key documents/presentations may be translated into the Indigenous language of participating communities.
- › **Flexible** – The proponent will be responsive to issues and concerns that are expressed and will consider this input in the decision-making process related to this Project in a manner that will minimize adverse effects and maximize benefits.
- › **Collaborative** – The proponent will work closely with their communities (MFFN and WFN) and other potentially affected Indigenous communities and organizations, regulatory agencies, the public and stakeholders to leverage opportunities for collaboration, and share best practices and lessons learned, wherever possible.

4.1.3.2 Guiding Principles for Engagement

For this Project we will pay special attention to maintaining the vision of the proponent and adhere to a combination of mutual guiding principles of MFFN and WFN.

Elders from both communities have provided guidance to the proponent so that consultation and engagement for the ToR is conducted in a respectful manner that reflects their culture and traditions of MFFN and WFN as Indigenous proponents of the Project.

All ToR and EA/IA-related consultation and engagement activities will be inclusive of the following guiding principles:

- › Mutual recognition of inherent rights;
- › Mutual recognition of ancestral knowledge;
- › Mutual recognition of traditional knowledge and practices;
- › Mutual recognition of clan families and relationships;
- › Mutual recognition of sustainable livelihood; and
- › Mutual recognition of traditional protocols.

Early in the process, we will reach out to Indigenous communities to request for information and direction on consultation and engagement principles, protocols and practice. When visiting Indigenous communities, the proponent will respect their protocols and principles as appropriate. Additionally, consultation and engagement activities will include some of the key elements of consultation as outlined in the Nishnawbe Aski Nation Handbook on Consultation in Natural Resource Development (Nishnawbe Aski Nation, 2007) so that consultation is:

- › A continuous process;
- › About exchanging information;
- › About building relationships;

- › About getting feedback;
- › About exchanging additional information, as required;
- › About identifying issues;
- › About accommodation and reconciliation;
- › About fairness; and
- › About negotiating with the right attitude.

4.1.3.3 MFFN Elders' Guiding Principles

To honour the traditional lands in which this Project will be developed and to respect the traditional teachings, the following Guiding Principles (MFFN, 2020) have been endorsed by Chief and Council of both communities and will be used throughout the engagement process. These were originally prepared for the draft Marten Falls Community Based Land Use Plan currently in development:

1. "Kezhikanawabajikateg kaye ji tepwaaniwaang kekikinozhiwemakaang."

"Everything on our land and water is living and needs to be respected."

The land and all of its living creatures are viewed by the Anishinabek as integral to the circle of life and integral to the survival and balance and harmony of the environment that Anishinabek is only one part of.

2. "Kawininitojikateg nikan onajikewining ineke."

"The Anishinabek relationship to the land should be seen as a cultured landscape; also an area that is continuously being used by the Anishinabek as a habitation and as a resource."

The Anishinabek are of the land; their customs, identity, and cultures are tied intricately to the land and its resources.

3. "Kakina ji wiinda mawa nowaht anishinabek ka onjiwatch."

"Engage the Anishinabek on all issues that affect our shared and communal lands."

All Anishinabek should be treated with respect and therefore, are to be engaged on matters that affect their lives directly.

4. "Jih ishi kanawejikatey kakina kekon."

"Respect the natural and Anishnawbe customs and teachings at all times."

The Creator put Anishinabek on these lands as stewards of the land to take care of the lands and use the lands and its resources indefinitely. The only conditions were to adhere to the natural and traditional teachings of the Elders.

5. "Chi Mamow waban ji kateg emishiinonaniwang mashkawisiinaniwang."

"Looking at it together. In numbers there is strength."

With consultation, the more persons that are directly affected, the more need to be involved in the process; therefore, the process will need to find ways to accommodate Anishinabek people (members and other stakeholders) (MFFN, 2020).

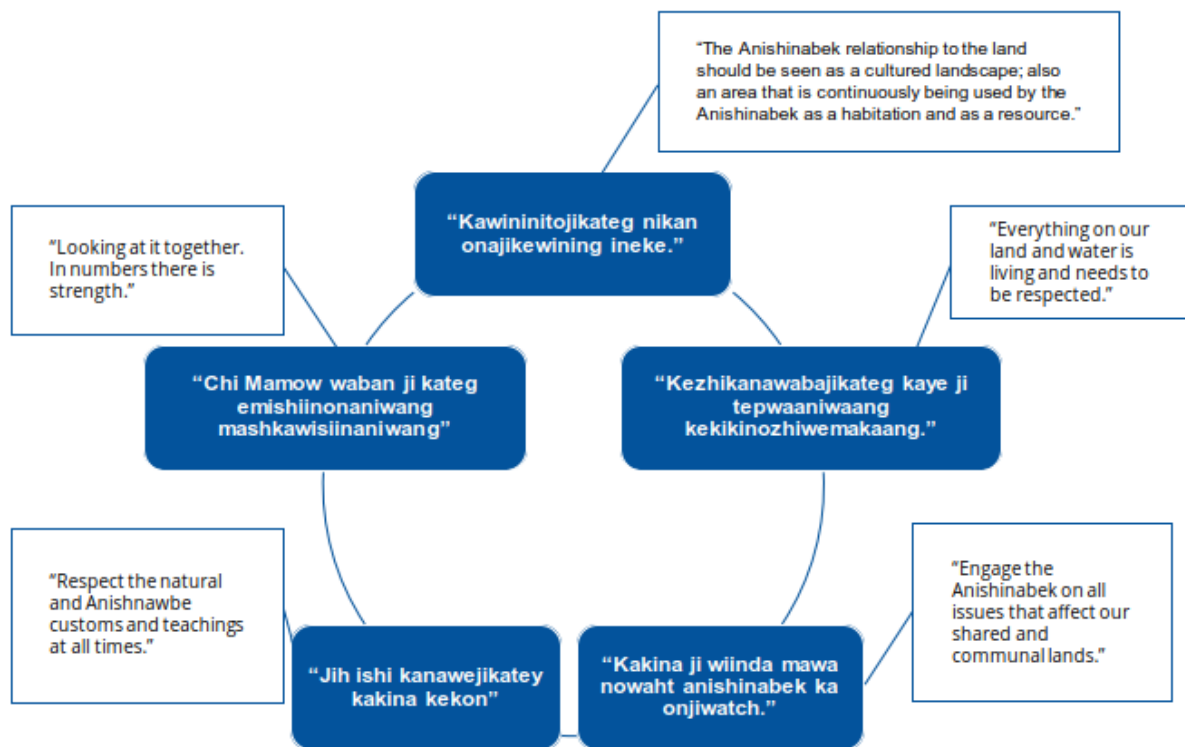


Figure 4-1: Guiding Principles (MFFN, 2020)

The guiding principles noted above and other general principles of consultation and engagement will be refined in accordance with protocols and principles of other Indigenous communities and Indigenous organizations throughout the ToR and EA/IA. The consultation conducted for the ToR will help to guide development of the consultation process to be conducted throughout the subsequent EA/IA.

Webequie First Nation Three-Tier Approach

A Three-Tier framework has been prepared for the approach to Indigenous consultation for the NRL. The Three-Tier approach is consistent with Webequie and Marten Falls First Nations' traditional cultural values, customs and beliefs, as shown in **Figure 4-2** and described below (WSR, 2020).

WEBEQUIE'S THREE-TIER APPROACH

The three tiers are closely connected and depend on each other.

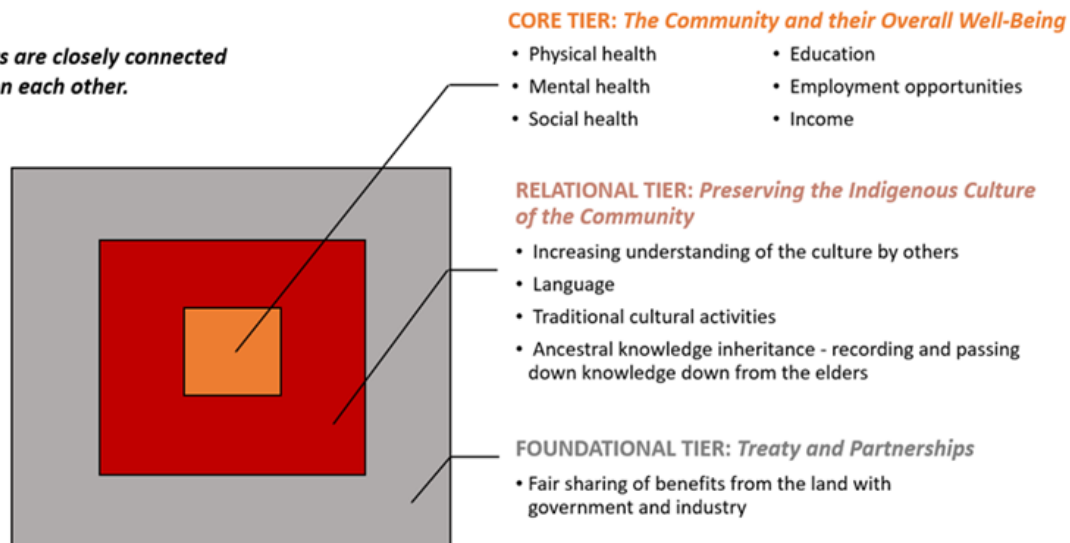


Figure 4-2: Three-Tier Approach

This consultation approach has been inherently passed on through generations by WFN's Indigenous Knowledge Keepers and forms part of the Elders' Guiding Principles that harmonize with regulatory requirements for consultation.

4.1.3.4 Core Tier - Webequie and Marten Falls First Nation

The community approach to project development and consultation is based on Bimachiowiin (life sustaining or sustainable), Ondatissiwiin (source of life) and Minobiimatissiwiin (prosperity and good life agreements).

Bimachiowiin is a result of sustainable community, which relies on the Foundational Tier. This is the tier where relationships are made with government regulators. The benefits are brought back to flow to the community.

Ondatissiwiin is the source of life. The source of livelihood depends on the relationship and benefit agreements with First Nation Partners, governments and industry, which is a benefit for the community.

The source is realized through project development or exploring and it either must be found or created. For this Project, access to the source of Bimachiowiin is a road project and, as such, must be explored and created.

Minobiimatissiwiin is the result of prosperity and good life agreements. It is measurable through baseline studies of existing social and economic conditions today.

4.1.3.5 Relational Tier – First Nations Neighbours and Government Agencies

In order to sustain its way of life, the community must breathe and the people must be able to practice their way of life with the land, as well as their languages and culture. The Relational Tier next to the core of the community is an adaptive transitional tier supporting the fixed location of the community, and relies on the land animals and wildlife to allow community members to practice the Creator-given rights to hunt and fish without having to move the family to different locations for harvesting purposes.

It is well understood that any project developed within their traditional territory could have effects on others. It is also well understood that the regulatory environment to develop projects, requires approvals and authorizations government agencies.

The Relational Tier of this approach to consultation and project development involves outreach to and involvement of other potentially affected First Nations, many of whom are home to WFN and MFFN family/clan members; and developing relationships with and working closely with agencies of the provincial and federal governments. It is recognized that these relationships and connections are important to maintain in a positive way.

4.1.3.6 Foundational Tier – Social and Economic Benefits from the Land

The approach to project development and consultation is based on the overarching objective to create social and economic benefits for the members of the WFN and MFFN through the use and development of resources on their lands.

Social and economic benefits will result in a number of positive outcomes for the community, including improved standard of living through increased revenues; and self-determination – reduced reliance on provincial and federal government sources of funding, and the ability for the community to make decisions about activities and development within their traditional territory.

The social benefits of increased economic activity and revenues into the community are many, including improved housing and family well-being through reduced crowding that will also lead to improved health conditions. Creating economic activity will also increase skill levels and employment opportunities, all of which contribute to economic prosperity, which will then contribute to the improvement of all social outcomes for the community.

Economic prosperity, social well-being and self-determination are at the foundation of the Three-Tier approach. Development opportunities must, in and of themselves, also be sustainable, providing long-term benefits to the community, and not at any cost. Any development within the traditional territory of the WFN and MFFN must be respectful of and consistent with the values, traditions and culture of the community.

As can be seen, the basic guiding principles held by the two communities, while expressed differently, are very similar and intricately tied together. The Core Tier of the Three-Tier Approach, with its focus on the overall physical, mental and social well-being of the community members, is linked closely with the principle of the importance of balance and harmony of all living things. The Relational Tier is directly linked to the principle of respecting and preserving the natural and Anishnawbe customs and teachings passed down by the Elders. The Foundational Tier is underpinned by the principle that the lands are shared and communal, and, as such, the benefits from the land should also be shared with government and industry.

4.1.4 Crown's Duty to Consult

The Crown has a legal obligation to consult with Indigenous communities when it contemplates decisions or actions that may adversely impact asserted or established Aboriginal or treaty rights. Boards, tribunals, regulatory authorities and proponents all play a role in the consultation process; however, the Crown retains the responsibility to ensure that the necessary consultation and, if appropriate, accommodation has occurred.

It is the responsibility of the Crown to determine whether a duty to consult has been triggered by a Project and, if so, identify the Indigenous communities to be engaged and the appropriate consultation to be undertaken with those communities. For the NRL Project, the Crown is represented by both federal and provincial agencies, as the Project falls under the jurisdiction of both the EA Act and the IAA.

In order for consultation and engagement to be meaningful, it is important to recognize that Indigenous communities have varying rights and interests in respect of the Project, and as such may request different approaches to consultation and engagement, as well as mitigation and accommodation, where appropriate, to mitigate impacts to their rights and interests.

The courts have established that the constitutional duty to consult rests with the Crown, and arises from the principle of the honour of the Crown. The Supreme Court of Canada in *Haida Nation v British Columbia* (2004) and *Mikisew Cree First Nation v Canada* (2005) has stated that consultation in relation to established Aboriginal and treaty rights requires the intention to substantively address Indigenous concerns. It is understood the Crown may rely on efforts by the proponents' Statutory Consultation in fulfilling its duty to consult.

The courts have also established that the government can delegate some of the procedural aspects of the duty to consult to a Project proponent. Also, the government may coordinate consultation activities of agencies, including the coordination of Provincial and Federal agencies, and proponents. The EA Act requires that proponents consult with interested persons, including Indigenous communities who may have an interest in the Project. When Ontario contemplates conduct that may adversely impact known established or asserted Aboriginal or treaty rights, Ontario has a constitutional duty to consult Indigenous communities and, where appropriate, accommodate impacts to their rights.

In addition, a Memorandum of Understanding (MOU) between MECP, NDMNRF and the MFFN and WFN has been signed and sets out which procedural aspects of consultation are being delegated by Ontario to the proponent. The MOU on shared consultation responsibilities outlines the roles and responsibilities of the proponent and Ontario. The MOU is provided as **Appendix G**.

4.1.5 Implications of COVID-19

The proponent acknowledges the challenges many Indigenous communities and stakeholders face with respect to the current and ongoing public crisis around COVID-19. Under normal circumstances in-person meetings are typically a cornerstone of the consultation process. However, due to the COVID-19 global pandemic, the proponent will responsibly engage in innovative and adaptive ways to allow for meaningful consultation in a form that respects both the values and safety of Indigenous communities, other Indigenous organizations, and stakeholders. The implications of COVID-19 will result in the proponent utilizing tools for virtual meetings until it is declared safe to meet in-person. The proponent will rely on the direction of provincial government health authorities, Indigenous community leaders, and leaders of other Indigenous organizations to determine when in-person meetings may resume. COVID-19 protocols will be observed for in-person meetings and Open Houses.

4.2 Identification of Indigenous Communities and Stakeholders

4.2.1 Indigenous Communities

The MECP, ENDM (now NDMNRF) and the Agency have identified Indigenous communities and Indigenous organizations whose Aboriginal and/or Treaty Rights may be potentially affected by the Project and may have an interest in the Project, as following (MECP, 2020a, provided as **Appendix C** and shown on **Figure 3-1**):

- › Animbiigoo-Zaagi'igan Anishinaabek
- › Aroland First Nation
- › Attawapiskat First Nation
- › Constance Lake First Nation

- › Eabametoong First Nation
- › Fort Albany First Nation
- › Ginoogaming First Nation
- › Kasabonika Lake First Nation
- › Kashechewan First Nation
- › Kingfisher Lake First Nation
- › Kitchenuhmaykoosib Inninuwug
- › Long Lake #58 First Nation
- › Marten Falls First Nation
- › Métis Nation of Ontario – Region 2
- › Neskantaga First Nation
- › Nibinamik First Nation
- › Red Sky Independent Métis Nation
- › Wapekeka First Nation
- › Wawakapewin First Nation
- › Webequie First Nation
- › Weenusk (Peawanuck) First Nation
- › Wunnumin Lake First Nation

As well, the following Tribal Councils will be notified to determine interest in participating in the process:

- › Independent First Nation
- › Independent Métis Nation
- › Matawa Tribal Council
- › Mushkegowuk Council
- › Nokiwin Tribal Council
- › Shibogama Council

The following Provincial Territorial Organizations will be notified to determine interest in participating in the process:

- › Nishnawbe Aski Nation (also known as Grand Council Treaty 9)
- › Anishinabek Nation (also known as the Union of Ontario Indians)
- › Métis Nation of Ontario
- › Chiefs of Ontario

4.2.2 Government Agencies

4.2.2.1 Provincial and Federal Government Agencies

The following government agencies will be consulted during the EA/IA:

- › Ontario Government
 - Ministry of the Environment, Conservation and Parks
 - Ministry of Northern Development, Mines, Natural Resources and Forestry
 - Ontario Ministry of Transportation
 - Ministry of Indigenous Affairs
 - Ministry of Economic Development, Job Creation and Trade
 - Ministry of Municipal Affairs and Housing
 - Ontario Ministry of Heritage, Sport, Tourism and Culture Industries
 - Ontario Provincial Police

- › Government of Canada
 - The Agency
 - Environment and Climate Change Canada
 - Fisheries and Oceans Canada
 - Indigenous Services Canada
 - Transport Canada

4.2.2.2 Municipalities

Municipalities to be included in the consultation program were identified based on their proximity to the NRL Project, and include:

- › City of Thunder Bay
- › City of Timmins
- › Municipality of Greenstone
- › Municipality of Sioux Lookout
- › Township of Pickle Lake

4.2.2.3 Public and Stakeholders

The following stakeholders will be involved in the consultation process:

- › Residents of the cities and municipalities of Greenstone, Thunder Bay, Timmins, Township of Pickle Lake, and Sioux Lookout;
- › Those with recreational interests (e.g., hikers, campers, hunters, fishers, boaters);
- › Environmental groups (e.g., non-Governmental organizations)
- › Camp operators and outfitter businesses;
- › Other interested businesses;
- › Resource users (e.g., forestry, trappers, mining and mineral tenure holders in the area, including Noront Resources);
- › Other interests (e.g., Chamber of Commerce); and
- › Interested persons who ask to be added to the project contact list.

4.3 Consultation with Potentially Affected Indigenous Communities

In addition to meeting the purpose of the duty to consult and addressing impacts on rights, consultation is key to preserving relationships, collecting information, and ensuring that the Project's scope encompasses all matters of interest. While consultation with Indigenous communities is the Crown's legal obligation, the proponent is interested in building and maintaining relationships with interested Indigenous communities and organizations. Maintaining these relationships involves meaningful consultation and engagement to hear ideas and address concerns throughout the ToR and EA/IA. Indigenous communities will be involved at critical decision-making points throughout the EA/IA so that the proponent can consider and incorporate IK/ILRU into the Project, as well as consideration of other concerns or opportunities identified. IK/ILRU from the Project affected communities will also be incorporated into the various studies associated with the EA/IA, where appropriate, and with data information sharing agreements in place. An IK Program is being conducted for the Project and is further discussed in **Section 5**.

4.4 Key Communication and Engagement Tools

A variety of methods will be used for consultation throughout the EA/IA to obtain input from all interested parties. Engagement will include opportunities for translation of communication materials into Ojibway, Oji-Cree and Cree languages to ensure clear understanding of the Project. Communication and engagement methods are summarized in **Table 4-1**. Virtual meetings may be needed in replacement of in-person meetings based on challenges related to the current COVID-19 pandemic.

Table 4-1: Summary of Engagement Methods

Method of Engagement	Description
Registered Mail Notification Letters	Notification letters will be prepared and sent by registered mail to the identified Indigenous communities, Tribal Councils and PTOs (as listed in Section 4.2) to inform them of the EA/IA milestones, including: EA/IA commencement/introduction ; Draft EAR/IS for feedback and comments; and Final EAR/IS with comments incorporated.
Direct mail/email Notifications	A mailing list has been developed and will be maintained through the duration of the EA/IA. Those on the mailing list will be sent notices of meetings and other key milestones of the EA/IA. We plan to provide (at a minimum) quarterly updates to the Chiefs of the Indigenous communities being engaged for this Project.
Notices and Newspaper Advertising	<p>Notices will be issued at various points through the duration of the EA/IA to inform identified Indigenous communities/organizations and others on the stakeholder list of Project milestones and to invite attendance to Open Houses, including:</p> <ul style="list-style-type: none"> › Notice of Commencement of Terms of Reference › Notice of Draft Terms of Reference for Review › Notice of Submission of Proposed Terms of Reference › Notice of Commencement of the Environmental Assessment › Notice of Draft EAR/IS for Review › Notice of Submission of Final EAR/IS › Notice of Open Houses
Comment Forms	Comment forms will be made available at Indigenous community meetings, Open Houses, and the Project website.
Newsletters, videos, radio, livestream	<p>Project newsletters will be developed on a monthly basis to provide updates and summaries of project milestones. Newsletter distribution will be scheduled around the timing of the planned Open Houses and other key activities. Each newsletter will be distributed to MFFN and WFN community members, other Indigenous communities and to the public and stakeholders who have expressed an interest. Newsletters will also be made available on the Project website. Radio shows will be broadcast over Wawatay Radio, throughout the Wawatay broadcast region. These sessions will take place bi-weekly and each session will be in an open dialogue format with the proponent to allow community members to ask questions about the Project and to obtain their feedback and input.</p> <p>Livestream events will also take place bi-weekly and these livestreams will be available on the Project website, FaceBook and YouTube. Invitation letters with posters are sent to the Chiefs inviting them and their membership to participate in the radio shows and the livestream events.</p>
Open Houses (in-person and/or virtual)	<p>Public and Indigenous Open Houses will be conducted in-person and/or virtually. The Open Houses will each start with a presentation, followed by time to visit different stations with display boards to discuss different topics and speak to the proponent. There will be an opportunity to ask questions and provide feedback via a survey during and after the Open Houses to support our consultation efforts. In addition, we will be posting a recording of the Open House presentation to the project website, and additional times are provided for question and answer to be done virtually. A Virtual Reality (VR) Open House portal will be available for viewing two weeks before the Open House as well as during the Open House period to view the display boards. Comments can also be left on each display board in the VR Open House.</p>

Method of Engagement	Description
Community Visits / Virtual Community Sessions	<p>Community visits and virtual community sessions, in the form of video teleconferences or live streaming sessions on Facebook or YouTube are planned throughout the EA/IA schedule with the most interested and potentially affected communities.</p> <p>Specific activities to be conducted during community visits may include:</p> <ul style="list-style-type: none"> › Introduce the proponent to the Chief and Council and Elders and to provide a Project overview › Confirm key community participants and leaders to engage and consult with › Determine existing community protocols for engagement and consultation › Outline the purpose of the ToR and EA/IA, including schedule and milestones › Obtain input and feedback from community members on the ToR and EA/IA › Obtain general input from community members about the Project and information they wish to share
Meeting with Off-Reserve Community Members	Meetings with off-reserve Indigenous community members can take place either before or after the Open Houses when they can occur in person. In addition, members will be able to participate in either the Indigenous Open Houses or the Public Open Houses.
Engagement with Métis	Periodic information meetings will be held with the Métis Nation of Ontario-Region 2 and the Red Sky Métis Independent Nation throughout the ToR and EA/IA, and they will be invited to the general Indigenous community Open Houses and the Public Open Houses.
Engagement with Tribal Councils and Provincial Territorial Organizations (PTOs)	Tribal Councils and PTOs will be provided information and will be provided opportunities to comment throughout the ToR and EA/IA. Meetings will be held upon request.
Project Website & Social Media	<p>A Project website is available for the Indigenous communities/organizations, public and stakeholders to review Project related information at https://northernroadlink.ca</p> <p>The Project website will serve as a hub for all public documents. There is also a phone number to reach the proponent: 1-888-515-3607.</p>

The information collected through these methods will be documented and, where applicable, responses will be provided. Information that is received will be documented in the Record of Consultation and, where appropriate, will be used to inform the assessment of the Project and scoping of various ongoing studies.

The following outlets are proposed for publication of notices:

- › Geraldton Times Star;
- › Thunder Bay Chronicle Journal;
- › Timmins Daily Press;
- › Sioux Lookout Bulletin;
- › Northern Ontario Business (online);
- › Anishnabek News (online);
- › Windspeaker (online);
- › Wawatay News (online);
- › Federal and provincial regulators;
- › Identified property owners, interest groups and members of the public;
- › Indigenous communities and groups; and
- › Project website.

The following locations are proposed for viewing project documents (e.g., Draft ToR, Proposed ToR, Draft EAR/IS), pending COVID-19 public health precautions:

- › Greenstone Public Library (Geraldton);
- › Greenstone Public Library (Longlac);
- › Matawa First Nations Management;
- › Sioux Lookout Public Library or Sioux Lookout Municipal Office;
- › Thunder Bay Public Library; and
- › Timmins Public Library.

4.5 Issues Resolution

The proponent expects that, during the EA/IA, issues will arise that will need to be resolved. To manage these issues, all comments, questions and concerns will be documented in the Record of Consultation (RoC) and responded to accordingly. The comments and responses will be included in the ToR and EAR/IS, as applicable, including how feedback will be incorporated into the EA/IA. The proponent is committed to ongoing discussion, meetings, and proposed issue resolutions (e.g., mediation), which will be documented to record the issue resolution process for each issue raised.

4.6 Record of Consultation

To meet the requirements of the EA Act, the consultation and engagement process must be documented, and all feedback appropriately categorized and documented. To facilitate this process, the proponent will maintain an electronic communication log to keep track of all consultation and engagement activities such as correspondence, telephone calls, website communications, community and stakeholder meetings, open houses and any other meetings that were held. This log will also record the type of correspondence received, to whom it was addressed and when it was received, and a summary of the incoming and outgoing correspondence. The database will also document by whom and when the comments were addressed, the content of the response, and how the comment/response was incorporated into the ToR and EA/IA.

The consultation log is designed to include the following information relating to each consultation and engagement event or activity:

- › Date on which the communication, event or activity occurred;
- › Method of communication (e.g., letter, email, phone call, face-to-face);
- › Identification of initiator and recipient of communication or, in the case of a meeting, organizer and participants attending the meeting;
- › Copy of or link to communication in the case of written communication, as well as copy of/or link to any other relevant documentation provided or generated as part of the communication, including all information provided to fulfill regulatory requirements, notices for open houses, and draft versions of all materials prepared for the EA;
- › Summary of communication or, in the case of a meeting, meeting notes; and
- › Identification of issues raised or discussed and any follow-up action or undertaking and status of the issue (e.g., outstanding, addressed/resolved).

The consultation log is an input to the Record of Consultation (RoC) for the Project. The RoC (to date) is included in **Appendix A**. The RoC will document all of the consultation and engagement activities undertaken, including:

- › A description of consultation and engagement activities;
- › A description of engagement with Indigenous communities and interested stakeholders who were identified, notified and consulted with;
- › A summary of comments and concerns raised and proponent responses to comments and how concerns were considered and/or incorporated into the ToR and EA/IA;
- › Comment-response tables and meeting notes that include Government Review Team input;
- › A description of concerns and responses;
- › Summaries from meetings held;
- › Copies of written comments received from interested groups and responses provided; and
- › All related non-confidential communications including letters/emails, publication of notices, meetings, and issues raised and how they have been addressed/considered.

A summary of consultation activities to date is provided in **Section 4.7** and **Appendix A**. The RoC will be maintained and updated throughout the EA/IA.

4.7 Consultation on the Terms of Reference

This section outlines the consultation and engagement activities that have been undertaken to date and the additional activities that are planned for the remainder of this ToR stage of the Project. The Draft ToR was made available on the project website, at the administration office of each Indigenous community identified in **Section 4.2.1**, and at several public libraries (**Section 4.4**). The proponent incorporated feedback and comments received into the Proposed ToR.

Table 4-2 summarizes the consultation milestones identified for the ToR phase. Input obtained during the activities listed is documented and included in the Proposed ToR as applicable.

Table 4-2: Summary of Consultation Milestones for the Terms of Reference

Task	Estimated Time Period
Notice of Commencement for ToR	May 4, 2021
Project introduction to MFFN and WFN	April 22, 2021
Notice of Open House #1	August 31, 2021
Indigenous Community Open House #1 (Thunder Bay and virtual) & Public Open House #1 (Thunder Bay and virtual)	September 14-15, 2021
Notice of Draft ToR & Record of Consultation (RoC) for review and post Draft ToR for 45-day review by Indigenous communities, government, public and stakeholders	November 24, 2021
Indigenous Community Open House #2 (virtual) & Public Open House #2 (virtual)	February 23-24, 2022
Submission of Proposed ToR, Notice of Proposed ToR + RoC for review (placement/posting/distribution)	TBD

4.7.1 ToR Consultation Activities to Date

On May 4, 2021, the proponent distributed the ToR Notice of Commencement to the Indigenous communities and organizations, federal and provincial governments, municipalities, and other stakeholders interested in the Project as included in our contact list. The Notice was distributed through mail and email, printed in several northern Ontario newspapers, as well as posted on local news websites and the project website. Prior to this, the Project was introduced to MFFN and WFN community members through a live virtual community meeting. The team leaders were available to answer questions during this session. **Table 4-3** provides an overview of ToR consultation activities completed to date. The complete RoC to date, including details on how stakeholders and Indigenous communities were informed of consultation activities and an overview of the Open Houses are included as **Appendix A**.

Table 4-3: Overview of ToR Consultation Activities to Date

Activity	Date
Website – set-up and updates	Ongoing
Social media pages – set-up and updates	Ongoing
Newsletter #1	April 19, 2021
Introduction/EA process presentation with MFFN/WFN	April 22, 2021
Distribution of NoC of ToR	May 4, 2021
Live stream meeting with MFFN Chief and Council	May 4, 2021
Live stream sessions/radio shows with MFFN and WFN re: Introduction to EA/ToR	June 2, 2021
Live stream sessions/radio shows with MFFN and WFN re: ToR	June 16, 2021
Virtual community meeting with WFN to introduce project and explain there are 3 separate projects (MFCAR, NRL and WSR)	June 25, 2021
Live stream sessions/radio shows with MFFN and WFN re: ToR Consultation Plan	June 30, 2021
Meeting with MFFN re: Attawapiskat River crossings	June 15, 2021
Meeting with MFFN re: Attawapiskat River crossings	August 18, 2021
Newsletter #2	September 7, 2021
Update meeting with MFFN	September 10, 2021
Open House #1 (Thunder Bay and virtual)	September 14 and 15, 2021
Newsletter #3	November 15, 2021
Circulation of Draft ToR for comment	November 24, 2021 to January 31, 2022
Open House #2 (virtual)	February 23 and 24, 2022
Newsletter #4	January 25, 2022

4.8 EA/IA Consultation and Engagement Plan

The proponent has prepared a Consultation and Engagement Plan to meet the requirements of the EA Act, included as **Appendix B**. The consultation and engagement approach established for the ToR stage will continue through the EA/IA. Additionally, any feedback received from Indigenous communities, government agencies, municipalities, stakeholders and the public during the ToR stage regarding the consultation approach will be taken into account and the appropriate adjustments made.

Consultation and engagement during the EA/IA will continue with the Indigenous communities, federal and provincial regulators, and stakeholders identified to have a potential interest in the Project, as described in **Section 4.2**.

Throughout the EA/IA, there will be milestones that the proponent will need to reach including:

- › Commencement of EA/IA following ministerial approval of the ToR;
- › Further development and identification of alternative methods for implementing the Project and criteria for evaluating alternatives;
- › Evaluation of alternatives and identification of preferred alternative;
- › Submission of Draft EAR/IS; and
- › Submission of Final EAR/IS.

Table 4-4 outlines the regulatory milestones and associated proposed consultation activities. Virtual meetings may be needed in replacement of in-person meetings based on challenges related to the current COVID-19 pandemic.

Table 4-4: Consultation Milestones

Regulatory Milestone/Activity	Consultation Activity	Outcome
Notice of Commencement of EA	<ul style="list-style-type: none"> › Circulate Notice of Commencement of EA › Letter to Chiefs and Councils › Meet Chiefs and Councils 	<ul style="list-style-type: none"> › Identify interest to participate › Consolidate/update initial Stakeholder Contact List
Baseline Data Collection, Identification of Alternatives	<ul style="list-style-type: none"> › Indigenous Open Houses to introduce the Project and seek input on baseline data collection and identification of alternatives › Off-reserve Open House › Non-Indigenous communities, public and stakeholder Open House (Thunder Bay) › Website › Newsletters (to be posted on the website) 	<ul style="list-style-type: none"> › Input to study plans (e.g., scope of baseline studies, effects assessment) › Input to cumulative effects assessment study plan › Input to alternatives (e.g., routing, ancillary infrastructure – aggregate sources) › Input to criteria and indicators › Input to baseline information. › Gather IK/ILRU to characterize existing conditions and identify project area features and resources that are of value to the community

Regulatory Milestone/Activity	Consultation Activity	Outcome
Evaluation of Alternatives, Selection of Preferred Methods, Preliminary Effects Assessment, and Cumulative Effects Assessment	<ul style="list-style-type: none"> › Indigenous Open Houses to receive input on the evaluation of alternatives and preliminary effect assessment results › Website › Newsletters (to be posted on Website) › Circulation of EA/IA materials 	<ul style="list-style-type: none"> › Input to evaluation of alternatives › Input to effects assessment, including mitigation and monitoring › Incorporate IK/ILRU into evaluation of alternatives and effects assessment
Review of Draft EAR/IS	<ul style="list-style-type: none"> › Indigenous Open House to discuss and present the Draft EAR/IS, seek comments on the Draft EAR/IS, and solicit additional information for inclusion in the Final EAR › Non-Indigenous communities, public and stakeholder open house (Thunder Bay) › Website › Newsletters (to be posted on Website) › Circulation of Draft EAR/IS › Post document at Indigenous community Administration offices and participating municipal offices and libraries (document will be provided via email; hardcopy will be provided upon request) › Follow-up calls to confirm receipt of document 	<ul style="list-style-type: none"> › Incorporate IK/ILRU obtained into Final EAR/IS › Input to evaluation of alternatives › Input to effects assessment, including residual and cumulative › Input to mitigation measures › Respond and address to comments on Draft EAR/IS › Update Stakeholder Contact List for notices on Final EAR/IS
Review of Final EAR/IS	<ul style="list-style-type: none"> › Circulate Notice of Submission of Final EAR/IS › Letter to Chiefs and Councils › Website › Newsletters (to be posted on Website) › Distribution of Final EAR/IS › Post document at Indigenous community Administration offices and participating municipal offices and libraries (document will be provided via email; hardcopy will be provided upon request) › Indigenous community Open Houses, upon request or as necessary to resolve issues › Follow-up calls to confirm receipt of document 	<ul style="list-style-type: none"> › Receive comments on EAR/IS › Prepare responses to comments on EAR/IS

The EAR/IS will summarize the project-related consultation and engagement activities undertaken to date and/or planned by the proponent with the public, Indigenous communities and groups, federal and provincial regulators, and other stakeholders. The EAR/IS will include details of consultation including:

- › Principles and purpose of consultation and engagement;
- › Identification of Indigenous communities/organizations, public stakeholders, local government, and regulatory agencies that were engaged;
- › Consultation methods and schedule;
- › Issues resolution; and
- › Detailed record of consultation and engagement how it was used to inform the EA/IA.

4.8.1 Consultation Progress Reporting

The proponent will prepare written progress reports on the consultation activities associated with each of the following EA/IA milestones:

- › Notice of Commencement of EA;
- › Baseline data collection, identification of alternatives;
- › Evaluation of alternatives and selection of a preferred methods;
- › Preliminary effects assessment; and
- › Cumulative effects assessment.

Each progress report will:

- › Be organized by each Indigenous community;
- › Contain a consultation log and summary that tracks consultation activities, information shared by the proponent with the community, any community input and the proponent's responses to such input for the EA/IA milestone; and
- › Contain a discussion of how any input and information provided by the Indigenous communities have informed the development of the EA/IA milestone.

After completion of each milestone, the progress reports will be distributed to NDMNRF and MECP. Community-specific sections of the progress reports will also be distributed to each Indigenous community.

The proponent will respond to any questions or concerns raised by NDMNRF, MECP and/or Indigenous communities regarding the progress reports and revise the progress reports as appropriate. Final progress reports will be included in the Record of Consultation.

5 Indigenous Knowledge

An Indigenous Knowledge (IK) Program will be conducted to collect IK/ILRU information and incorporate it throughout the EA/IA. The IK Program is a critical component of the information base upon which the assessment will be conducted. The information generated through the IK Program will be used in concert with western scientific approaches to form the foundation for characterizing baseline conditions, predicting potential project impacts, and determining appropriate mitigation and monitoring methods. The program will include collection of existing IK/ILRU information as well as completion of Project-specific studies. The IK Program will provide funding for Indigenous communities, and work with communities where requested, to collect IK relevant to the various technical disciplines and support the meaningful integration of IK throughout the EA/IA and Project planning.

The IK Program will be introduced to the Indigenous communities and groups identified in **Section 4.2.1** during the commencement of the EA/IA process and will coincide with corresponding Project milestones identified in **Table 4-4**. The IK Program will consider and incorporate, where appropriate, Indigenous Knowledge and Indigenous Land and Resource Use (IK/ILRU) information into the Project as follows:

- › **Informing Valued Components and Indicators** – Identified Indigenous communities will be engaged to help inform and confirm the VCs and indicators selected for the Project from an IK perspective. Respecting cultural protocols and governance structures, the Proponent will continue to work with Indigenous communities to identify what is important to them and why. Where information has not previously been provided, Indigenous communities are encouraged to share IK on key topics, issues, and concerns to help further identify, inform, and refine the criteria and indicators. IK will provide different perspectives on the physical and socio-economic environment, and ultimately on what might constitute a VC and indicator.
- › **Establishing Existing Conditions** – IK can support and strengthen the EAR/IS as it has relevance to all aspects of the environment and, as a result, obvious linkages to the assessments of all disciplines (e.g., fish and wildlife, water, culture, archaeology). IK will identify cultural or heritage uses and will assist in determining health, abundance, and distribution of species and their habitats, including seasonal variations, and historical changes/fluctuation. Information collected through the IK Program will also help to establish the use of land and resources for traditional purposes. While baseline data collection has already commenced for several environmental disciplines, it is expected that available IK shared and collected to support the EA/IA will be used to both guide future data collection; and supplement the data gathered through western scientific means for this remote area of the province. The findings of field investigations will also be presented to Indigenous communities to determine where IK fills gaps for characterizing existing conditions.
- › **Assessing Potential Effects** – The Proponent will support interested Indigenous communities in completing Project-specific IK/ILRU studies during the EA/IA. It is anticipated that information on potential effects will be compiled as part of these studies. Indigenous communities will be consulted and engaged in the effects assessment to help the Proponent better understand whether the Project may have a potential effect on a particular criterion and indicator based on traditional characteristics of the value and its importance to the people from an IK perspective. The Proponent will consult and engage with Indigenous communities to identify potential effects from an Indigenous perspective. Working with Indigenous communities in the collection and sharing of IK and information on Indigenous land uses will better position the Proponent to document and address concerns directly and effectively in the EAR/IS.

Developing Mitigation Measures – IK and information on ILRU will assist in identifying appropriate mitigation measures so that the Project can be designed, constructed, and operated in a manner that meets the needs of the people who use and have in-depth knowledge of the land. The Proponent will work with Indigenous communities and solicit IK and perspective on impact management measures to manage potential effects. IK and information on ILRU will help to identify site-specific measures for sensitive areas,

including avoidance where possible. Efforts will be made to identify impact management measures that include opportunities to support, retain, and enhance IK during planning, construction, and operation of the Project. It is anticipated that all IK and information on ILRU shared and/or collected through the program will be governed by IK Sharing Agreements that indicate how confidential information will be used to inform the effects assessment but will be protected from public or third-party disclosure. The proponent will host meetings with Indigenous communities and groups who express interest in participating in the IK Program to discuss IK Sharing Agreements, funding, timelines, and relevant information and/or data communities and groups may already have and are willing to share, and to answer questions about the program. The proponent will also continue to solicit interest in the IK Program from other Indigenous communities who have not yet expressed an interest.

A Guidance Document will be developed to support the collection and/or sharing of IK/ILRU. This IK Program Guidance Document will be shared with the Indigenous communities and groups during the commencement of the IK Program and any feedback provided will be used to update the Guidance Document where applicable.

Background information and reference materials related to IK/ILRU, cultural values and practices, rights and interests is often considered sensitive/confidential and is not publicly available. Further, it is important to understand the specific context in which relevant background resources were developed. To increase trust and build relationships, the proponent will seek direction from Indigenous communities and groups with respect to available reference materials they are willing to share and that should be included in the document review. This is expected to be an ongoing and iterative process. Where secondary sources of information are available and required to collect relevant IK, permission from Indigenous groups will be sought prior to inclusion.

6 Assessment Methods

6.1 Assessment of Alternative Methods of Carrying Out the Project

As noted in **Section 2.2.3**, a comparative evaluation of alternative methods of carrying out the Project will be undertaken. These preferred methods include the preferred corridor and preferred alternatives for supportive temporary and/or permanent infrastructure elements for the Project (e.g., aggregate sites, sites for temporary laydown and storage areas, sites for construction camps, and access road locations). The sum of the preferred methods will constitute the Project.

The criteria for the assessment of alternatives have yet to be finalized and will be based on EA Act requirements, feedback from consultation and engagement with Indigenous communities and interested persons, discussion with regulators, available IK/ILRU, environmental studies, and desktop analysis of publicly available sources. Preliminary criteria and factors are presented in **Table 2-6**.

Once the preferred methods (i.e., the Project) have been identified, an environmental effects assessment will be completed for the Project, as described in **Section 6.2** through **6.8**.

6.2 Assessment of Project Effects

The Project (i.e., the sum of the preferred methods) will undergo an effects assessment. This section presents an outline of the methods that will be described in the EAR/IS for the description of the environment and the effects assessment, including:

- › Selection and scoping of Valued Components (VC);
- › Baseline characterization;
- › Identification of Project-VC interactions and potential effects;
- › Selection of mitigation measures;
- › Identification and characterization of residual effects;
- › Cumulative effects assessment; and
- › Follow-up commitments and monitoring programs.

The EAR/IS will provide a description of the methods used to support the assessment of project-related effects on VCs within the following disciplines: Aboriginal and Treaty Rights and Interests, physical environment, biological environment, socio-economic environment, cultural heritage resources, and human health.

The EAR/IS will provide details of the effects assessment methods used to assess potential Project-related effects and cumulative effects. The EAR/IS will demonstrate compliance with this ToR and include a concordance table between the ToR and the EAR/IS.

Study plans will be prepared for some disciplines/VCs to provide more detail on specific VC assessments. Study plans will be prepared for Aboriginal and Treaty Rights and Interests, the physical environment (including Surface Water), the biological environment (including Species at Risk), the socio-economic environment, cultural heritage resources and human health. A cumulative effects assessment study plan will also be prepared, as described in **Section 6.7.3**. The full list of study plans will be developed through consultation with the regulators, Indigenous communities, and other stakeholders. All study plans will be

provided to provincial and federal regulators for review and comment after both the provincial and federal planning phases are complete. Plain language fact sheets summarizing each study plan will be prepared and presented for input early in the EA/IA process as part of the consultation and engagement program. Fact Sheets for each study plan will be provided as supportive hand-out at Indigenous and public open house events, posted on the project website, and presented at livestreaming and radio information sessions to provide an opportunity for comment and discussion.

The methods used to assess the Project will be consistent with guidance from the ToR Code of Practice (MOE, 2014a) and the EA Code of Practice (MOE, 2014b), in addition to current best practices for EAs in Ontario and Canada and guidance listed in **Section 1.6**.

Available IK/ILRU information will be incorporated into the EA/IA as appropriate and as it becomes available, as will information received from Indigenous groups through consultation and engagement.

6.2.1 Selection and Scoping Valued Components

The EAR/IS will summarize the process and methodologies used to identify and select the VCs for assessment. VCs are components of the environment (i.e., Aboriginal and Treaty Rights and Interests, physical, biological, Species at Risk, socio-economic, cultural heritage resources, human health) identified as important and/or sensitive to change, of concern, or of value for cultural or traditional purposes, and likely to interact with the Project or Project activities.

The proponent has identified a preliminary list of VCs that are likely to interact with the Project and are known or anticipated to be of greatest value to Indigenous communities, nearby communities, and regulators. The selected VCs are currently a candidate list that will be subject to change based on input gathered through consultation and engagement. The list of VCs will be informed, validated, and finalized through the consultation and engagement process including environmental, cultural, spiritual, historical, health, social, economic considerations and their relation to Aboriginal and Treaty Rights and Interests. The selected VCs will form the basis of the environmental assessment of the Project and alternative methods of carrying out the Project. The EAR/IS will demonstrate how this feedback from Indigenous communities and groups, the public, stakeholders, and federal and provincial regulators on VC selection and assessment was incorporated, as appropriate.

The list of identified VCs and associated criteria will be validated and finalized through a variety of means and consideration of factors that include, but are not limited to the following:

- › Engagement with Indigenous communities and groups;
- › Stakeholder engagement, including discussions with interest holders, and federal and provincial regulators;
- › Presence, abundance and distribution within, or relevance to, the area associated with the Project;
- › Extent to which the effects (real or perceived) of the Project and related activities have the potential to interact with the VC;
- › Species conservation status or concern;
- › Umbrella or keystone species with potential to represent a broad range of potential effects;
- › Uniqueness or rarity in the study area;

- › Likelihood of an indirect effect on an associated criterion (i.e., a link exists between the affected criterion and another criterion, such as the introduction of invasive species, and improved access affecting bird populations and habitat);
- › Ecological, social and economic value to Indigenous communities, municipalities, stakeholders, federal and provincial regulators, and the public; and
- › Traditional, cultural and heritage importance to Indigenous peoples.

Potential Project interactions with VCs will be identified and evaluated for potential Project-related effects on the VCs. Where an interaction is anticipated, the effect will be evaluated, and mitigation identified to avoid or minimize the effect.

VCs will be selected to be:

- › Relevant to the Project;
- › Representative of the important features of the natural and human environment likely to be affected by the Project;
- › Responsive (i.e., sensitive) to the potential effects of the Project;
- › Concise (so the nature of the Project-VC interaction can be understood, while avoiding overlapping or redundant analysis); and
- › Taken together, complete to enable a full understanding of the important potential of the Project on Aboriginal and Treaty Rights and Interests, physical environment, biological environment, socio-economic environment, cultural heritage resources, and human health.

6.2.1.1 Indicators

The EAR/IS will define the indicators to be used for the VC assessment. 'Indicators' are metrics that will be used to measure and report on the condition of a VC to demonstrate change from current condition to expected condition with the Project.

Indicators are measurable parameters that are identified for each VC assessment. These indicators are metrics used in the assessment to measure change (qualitatively or quantitatively) in the existing conditions of the VC (i.e., current conditions of the VC without the Project) to future expected conditions of the VC with the Project.

Indicators for each VC will be selected based on the following criteria:

- › Relevant: indicators must relate directly or indirectly to the selected VC.
- › Practical: there must be a practical way to evaluate the indicator, using existing or achievable data, predictive models, or other means.
- › Measurable: the measurement of the selected indicator must generate useful data that inform the understanding of the potential effect on the VC.
- › Responsive to the potential effects of the Project.
- › Accurate in reflecting changes to the VC.
- › Predictable in terms of their response to the Project.

Preliminary indicators for each VC are provided in **Section 7**.

6.2.1.2 Pathway of Effects

A pathway of effect refers to the linkage between a project and a VC. In some instances, the project-VC interaction results in a direct effect, while other interactions are an indirect effect. Indirect effects are a result of a project causing a change to a VC (intermediate effect) that then causes an effect to another VC (receptor VC).

The EAR/IS will identify 'Linked VCs'. Linked VCs represent VC assessments that can be informed by or inform the assessment of other VCs. For example, Project-related changes to air quality represent a pathway of effects on other VCs such as human health or vegetation.

6.2.1.3 Regulatory Context

The EAR/IS will include the relevant guidelines and legislation used in the regulation of each VC and to inform or guide the assessment.

6.2.1.4 Assessment Boundaries

The EAR/IS will include methods for determining assessment boundaries for each VC. **Section 6.2.1.4.1** presents preliminary temporal boundaries for each VC assessment. **Section 6.2.1.4.2** presents the spatial boundaries that will be defined for each VC assessment.

6.2.1.4.1 Temporal Boundaries

The EA/IA process was designed to evaluate the short-term and long-term changes resulting from the implementation of the Project and associated effects on the environment, including where Project activities may overlap such as the restoration (e.g., revegetation) of temporary access roads that could occur during the operation.

Implementation of the Project will occur in phases. The potential interactions with the natural, cultural and socio-economic environments and the potential occurrence of residual effects are anticipated to be different in each phase. In order to focus the assessment, the key activities can be divided into the three main phases:

Construction Phase (3 to 10 years): All the activities associated with the initial development of the road and ancillary infrastructure.

Operations Phase: All activities associated with operation and maintenance of the road and any other permanent ancillary infrastructure (e.g., operation and maintenance yard, aggregate sites) that will start after construction and continue indefinitely.

Decommissioning Phase: The Project will be operated for an indeterminate time period; therefore, decommissioning is not anticipated and will not be addressed in the EA. Therefore, the assessment will be confined to the construction phase and the operations phase. Clean-up and site restoration, including the decommissioning and removal of temporary infrastructure (e.g., access roads) will be addressed in the construction phase.

Although generally based on the above-described planned phases, the final selection of temporal boundaries is VC-specific and further detail will be provided in the discipline-specific assessment sections of the EAR/IS. Temporal variation or patterns in potential effects associated with different criteria (e.g., habitat use by wildlife, or trends over time in populations and employment) will also be considered. Baseline data collection for all biophysical VCs will be undertaken for a minimum of two years, unless specified otherwise. Temporal boundaries spanning more than one year will enable accounting for annual or seasonal variations (e.g., the effects of storms on migration, delays in the onset of spring conditions, or early snowfalls).

6.2.1.4.2 Spatial Boundaries

The EAR/IS will define the spatial boundaries for each VC assessment. The spatial boundaries will provide the bounds of the spatial extent in which Project-related activities have the potential to interact with the VC.

Spatial boundaries to be used in the EAR/IS will be defined considering the appropriate scale and spatial extent of potential effects of the Project, IK/ILRU, Aboriginal and Treaty Rights and Interests, including cultural and spiritual practices; and physical, ecological, technical, social, health, economic, and cultural considerations. The spatial boundaries to be used in the EAR/IS will be refined and validated through input from federal and provincial regulators, Indigenous groups, the public, and other interested parties.

The EAR/IS will describe the methods used in identifying spatial boundaries. Information on spatial boundaries for each VC will be included in VC-specific sections and will encompass all relevant Project phases, components, and activities. The EAR/IS will include figures and descriptions of the spatial boundaries for each VC. The VC spatial boundaries will be relevant to the respective VC assessment to sufficiently capture potential Project related effects.

Spatial boundaries will be described in terms of study areas. The following study areas will be used to define the geographic extent within which to capture the potential direct and indirect effects of the Project.

Project Footprint: The Project Footprint is established to identify the areas of direct physical disturbance from Project activities (i.e., the physical area required for construction and operation of the Project). The Project Footprint is not known at this time. As described in **Section 2**, the alternatives assessment is currently at a stage where there are several alternative corridors as shown in **Figure 2-5**. Conceptual routes will be developed within each 2-km wide corridor and an alternatives assessment of the routes will support development of a preferred corridor and route. The conceptual preferred route will undergo further assessment and engineering design to develop the Project Footprint. The Project Footprint will encompass a 100 m width right-of-way for the preferred route, as well as areas for ancillary infrastructure described in **Section 3.3.1**. The Project Footprint presented in the EAR/IS will be based on preliminary engineering design and may be subject to changes during detail design, hence, it is anticipated the EAR/IS may assess a wider area than the 100 m right-of-way for the road to allow for these changes.

Local Study Area (LSA): The LSA is a study area within which direct Project interactions with VCs are anticipated and potential Project-related effects are expected to occur. Individual LSAs are defined for each VC. Depending on the VC, the LSA either includes or is equal to the Project Footprint. Since the Project Footprint is not known at this time, preliminary LSAs are described in **Appendix D**.

Regional Study Area (RSA): The RSA is a study area that provides context to the VC at a regional level. The RSA encompasses the area outside of the LSA used to measure broader-scale existing environment conditions and provide regional context for the maximum predicted geographic extent of direct and indirect effects of the Project (e.g., changes to downstream surface water quality, Caribou, or changes to socio-economic conditions such as regional employment and incomes). The RSA is typically used to assess the cumulative effects of the Project.

Appendix D presents preliminary spatial boundaries for each VC, selected based on the appropriate bounds of assessment for the specific VC to capture potential Project-related effects. These are preliminary boundaries only and the proponent will consult and engage with federal and provincial regulators, Indigenous groups, the public, and other interested parties to determine the appropriate spatial boundaries to be used in the EA/IA.

6.3 Baseline Characterization

The EAR/IS will include a detailed description of the methods and information sources used to characterize the baseline conditions for the effects assessment. Each VC assessment will provide a detailed description of the baseline conditions, including past influences, within the defined spatial boundaries of the VC.

For each VC section the EAR/IS will include:

- › A description of the baseline conditions within the LSA in sufficient detail to enable potential Project-VC interactions to be identified, understood, and assessed;
- › A description of the quality and reliability of the baseline data and its applicability for the purpose used, including any gaps, insufficiencies and uncertainties, particularly for the purpose of monitoring activities;
- › Reference to natural and/or human-caused trends that may alter the environmental, economic, social, heritage and human health setting, irrespective of the changes that may occur as a result of the proposed Project or other project and/or activities in the area;
- › An explanation of if and how other past and present projects and activities in the LSA have affected or are affecting each VC;
- › Documentation of the methods and data sources used to compile information on baseline conditions, including any standards or guidelines followed;
- › Where additional Project and VC-specific field studies are conducted, the scope and methods to be used will follow published documents pertaining to data collection and analysis methods, where these are available. Where methods used for the assessment deviate from applicable published guidance, the rationale for the variance will be provided in the EAR/IS; and
- › A description of the IK/ILRU (if any) used in each VC assessment. The EAR/IS will include solely IK/ILRU that Indigenous communities are willing to share, and in accordance with Information Sharing Agreement.

For each VC, relevant technical reports that informed the baseline will also be included in the EAR/IS as appendices. The key findings of these technical reports will be summarized directly in the EAR/IS, in a manner that allows the reader to understand the baseline conditions of each VC.

Preliminary VC-specific baseline characterization methods are presented in **Section 7**.

Detailed technical investigations and assessments will be undertaken for the Project and documented in the EAR/IS for the following VCs:

- › Indigenous Use of Land and Resources
- › Cultural Continuity and Well-being
- › Air Quality
- › Greenhouse Gas Emissions
- › Noise
- › Groundwater
- › Surface Water
- › Geology, Terrain and Soils
- › Visual Environment
- › Fish and Fish Habitat
- › Wildlife and Wildlife Habitat
- › Birds and Bird Habitat
- › Plants and Vegetation Communities
- › Species at Risk
- › Regional and Local Economy

- › Community Services and Infrastructure
- › Land Use and Recreation
- › Community Safety
- › Archaeological Resources
- › Built Heritage Resources and Cultural Heritage Landscapes
- › Human Health

It is important to note that investigations/assessments additional to the above-listed may be undertaken should they be deemed necessary.

6.4 Identification of Project-VC Interactions and Potential Effects

For each VC the EAR/IS will:

- › Identify the potential interactions of the Project with the VCs;
- › Identify and describe the potential effects resulting from the Project interaction.

A Project-VC interaction table will be developed for each VC, which will identify the anticipated interactions between Project activities by phase of the Project, and each VC. **Table 6-1** provides high-level list of anticipated Project activities and provides the basis to develop the VC-specific Project-VC interaction tables. A final list of Project activities will be included in the EAR/IS. The potential effects related to the identified interactions will be described in detail in the EAR/IS.

Table 6-1: Example Project-VC Interactions

Phase	Project Activities	Interaction (x=interaction)
Construction	Mobilization of equipment and supplies	
	Construction and use of temporary construction staging areas	
	Construction and use of temporary access roads and trails	
	Construction and use of temporary construction camps	
	RoW clearing and grubbing	
	Brush and timber disposal	
	Construction and use of pits and quarries	
	Drilling, blasting and aggregate production	
	Road construction (stripping, subgrade excavation, embankment fill placement, grading, ditching)	
	Bridge and culvert installation (approach embankments, foundations, substructures, superstructures, traffic protection, erosion controls)	
	Construction site restoration	
	Decommissioning of pits and quarries	
	Decommissioning of temporary camps, roads, trails and staging areas	
	Potential for accidents and malfunctions	
Operations	Road use	
	Maintenance*	
	Potential for accidents and malfunctions	

* Includes general maintenance (e.g., grading, erosion control), seasonal maintenance (e.g., snow clearing, bridge and culvert maintenance), and special maintenance (e.g., slope failures, road settlements, break-up).

6.5 Mitigation Measures

Mitigation measures will be developed within the EAR/IS as appropriate to address the potential Project-related effects identified for each VC. Mitigation measures will be technically and economically feasible and mitigate significant adverse effects of the Project.

For each VC, the assessment will:

- › Identify and describe the mitigation measures incorporated into the Project, including site and route selection, Project scheduling, Project design (e.g., equipment selection, placement, emissions abatement measures), and construction and operations procedures and practices;
- › Identify and describe mitigation measures assumed or proposed to be implemented, including consideration of best management practices, environmental management plans, environmental protection plans, contingency plans, emergency response plans, and other general practices;
- › Identify if, after application of proposed mitigation, a Project-related residual adverse effect remains and will be characterized further in the assessment, including discussion of uncertainty related to the prediction; and
- › Summarize the mitigation measures for potential Project effects by Project phase and identify any mitigation measures that are in management or compensation plans.

Mitigation measures will be developed using a hierarchy of strategies: avoid, minimize, offset and reclaim:

Avoid: Where possible, the first and most effective mitigation strategy to circumvent effects is through avoidance. Spatial avoidance is achieved through project siting and temporal avoidance is achieved by limiting development during a particular time period to avoid impacts to certain ecosystems or species.

Minimize: Mitigation strategies will aim to reduce the direction, magnitude, geographic extent, duration, reversibility, frequency, and likelihood/confidence of project effects. As much as possible, mitigation will be built into project design. Environmental management plans/procedures will also aim to limit effects that cannot be avoided, including management plans for construction and operation.

Offset: Some residual effects will remain after implementation of avoidance and minimization mitigation measures, such as loss of wetland habitat at the plant site. Offsets/compensation will be implemented where applicable, and may include protection of habitat in another location.

Reclamation: Some residual effects may remain after implementation of avoidance and minimization mitigation measures. Reclamation mitigation measures aim to restore habitat to conditions similar to the surrounding environment after disturbance. These may include re-contouring and revegetation of disturbed land. Reclamation strategies may include monitoring programs to ensure reclamation success.

6.6 Characterization of Residual Effects

Residual effects are effects remaining after the implementation of all mitigation measures, and are the expected consequences of the Project on the selected VCs.

The EAR/IS will describe the residual effects (i.e., those effects remaining after mitigation) using the residual effects characterization criteria: direction, magnitude, geographic extent, duration, reversibility, frequency, and likelihood/confidence. Where feasible, these criteria will be described quantitatively in the EAR/IS for each VC. When residual effects cannot be characterized quantitatively, the EAR/IS will characterize these effects qualitatively. Definitions will be provided when qualitative terms are used.

The use of any qualitative terms (e.g., high, moderate, low) will be accompanied by distinct definitions for each of these rankings. An explanation will be included for the conclusion reached for each criterion used to characterize a residual effect.

When residual effects on a VC are determined and the VC is also considered a “pathway” for other potential effects on other VCs, the EAR/IS will identify the linkages between the VCs and the discipline-specific studies to which the information has been forwarded for further evaluation.

The EAR/IS will characterize all potential residual effects for each selected VC using the characterization criteria presented in **Table 6-2**. Each of these criteria will be defined on a VC-specific basis, including definitions of qualitative terms in the EAR/IS.

Table 6-2: Residual Effects Characterization Criteria

Characterization Criteria	Description
Direction	Positive, negative, or neutral.
Magnitude	The expected size or severity of the residual effect. When evaluating the magnitude of the residual effect, relevant factors to consider include the proportion of the VC affected within the spatial boundaries and the relative effect (e.g., relative to natural annual variation in the magnitude of the VC or other relevant characteristic).
Geographic Extent	The spatial scale over which the residual effect is expected to occur. Typically, a residual effect may be described as site-specific, local, sub-regional, regional, or greater in extent. As the spatial scale of each VC varies, so too may the definitions of the VC-specific spatial scales of the residual effect. That is, the scale of a “local” or “regional” effect may be different for different VCs. Thus, it is important to define each scale used for each VC. It may also be useful to state the extent of the residual effect in relation to the distribution of the VC, to clarify the scale of the residual effect.
Duration	Duration is the period of time over which the effect will be present between the start and end of an activity or stressor. Duration would be characterized for each effect as short-term, medium-term, long-term or permanent, based on the specific VC.
Reversibility	Whether or not the residual effect on the VC can be reversed once the physical work or activity causing the disturbance ceases. A residual effect may be fully reversible, partially reversible, or irreversible. In this regard, reversibility is closely linked with duration: an irreversible residual effect is of permanent duration, while the length of time required for the VC to fully or partially revert to its pre-effect condition or functionality may vary.
Frequency	How often the residual effect occurs and is usually closely related to the frequency of the physical work or causal disturbance resulting in the residual effect.
Likelihood/Confidence	The chance that the residual adverse effect will occur. Factoring in confidence of the predicted effect including confidence in proposed mitigations. The EAR/IS will summarize the process and methods used to evaluate the levels of confidence associated with residual effects predictions and in particular, how any identified uncertainty may affect either the likelihood or the significance of the predicted residual effect. The EAR/IS will also describe any measures to reduce uncertainty through monitoring, adaptive management or other follow-up programs.

6.7 Cumulative Effects Assessment

The EAR/IS will include a cumulative effects assessment to identify and characterize Project effects that are likely to interact cumulatively with the effects of other past, present or reasonably foreseeable projects and/or activities.

6.7.1 Identifying Past, Present or Reasonably Foreseeable Projects and/or Activities

The following development categories will be considered in the EAR/IS:

- › Existing projects or activities for which the environmental effects overlap with those of the proposed Project (i.e., past and present); and
- › Proposed projects for which the environmental effects overlap the proposed Project (i.e., reasonably foreseeable).

The Ring of Fire is an area that has been targeted for development by Ontario due to mining potential (NDMNRF, 2021a). Reasonably foreseeable projects to be included in the cumulative effects assessment will consider but not be limited to mine development and exploration, proposed road construction (e.g., MFCAR and WSR), and other utilities and associated infrastructure to support mine development. The cumulative effects assessment will also consider, where appropriate, any publicly available information that may be generated through the federal regional assessment that is considered to be relevant to the NRL Project.

The cumulative effects assessment identifies residual effects from this Project that are considered likely to interact with other effects in the same time frame with those of past, present, or reasonably foreseeable physical activities in the vicinity of the Project. The EAR/IS will describe the methods for identifying potential interactions between residual Project effects and the effects of other developments, including a description of the following:

- › The residual effects to be carried forward to the cumulative effects assessment;
- › The spatial boundaries for the cumulative effects assessment for each VC, including maps;
- › The spatial and temporal boundaries of other developments; and
- › The potential for interaction (spatial and temporal) and linkages (overlap) of VCs with other developments.

The EAR/IS will include:

- › A table of all past, present and reasonably foreseeable developments that will be included in the cumulative effects assessment, should one be required for a particular VC;
- › A general description of the information sources used to identify reasonably foreseeable developments and activities; and
- › A map showing the location of the projects and activities.

6.7.2 Conducting a Cumulative Effects Assessment

The EAR/IS will summarize the process and methods used to conduct the cumulative effects assessment, including the identification of potential cumulative effects, identification of additional mitigation measures, and evaluation of any (residual) cumulative effects using the same methods described in **Section 6.3** and **Section 6.5**. The proponent will develop a cumulative effects assessment study plan to provide a

framework for the cumulative effects assessment. The methodology the Project will follow to assess cumulative effects is consistent with evolving best practice and the federal approach under the *Canadian Environmental Assessment Act, 2012* (Canadian Environmental Assessment Agency, 2018 [interim guidance until new guidance is released under the *Impact Assessment Act*]).

6.7.3 Consultation on the Cumulative Effects Assessment

Indigenous communities and regulators will be consulted on the cumulative effects assessment study plan, methodology, results and mitigation/impact management measures during preparation of the EAR/IS. This will include targeted consultation opportunities to participating Indigenous communities, including methods of engagement that the Indigenous communities might request.

The draft EAR/IS will include a cumulative effects consultation report to accompany the cumulative effects assessment within the EA. The report will include:

- › A summary of the consultation completed with Indigenous communities and any other organizations/agencies regarding the development of the cumulative effects assessment; and
- › Comment-response tables showing how comments from Indigenous communities and any other organizations/agencies were considered and incorporated, as appropriate, in the development of the cumulative effects assessment.

6.8 Follow-up Strategy

Follow-up strategies will be developed for Project-related effects, as appropriate. Follow-up strategies may be applied for example when:

- › There is uncertainty in the effects prediction.
- › The effectiveness of mitigation measures should be evaluated.
- › The concerns of the public or Indigenous groups warrant follow-up, regardless of the confidence in the prediction.
- › Effects are expected to disproportionately effect vulnerable populations.

Where a residual adverse effect and/or cumulative effect has been identified for a specific VC, the EAR/IS will include a description of a follow-up strategy, where appropriate, that:

- › Identifies the measures to evaluate the accuracy of the original effects prediction;
- › Identifies the measures to evaluate the effectiveness of proposed mitigation measures; and
- › Proposes an appropriate strategy to apply in the event that original predictions of effects and mitigation effectiveness are not as expected. This includes reference to further mitigation, involvement of key stakeholders, Indigenous groups, federal and provincial regulators, and any other measures deemed necessary to manage the issue.

A monitoring framework will be developed based on the follow-up strategies identified for the Project, as described in **Section 10**.

7 Environmental Effects Assessment

This Proposed ToR presents preliminary information on indicators, baseline characterization, and potential Project-related effects, for each VC. The environmental effects assessment will be informed, validated, and finalized through consultation and engagement with regulatory agencies, Indigenous communities, the public and other interested persons.

As noted in **Section 2.2.3**, a comparative evaluation of alternative methods of carrying out the Project will be undertaken, and the sum of the preferred methods will constitute the Project. Once the preferred methods (i.e., the Project) have been identified, an effects assessment will be completed for the Project.

The EAR/IS will include individual stand-alone sections for each VC assessment. The assessment sections will apply methodology presented in **Section 6** for the specific VC, including:

- › Selection and scoping of final VCs including study areas and pathway of effects;
- › Establishment of existing conditions of the VC study areas as the baseline;
- › Identification of Project interactions and potential effects;
- › Identification of effective and established mitigation measures;
- › Identification of residual effects (i.e., net effects) after applying mitigation measures;
- › Assessment of cumulative effects; and
- › Follow-up commitments and monitoring programs for the assessment.

The description of the environment, selection of valued components, and effects assessment will be informed, validated, and finalized through the consultation and engagement with regulatory agencies, Indigenous communities, the public, and other interested persons. In addition, the proponent intends to gather IK/ILRU (e.g., traditional/country foods, medicinal plants, culturally important plants, harvest areas) through an IK Program (**Section 5**). IK/ILRU will be incorporated to each VC assessment as it becomes available.

This section presents preliminary information on indicators, baseline characterization, and potential Project-related effects, for each VC.

The preliminary indicators subsections provide definitions and rationale for the for inclusion in the VC assessment. The baseline characterization subsections include preliminary baseline descriptions, background information and data that will be used, and proposed baseline studies.

Background information and data to inform the baseline characterization for each VC may include, but not be limited to:

- › IK/ILRU obtained through consultation and engagement with Indigenous communities;
- › WFN and MFFN Draft Community Based Land Use Plans Terms of Reference;
- › Regulatory databases;
- › Aerial photography and satellite imagery;
- › Geographic Information System (GIS) databases;
- › Academic literature;
- › Information obtained from regulatory agencies and other stakeholders;
- › MFCAR project documentation, including Terms of Reference, Tailored Impact Assessment Guidelines, Project Description, technical investigations, and other related documentation for the environmental assessment and impact assessment processes; and
- › WSR project documentation, including Terms of Reference, Tailored Impact Assessment Guidelines, Project Description, technical investigations, and other related documentation for the environmental assessment and impact assessment processes.

In addition, the subsections on background information and data provide a preliminary list of the available VC-specific resources that will be used. Additional information sources than those listed for each VC may become available as the EA/IA progresses and these lists should not be considered exhaustive.

The potential Project-related effects subsections include a preliminary list of anticipated effects on the VC based on the Project activities presented in **Table 6-1**; for some VCs, these subsections also identify the types of modelling studies that may be required to support the effects assessment. **Appendix D** describes the preliminary spatial boundaries for each VC.

7.1 Aboriginal and Treaty Rights and Interests

The EAR/IS will include the assessment of Aboriginal and Treaty Rights and Interests. The EA/IA will assess Project-related effects on the identified VCs summarized in **Table 7.1-1**.

Table 7.1-1: Preliminary VCs for Aboriginal and Treaty Rights and Interests

Preliminary Valued Components
Section 7.1.1 Indigenous Use of Land and Resources
Section 7.1.2 Cultural Continuity and Well-being

7.1.1 Indigenous Use of Land and Resources

The EAR/IS will present in detail the assessment of Project-related effects on the Indigenous Use of Land and Resources VC. Indigenous use of lands and resources is defined as sites and areas used for rights-based activities and interests; location, frequency, duration, and/or timing of these rights-based activities and interests; types of resources used and their habitats; the quantity and quality of resources; culturally important resources and places based activities and interests; location, frequency, duration, and/or timing of these rights-based activities and interests; types of resources used and their habitats; the quantity and quality of resources; culturally important resources and places that -are harvested; access to resources or places used; the experience of the practice; and other current uses identified by Indigenous communities or groups for rights-based activities and other interests.

7.1.1.1 Preliminary Indicators

Table 7.1-2 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Indigenous Use of Land and Resources VC effects assessment.

Table 7.1-2: Preliminary Indicators for the Indigenous Use of Land and Resources VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Sites and areas used for rights-based ^(a) activities and other interests (e.g., hunting, trapping, fishing, gathering).	<ul style="list-style-type: none"> Project-related disturbance to or loss of sites and areas used for rights-based activities and other interests can interfere with Indigenous land and resource use. Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.
Availability or quantity of resources (e.g., wildlife, fish, vegetation) for rights-based activities and other interests (e.g., harvesting and gathering).	<ul style="list-style-type: none"> VC is reliant on the availability of natural resources used for rights-based activities and other interests. Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.
Quality or perceived quality of resources for rights-based activities and other interests.	<ul style="list-style-type: none"> VC is reliant on confidence in the quality of natural resources used for rights-based activities and other interests. Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Access to sites and areas used for rights-based activities and other interests.	<ul style="list-style-type: none"> VC is reliant on access to sites and areas used for rights-based activities and other interests. Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.

Note: (a) The term 'rights-based activities' encompasses Indigenous communities' practices such as hunting, trapping, fishing, gathering, teachings, and cultural activities and other community activities.

7.1.1.2 Baseline Characterization

7.1.1.2.1 Preliminary Baseline Description

Table 7.1-3 provides brief community profiles for the Indigenous communities and Indigenous organizations whose Aboriginal and Treaty Rights might potentially be affected by the Project, or may otherwise have an interest in the Project and have been identified to be consulted on the Project (as described in **Section 4.2.1**). The consultation will continue throughout the EA/IA, as per the interest expressed by each community.

Table 7.1-3: Community Profiles of Indigenous Communities Potentially Affected by or Interested in the Project

Indigenous Community	Community Profile
Animbiigoo Zaagi'igan Anishinaabek First Nation Tribal Council: Nokiwin Tribal Council	<p>Animbiigoo Zaagi'igan Anishinaabek First Nation (AZA) is signatory to the Robinson-Superior Treaty 1850 and is affiliated with the Nokiwin Tribal Council. The AZA cultural affiliation is Ojibway.</p> <p>There is one AZA reserve, the Lake Nipigon Reserve (1,269.9 ha), which was established in 2008. The Lake Nipigon Reserve is located along the southern shores of Partridge Lake, between Jellicoe and Geraldton, approximately 240 km southwest of MFFN and 360 km south of WFN. Three registered members live on the Lake Nipigon Reserve and the remaining approximately 500 registered members live elsewhere (GoC, 2021a), primarily in other Ontario communities, including Beardmore, Jellicoe, Geraldton, and Thunder Bay.</p> <p>The First Nation has a Custom Electoral Governance System, with one Chief and four Councillors elected every three years. AZA's administrative office is located in Beardmore, Ontario (AZA, 2021a).</p>
Aroland First Nation Tribal Council: Matawa First Nations Management Inc. Provincial Territorial Organization: Nishnawbe Aski Nation	<p>Aroland First Nation is a signatory to Treaty 9 and is affiliated with Matawa First Nations Management Inc. and Nishnawbe Aski Nation. Although the Aroland Indian Settlement is not yet formally a reserve (in 1972, the settlement briefly was recorded as Aroland 83 Indian Reserve), it should be designated as such in the near future. Following multiple negotiations, Aroland First Nation gained certain reserve status under the Indian Act on April 15, 1985. Reserve lands have recently been dedicated to the First Nation by both provincial and federal governments; however, a final formal designation of reserve lands is not yet in place. Current reserve lands contain 19,599 hectares and extend northward from Highway 643 to encompass lands along the western and northern shores of Esnagami Lake. At present, these lands are generally undeveloped (Aroland First Nation, 2021; First Nations.info, 2021).</p> <p>Aroland First Nation (Aroland 83 Reserve) is comprised of an amalgamation of members, with ties to Eabametoong First Nation, MFFN, Ginoogaming First Nation, Long Lake #58 First Nation and Fort William First Nation, and with cultural affiliations to Oji-Cree and Ojibway (Aroland First Nation, 2021).</p> <p>Aroland Indian Settlement is the primary community for approximately 400 of the 747 registered Aroland First Nation members (GoC, 2021a; Aroland First Nation, 2021). The community is located approximately 170 km southwest of MFFN, 310 km south of WFN and 20 km west of the Municipality of Greenstone on Highway 643. Aroland First Nation has a Custom Electoral Governance System, with one Chief and seven Councillors elected every two years.</p>

Indigenous Community	Community Profile
<p>Attawapiskat First Nation</p> <p>Tribal Council: Mushkegowuk Council</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Attawapiskat First Nation is a signatory to Treaty 9 and is affiliated with the Mushkegowuk Council and Nishnawbe Aski Nation. Omushkegowuk (people of Attawapiskat) are represented by the Mushkegowuk Council for their Mushkegowuk Aski (traditional territory). The Attawapiskat cultural affiliation is Swampy Cree.</p> <p>Attawapiskat First Nation is comprised of two reserves: Attawapiskat Reserve 91a (235.8 ha), the permanent community, and Attawapiskat Reserve 91 (27,040.1 ha) (GoC, 2021a). Attawapiskat Reserve 91 is located at the mouth of the Attawapiskat River on James Bay. Attawapiskat Reserve 91a is located approximately 230 km northeast of MFFN and 200 km east of WFN. The reserves are accessible by air, water and winter road only, and 1,983 members are listed as living on Attawapiskat reserves, with the remaining 1,677 members living elsewhere (GoC, 2021a).</p> <p>Attawapiskat First Nation has a Custom Electoral Governance System, with one Chief, one Deputy Chief and 11 Councillors elected every three years.</p>
<p>Constance Lake First Nation</p> <p>Tribal Council: Matawa First Nations Management Inc.</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Constance Lake First Nation is a signatory to Treaty 9 and is affiliated with Matawa First Nations Management Inc. and the Nishnawbe Aski Nation. The Constance Lake cultural affiliation is Cree and Ojibway.</p> <p>Constance Lake First Nation is comprised of two reserves: Constance Lake 92 Indian Reserve on the Kabinakagami River (3,110.5 ha), which serves as the primary residential community, and English River 66 Reserve on the Kenogami River (3,108 ha) (GoC, 2021a). The Constance Lake 92 Reserve is located approximately 240 km southeast of MFFN and 415 km southeast of WFN. The English River 66 Reserve is located 170 km southeast of MFFN and 340 km southeast of WFN. Both of the Constance Lake Reserves are accessible by way of Highway 11. There are 861 of the 1,784 registered members listed as living on the Constance Lake 92 Reserve (GoC, 2021a).</p> <p>Constance Lake First Nation uses the <i>Indian Act</i> Electoral Governance System, with one Chief and six Councillors elected every two years.</p> <p>Constance Lake First Nation is actively working on a Draft CBLUP; the Terms of Reference for the plan was approved in 2013 (NDMNRF, 2021c).</p>
<p>Eabametoong First Nation</p> <p>Tribal Council: Matawa First Nations Management Inc.</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Eabametoong First Nation is a signatory of Treaty 9 and is affiliated with Matawa First Nations Management Inc. and Nishnawbe Aski Nation. The Eabametoong cultural affiliation is Ojibway.</p> <p>Eabametoong First Nation is comprised of a single reserve, Fort Hope Reserve 64 (25,900.3 ha) (GoC, 2021a). Fort Hope 64 is a remote northern community located approximately 360 km north of Thunder Bay, 130 km west of MFFN and 155 km south of WFN. The community is situated on the north shore of Eabamet Lake. Approximately 1,574 registered members live on the Fort Hope 64 Reserve, with the remaining 1,199 registered members living elsewhere (GoC, 2021a), mostly in other parts of northern Ontario. The Reserve is accessible by air, water and winter road only.</p> <p>According to the Federal Reporting Centre on Specific Claims (GoC, 2021a), there is one active claim by Eabametoong First Nation related to unfulfilled Treaty Land Entitlement pursuant to Treaty 9.</p> <p>Eabametoong First Nation uses the <i>Indian Act</i> Electoral Governance System, with one Chief and five Councillors elected every two years.</p>

Indigenous Community	Community Profile
<p>Fort Albany First Nation</p> <p>Tribal Council: Mushkegowuk Council</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Fort Albany First Nation is a signatory to Treaty 9 and is affiliated with the Mushkegowuk Council and the Nishnawbe Aski Nation. Prior to 1965, the community was referred to as Peetabeck Inninowuk. The Fort Albany cultural affiliation is Mushkegowuk Cree.</p> <p>O mushkegowak (people of Fort Albany) lived off their Paquataskamik (traditional territory) until they were relocated to the Fort Albany 67 Reserve. The community originated as a Hudson's Bay Company trading post. In the 1950s, the Fort Albany 67 Reserve divided into two communities (Fort Albany First Nation and Kashechewan First Nation) due to religious differences (Five Nations, 2012).</p> <p>The Fort Albany 67 Reserve (36,345.7 ha) is unique in that there are two First Nations residing on the land (Fort Albany First Nation and Kashechewan First Nation) (GoC, 2021a). Fort Albany 67 is located on the south bank of the Albany River approximately 15 km upstream from James Bay (Five Nations, 2012). It is located approximately 300 km northeast of WFFN and 390 km southeast of WFN. Fort Albany 67 is accessible by air, water and winter road only.</p> <p>The combined total of registered member population of Fort Albany First Nation and Kashechewan First Nation is 5,289, and is mutually referred to as 'Albany' in the Indigenous Services Canada First Nation Profile (GoC, 2021a). There are 3,240 registered members of Fort Albany First Nation and Kashechewan First Nation residing on Fort Albany 67, with the remaining 2049 registered members living elsewhere (GoC, 2021a).</p> <p>Fort Albany First Nation has a Custom Electoral Governance System, with one Chief, one Deputy Chief and seven Councillors elected every two years.</p>
<p>Ginoogaming First Nation</p> <p>Tribal Council: Matawa First Nations Management Inc.</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Ginoogaming First Nation, formerly known as Long Lake 77, is a signatory of Treaty 9 and is affiliated with Matawa First Nations Management Inc. and Nishnawbe Aski Nation. The Ginoogaming cultural affiliation is Ojibway and Oji-Cree.</p> <p>Ginoogaming First Nation is comprised of one reserve, Ginoogaming (6,978 ha), located on the northern shore of Long Lake (GoC, 2021a), 2 km south of Longlac and approximately 220 km south of MFFN and 365 km southeast of WFN. The community is accessible by road (Highway 11), air, rail and water. There are 205 registered members residing on Ginoogaming First Nation Reserve, with 778 registered members residing elsewhere (GoC, 2021a).</p> <p>According to the Federal Reporting Centre on Specific Claims (GoC, 2021a), there are two active claims by Ginoogaming First Nation. One of the claims is related to alleged breaches of fiduciary obligations with respect to the construction of Tote Road through the Reserve. The second is related to unfulfilled Treaty Land Entitlement pursuant to Treaty 9, with negotiations involving 7,296 acres of land and areas of interest, including residential, economic and cultural uses (GoC, 2021a).</p> <p>Ginoogaming First Nation uses the <i>Indian Act</i> Electoral Governance System, with one Chief and six Councillors elected every two years.</p> <p>Ginoogaming First Nation is not actively in the planning stage of the CBLUP (NDMNRF, 2021c).</p>

Indigenous Community	Community Profile
<p>Kasabonika Lake First Nation</p> <p>Tribal Council: Shibogama First Nations Council</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Kasabonika Lake First Nation is a signatory to Treaty 9 and is affiliated with the Shibogama First Nations Council and Nishnawbe Aski Nation. The Kasabonika Lake cultural affiliation is Oji-Cree.</p> <p>Kasabonika Lake First Nation is comprised of one reserve, Kasabonika Lake Reserve (10,806.5 ha) located along the Ashweig River (GoC, 2021a), approximately 450 km northeast of Sioux Lookout, 285 km northwest of MFFN and 115 km northwest of WFN. It is accessible by air, water and winter road only. There are 1,130 registered members residing on the Kasabonika Lake reserve, with the remaining 95 members living elsewhere (GoC, 2021a).</p> <p>Kasabonika Lake has a Custom Electoral Governance System, with one Chief, one Deputy Chief, one Head Councillor and four Councillors elected every two years. Kasabonika Lake First Nation is not actively in the planning stage of the CBLUP (NDMNRF, 2021c).</p>
<p>Kashechewan First Nation</p> <p>Tribal Council: Mushkegowuk Council</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Kashechewan First Nation is a party to Treaty 9, and it is affiliated with the Mushkegowuk Council and Nishnawbe Aski Nation. Omushkegowuk (people of Kashechewan) are represented by the Mushkegowuk Council for their Mushkegowuk Aski (traditional territory). The Kashechewan cultural affiliation is Moose Cree and Swampy Cree.</p> <p>The community originated as a Hudson's Bay Company trading post. Prior to 1950, Kashechewan members were part of the Fort Albany First Nation at Treaty-making time in 1905, when Albany Band representatives signed the Treaty 9 document and accepted certain important oral promises by the government Treaty Commissioners (Five Nations, 2012; KFN, 2022). During the 1950s, the Fort Albany 67 Reserve divided into two communities (Kashechewan First Nation and Fort Albany First Nation) due to religious differences (Five Nations, 2012). In the 1950s and 1960s, most members of the Albany Band resided on an island in the Albany River, off the Treaty reserve land, but when government representatives suggested they would be better supported on reserve, a considerable portion of the Albany Band moved to the northern shoreline of the Albany River, onto reserve land, to what is now known as Kashechewan (KFN, 2022). The Fort Albany 67 Reserve (36,345.7 ha) is shared by both Fort Albany First Nation and Kashechewan First Nation (GoC, 2021a), and is located approximately 300 km northeast of MFFN and 380 km southeast of WFN. It is accessible by air, water and winter road only.</p> <p>The combined total registered member population of Kashechewan First Nation and Fort Albany First Nation is 5,289, and is mutually referred to as 'Albany' in the Indigenous Services Canada First Nation Profile (GoC, 2021a). There are 3,240 registered members of Kashechewan First Nation and Fort Albany First Nation residing on Fort Albany 67, with the remaining 2,049 registered members living elsewhere (GoC, 2021a).</p> <p>Kashechewan First Nation has a Custom Governance System, with one Chief, one Deputy Chief and 9 Councillors elected every four years.</p>

Indigenous Community	Community Profile
<p>Kingfisher Lake First Nation</p> <p>Tribal Council: Shibogama First Nations Council</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Kingfisher Lake First Nation is a signatory to Treaty 9 and is affiliated with the Shibogama First Nations Council and Nishnawbe Aski Nation. The Kingfisher Lake cultural affiliation is Oji-Cree.</p> <p>Kingfisher Lake First Nation is comprised of three reserves: Kingfisher 2A (5,444.7 ha), Kingfisher 3A (921.9 ha), and Kingfisher Lake 1 (596 ha) (GoC, 2021a). The Kingfisher Lake 1 Reserve is the most populated of the three. It is located on the south shore of Kingfisher Lake, approximately 360 km northeast of Sioux Lookout (which is the nearest service centre), 305 km northwest of MFFN and 165 km west of WFN. The reserves are accessible by air, water and winter road only. There are 560 of the 627 total registered members residing on reserve, with the remaining registered members living elsewhere (GoC, 2021a).</p> <p>Kingfisher Lake First Nation has a custom Electoral Governance System, with one Chief, one Deputy Chief, one Head Councillor and three Councillors elected every two years.</p>
<p>Kitchenuhmaykoosib Inninuwug First Nation</p> <p>Tribal Council: Independent First Nations Alliance</p>	<p>Kitchenuhmaykoosib Inninuwug First Nation is a signatory to Treaty 9. It is an independent First Nation and is affiliated with the Independent First Nations Alliance. The Kitchenuhmaykoosib cultural affiliation is Oji-Cree, specifically Anishiniimowin, Severn Cree and Northern Ojibway.</p> <p>Kitchenuhmaykoosib Inninuwug First Nation is comprised of a single reserve, Kitchenuhmaykoosib Aaki 84 (29,937.6 ha) on the north shore of Big Trout Lake (GoC, 2021a), located approximately 440 km northeast of Sioux Lookout, 360 km northwest of MFFN and 195 km northwest of WFN. It is accessible by air, water and winter road only. There are 1,180 registered members residing on the Kitchenuhmaykoosib Aaki Reserve, with the remaining 558 registered members residing elsewhere (GoC, 2021a).</p> <p>Kitchenuhmaykoosib Inninuwug First Nation has a Custom Electoral Governance System, with one Chief, one Deputy Chief, and six Councillors elected every two years.</p>
<p>Long Lake #58 First Nation</p> <p>Tribal Council: Matawa First Nations Management Inc.</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Long Lake #58 First Nation has not signed any treaty or ceding Aboriginal title to their traditional lands. The Long Lake #58 First Nation is affiliated with Matawa First Nations Management Inc., the Nishnawbe Aski Nation and the Union of Ontario Indians (UOI). The Long Lake #58 cultural affiliation is Ojibway.</p> <p>Long Lake #58 First Nation is comprised of a single reserve, Long Lake 58 (232.3 ha) located on the northern shore of Long Lake (GoC, 2021a), adjacent (1 km) to Longlac and approximately 215 km south of MFFN and 360 km south of WFN. There are 542 registered members residing on Long Lake 58, with 1,215 registered members residing elsewhere (GoC, 2021a).</p> <p>Long Lake #58 First Nation uses the <i>Indian Act</i> Electoral Governance System, with one Chief and 11 Councillors elected every two years.</p>
<p>Marten Falls First Nation</p> <p>Tribal Council: Matawa First Nations Management Inc.</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>MFFN is a signatory to Treaty 9 and is affiliated with Matawa First Nations Management Inc. and Nishnawbe Aski Nation. The MFFN's cultural affiliation is Ojibway.</p> <p>MFFN is comprised of one reserve, Marten Falls Reserve 65 (7770.1 ha) on the Hudson Bay Lowlands in Northern Ontario (GoC, 2021a), at the intersection of the Ogoki and Albany Rivers and approximately 400 km northeast of Thunder Bay and 175 km southeast of WFN. It is currently accessible by air, water and winter road only. The Municipality of Greenstone is the closest location with year-long road access, approximately 160 km to the south. There are 354 registered members residing on the Marten Falls Reserve, with the remaining 473 registered members living elsewhere (GoC, 2021a).</p> <p>MFFN uses the <i>Indian Act</i> Electoral Governance System, with one Chief and seven Councillors elected every two years.</p>

Indigenous Community	Community Profile
Métis Nation of Ontario, Region 2	<p>The Métis Nation of Ontario (MNO) was established in 1993 to represent communities that are a part of the Métis Nation (MNO, 2021). Today, there are over 20,000 registered Métis citizens and approximately 30 Chartered Community Councils across Ontario that represent Métis citizens at the local level.</p> <p>Through the MNO, Ontario Métis have established a governance structure that represents the Métis citizens and rights-bearing Métis communities at the local, regional and provincial levels. The Greenstone Métis Council forms a part of this governance structure as a local level council based out of Geraldton.</p> <p>The MNO has a provincial governing body that is elected every four years. The MNO hosts an Annual General Assembly, where regional and provincial Métis leaders are required to report back to Métis citizens yearly between elections. The MNO also maintains a charitable foundation, the Métis Nation of Ontario Cultural Commission, which promotes and supports Métis culture and heritage, and an economic development arm, the Métis Nation of Ontario Development Corporation (MNO, 2021).</p>
Neskantaga First Nation Tribal Council: Matawa First Nations Management Inc. Provincial Territorial Organization: Nishnawbe Aski Nation	<p>Neskantaga First Nation is a signatory to Treaty 9 and is affiliated with Matawa First Nations Management Inc. and Nishnawbe Aski Nation. The Neskantaga cultural affiliation is Ojibway and Oji-Cree.</p> <p>Neskantaga First Nation is comprised of one reserve, Neskantaga Reserve (831.5 ha) located on Attawapiskat Lake (GoC, 2021a), approximately 200 km north of the Municipality of Greenstone, 180 km northeast of Pickle Lake, 160 km northwest of MFFN and 100 km southwest of WFN. It is accessible by air, water and winter road only. There are 357 registered members residing on the Neskantaga Reserve, with the remaining 137 registered members living elsewhere (GoC, 2021a).</p> <p>Neskantaga First Nation has a Custom Electoral System, with one Chief and four Councillors elected every two years.</p>
Nibinamik First Nation Tribal Council: Matawa First Nations Management Inc. Provincial Territorial Organization: Nishnawbe Aski Nation	<p>Nibinamik First Nation, known as Summer Beaver, is a signatory to Treaty 9 and is affiliated with Matawa First Nations Management Inc. and Nishnawbe Aski Nation. The Nibinamik cultural affiliation is Ojibway.</p> <p>Nibinamik First Nation is comprised of the recently recognized reserve of the Summer Beaver Settlement, which is located on Nibinamik Lake (GoC, 2021a). The community is located approximately 480 km north of Greenstone, 210 km northwest of MFFN and 70 km southwest of WFN. It is accessible by air, water and winter road only. According to Indigenous Services Canada (GoC, 2021a), 75 registered members live on 'own reserve' and the remaining 464 registered members live elsewhere. However, the Summer Beaver Indian Settlement is currently not a reserve and has no statutory basis under the <i>Indian Act</i>. There are 380 registered members residing in the Summer Beaver Indian Settlement (GoC, 2021a).</p> <p>Nibinamik First Nation has a Custom Electoral Governance System, with one Chief, one Head Councillor and three Councillors elected every two years.</p>
Red Sky Métis Independent Nation	<p>Red Sky Métis Independent Nation (RSMIN) is comprised of descendants of the 84 Métis who were beneficiaries and annuitants under the Robinson-Superior Treaty 1850. As of August 2014, RSMIN is recognized as a non-status Nation (RSMIN, 2021). The administrative office for Red Sky Métis Independent Nation is located in Thunder Bay, approximately 430 km southwest of MFFN and 520 km south of WFN. There are approximately 8,000 members with an elected Chief (RSMIN, 2021).</p>

Indigenous Community	Community Profile
<p>Wapekeka First Nation</p> <p>Tribal Council: Shibogama First Nations Council</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Wapekeka First Nation is a signatory to Treaty 9 and is affiliated with the Shibogama First Nations Council and Nishnawbe Aski Nation. Wapekeka was formerly known as the Angling Lake First Nation. The Wapekeka cultural affiliation is Oji-Cree. Wapekeka First Nation is comprised of two reserves: Wapekeka Reserve 1 (3,605 ha) and Wapekeka Reserve 2 (2,026.5 ha) (GoC, 2021a). Wapekeka Reserve 2 serves as the residential community and is located on the shores of Otter Lake, approximately 440 km northeast of Sioux Lookout, which is the nearest service centre and approximately 345 km northwest of MFN and 175 km northwest of WFN. Wapekeka Reserve 1 is located approximately 10 km south of the main community. The community is accessible by air through the off-reserve Angling Lake/Wapekeka Airport, as well as partially accessible by boat and a winter road. There are 498 of the 513 registered members residing on Wapekeka Reserve lands, with the remaining residing elsewhere (GoC, 2021a). Wapekeka First Nation has a Custom Electoral Governance System, with one Chief, one Deputy Chief, and three Councillors elected every two years.</p>
<p>Wawakapewin First Nation</p> <p>Tribal Council: Shibogama First Nations Council</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Wawakapewin First Nation is a signatory to Treaty 9 and is affiliated with the Shibogama First Nations Council and Nishnawbe Aski Nation. The Wawakapewin cultural affiliation is Oji-Cree. Wawakapewin First Nation is comprised of one reserve, the Wawakapewin Reserve (5,221 ha) (GoC, 2021a), which is located approximately 300 km northwest of MFFN and 130 km northwest of WFN. Approximately half of the 36 registered members reside on the Wawakapewin Reserve, with the remaining 36 registered members residing elsewhere (GoC, 2021a). Wawakapewin First Nation has a Custom Electoral Governance System, with one Chief and one Councillor elected every three years.</p>
<p>Webequie First Nation</p> <p>Tribal Council: Matawa First Nations Management Inc.</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Webequie First Nation is a signatory to Treaty 9 and is affiliated with Matawa First Nations Management Inc. and Nishnawbe Aski Nation. The Webequie cultural affiliation is Oji-Cree. Webequie First Nation is comprised of one reserve, Webequie Reserve (34,279 ha), located on the northern peninsula of Eastwood Island on Winisk Lake (GoC, 2021a), approximately 540 km north of the city of Thunder Bay and 175 km northwest of MFFN. The community is accessible by air via the on-reserve remote Webequie Airport, by water and winter road. There are 326 of the registered members residing on the Webequie Reserve, while the remaining 611 registered members live elsewhere (GoC, 2021a). Webequie First Nation has a Custom Electoral System, with one Chief, one Head Councillor and five Councillors elected every two years.</p>
<p>Weenusk (Peawanuck) First Nation</p> <p>Tribal Council: Independent First Nations</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Weenusk (Peawanuck) First Nation is a signatory to Treaty 9 and is affiliated with Nishnawbe Aski Nation. The Weenusk First Nation cultural affiliation is Cree in the n-dialect. Anishiniimowin and Ojibwemowin are also spoken. Weenusk people used to live in the community of Winisk near the mouth of the Winisk River until the community moved to Peawanuck due to flooding. Peawanuck is located near the confluence of the Winisk and Shamattawa Rivers, approximately 30 km up river from Winisk. Weenusk First Nation is comprised of one reserve, Winisk Reserve 90 (5,310 ha), and the Winisk Indian Settlement (GoC, 2021a), both of which are located approximately 45 km from Hudson Bay along the Winisk River, approximately 375 km north of MFFN and 260 km northeast of WFN. There are 25 registered members living on Winisk Reserve 90, while the majority of the 605 registered members live elsewhere (GoC, 2021a). Weenusk First Nation has a Custom Electoral Governance System, with one Chief and three Councillors elected every two years.</p>

Indigenous Community	Community Profile
<p>Wunnumin Lake First Nation</p> <p>Tribal Council: Shibogama First Nations Council</p> <p>Provincial Territorial Organization: Nishnawbe Aski Nation</p>	<p>Wunnumin Lake First Nation is a signatory to Treaty 9 and is affiliated with the Shibogama First Nations Council and Nishnawbe Aski Nation. The Wunnumin cultural affiliation is Oji-Cree.</p> <p>Wunnumin Lake First Nation is comprised of two reserves, Wunnumin 1 (5,855.1 ha) and Wunnumin 2 (3,794.4 ha) (GoC, 2021a). The reserves are located approximately 385 km northeast of Sioux Lookout, 177 km northeast of Pickle Lake, 255 km northwest of MFFN and 120 km west of WFN. The community is accessible by air through the off-reserve remote Wunnumin Lake Airport, by water, and by winter road. There are 584 of the 723 registered members residing on the Wunnumin reserves, with the remaining registered members living elsewhere (GoC, 2021a).</p> <p>Wunnumin Lake First Nation has a Custom Electoral System, with one Chief, one Deputy Chief, one Head Councillor and three Councillors elected every two years.</p>

It is anticipated that each community's level of interest will be gauged and the appropriate level of consultation and engagement will be established and implemented throughout the EA/IA, including identification and consideration of the potential effects of the Project on the community. Communities that identify an interest in this Project will be consulted. Indigenous communities have varying rights and interests in respect of the Project, and as such may request different approaches to consultation and engagement, as well as mitigation and accommodation, where appropriate, to mitigate effects to their rights and interests. **Figure 3-1** shows the location of the reserves for the Indigenous communities listed in **Table 7.1-3**.

7.1.1.2.2 Background Information and Data

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Indigenous Use of Land and Resources VC.

Background information and data sources that will be reviewed and evaluated include:

- › Attawapiskat First Nation Community Based Land Use Plan Draft Terms of Reference (Attawapiskat First Nation, 2015; independent planning process not related to the *Far North Act*);
- › Constance Lake Terms of Reference: Terms of reference for community based land use planning in Constance Lake under the *Far North Act* (Constance Lake First Nation and MNRF, 2014);
- › Ginoogaming First Nation Social Impact Assessment (Beringia Community Planning Inc., 2015);
- › Wildlife Harvesting and Sustainable Regional Native Economy in the Hudson and James Bay Lowland, Ontario (Berkes et al., 1994);
- › Awuwanainithukik: Living an Authentic Omushkegowuk Cree Way of Life (Daigle, 2010);
- › Eabametoong and Mishkeegogamng First Nations Community Based Land Use Plan: Taashikaywin Terms of Reference (Eabametoong and Mishkeegogamng First Nations and MNR, 2013);
- › First Nation observations and perspectives on the changing climate in Ontario's Northern Boreal: forming bridges across the disappearing "Blue-Ice" (Kah-Oh-Shah-Whah-Skoh Siig Mii-Koom) (Golden, 2017);
- › Wawakapewin Terms of Reference: Terms of Reference for Community Based Land Use Planning in Wawakapewin under the *Far North Act* (Wawakapewin First Nation and MNR, 2014);

- › Traditional Knowledge Assessment Related to the Premier Gold Mines Hardrock Project (Hensel Design Group Inc., 2015);
- › Boreal Forest Fire Ecology and Archaeological Site Formation: An Example from Northern Ontario (Hinshelwood, 1996)
- › Traditional Food Consumption Behaviour and Concern with Environmental Contaminants among Cree Schoolchildren of the Mushkegowuk Territory (Hlimi et al., 2012);
- › Natural Resource Management and Indigenous Food Systems in Northern Ontario (LeBlanc, 2014);
- › Sioux Lookout First Nations Health Authority - Community Health Indicators, Engagement Summary Report (Matsumoto, 2017);
- › First Nations' Moose Hunt In Ontario: A Community Perspective and Reflections (McLaren, 2012);
- › Cultural Preservation and Self-determination through Land Use Planning: A Framework for the Fort Albany First Nation (Minkin, 2008);
- › Animbiigoo Zaagi'igan Anishinaabek (AZA) Land Code, (Animbiigoo Zaagi'igan Anishinaabek, 2021);
- › Canoe Atlas of the Little North (Berger and Terry, 2007);
- › Comprehensive Community Planning Toolkit: Finding Bimadizowin (Nishnawbe Aski Development Fund, 2017);
- › Kashechewan First Nation Terms of Reference for a Community Based Land Use Plan (KFN and MNRF, 2017);
- › Otokwin-Attawapiskat River Park Management Plan (Ontario Parks, 2002a);
- › Ogoki River Provincial Park Management Statement (MECP, 2021a);
- › Weenuski-Inninowuk Otaskiwao: Terms of Reference for Weenusk First Nation community based land use planning (Weenusk First Nation and MNRF, 2017);
- › Indigenous Current Use of Lands and Resources for Traditional Purposes (Nextbridge Infrastructure, 2018);
- › Pipestone River Park Management Plan (Ontario Parks, 2002b);
- › Northern Ojibwa Land Tenure (Sieciechowicz, 1986);
- › Hardrock Project Environmental Impact Statement/Environmental Assessment - Chapter 18.0: Assessment of Potential Environmental Effects on Traditional Land and Resource Use (Stantec, 2017);
- › Marathon Palladium Project Environmental Impact Statement Addendum - Indigenous Considerations (Stantec et al., 2021);
- › Learning from Place: A Return to Traditional Mushkegowuk Ways of Knowing (Restoule et al., 2013);
- › A Land Not Forgotten: Indigenous Food Security and Land-Based Practices in Northern Ontario (Robidoux et al., 2017);
- › Understanding Traditional Food Behaviour and Food Security in Rural First Nation Communities: Implications for Food Policy (Stroink and Nelson, 2012);
- › Wataynikaneyap Transmission Project Environmental Study Report for the Phase 2 Connecting 17 Remote First Nation Communities Project - Section 8.0: Aboriginal and Treaty Rights and Interests (Watay Power, 2018);

- › Draft Webequie First Nation Community Plan (Webequie Lands and Resources Department, 2021);
- › Webequie First Nation Community Well-being Baseline Study (WFN, 2012; 2014a; 2014b)
- › Terms of Reference for Community Based Land Use Planning in Webequie under the *Far North Act* (WFN and MNRF, 2014);
- › Marten Falls First Nation Community Based Land Use Plan (in development); and
- › Marten Falls Community Based Land Use Plan Terms of Reference (MFFN and MNR, 2013).

7.1.1.2.3 Proposed Baseline Studies

The proposed baseline studies outlined below will be utilized to assess potential effects to the Indigenous Use of Land and Resources VC, and the EA/IA will draw upon the IK information gathered through consultation with identified Indigenous communities.

Desktop Analysis

A desktop analysis of existing publicly available information sources will be completed to collect information relevant to the rights and interests of Indigenous communities and groups identified in **Section 4.2.1**. This information will be considered preliminary until it is validated by Indigenous communities and groups and substantiated through further study and inputs from Indigenous communities and groups.

Information related to IK/ILRU, cultural values and practices, rights and interests is typically considered sensitive/confidential and is usually not publicly available. Further, it is important to understand the specific context in which relevant background resources were developed. To increase trust and build relationships, the proponent will seek direction from Indigenous communities and groups with respect to the interpretation and use of existing/available IK that they are willing to share and that should be included in the document review. This is expected to be an ongoing and iterative process. Where secondary sources of relevant IK information are available, permission from Indigenous groups to use the information will be sought prior to inclusion and the content to be included will be validated with Indigenous communities for integration into the EA/IA.

The desktop analysis will support the establishment of baseline conditions with respect to:

- › The physical and cultural heritage of each Indigenous group: burial sites; cultural values; experiences of being on the land; and sacred, ceremonial, or culturally important places, plants, animals, objects, beings, or things;
- › Indigenous use of land and resources: traditional activities presently or historically practiced; location, frequency, duration and/or timing of these activities; types of resources used and their habitats; the quantity and quality of resources; culturally important resources and places that are harvested; access to resources or places used; the experience of the practice; and other uses identified by Indigenous communities or groups; and
- › Conditions related to the rights and interests of Indigenous peoples: areas in which rights and interests are exercised in the area of the Project, including historical, regional and community context; the quality and quantity of resources required to support the exercise of rights; access to resources required; experience associated with the exercise of rights; landscape considerations for the exercise of rights; specific areas of cultural importance; cultural traditions, identified thresholds related to the exercise of rights; and background or cumulative effects that are already interfering with the exercise of rights or the transmission of culture and cultural practices.

Indigenous Knowledge Program

An Indigenous Knowledge (IK) Program will be conducted to collect IK/ILRU information (e.g., native traditional/country foods, medicinal plants, culturally important plants, harvest areas, sacred sites), for consideration and incorporation in the EA/IA. The IK Program will include collection of existing IK/ILRU information, as well as completion of Project--specific studies.

The IK Program will consist of two concurrent key information collection and/or sharing activities:

1. Collecting existing IK/ILRU and relevant information previously collected by communities for other purposes that they choose to share with the proponent; and
2. Completing Project-specific studies to collect and report on IK, ILRU, cultural values and Indigenous rights and interests (Project-specific studies).

A Guidance Document will be developed at the outset of the IK Program, during the Terms of Reference stage of the Project, to support the collection and/or sharing of IK information.

Associated guidance materials will be included that are intended to serve as a 'toolbox' for communities to support IK data collection and sharing.

These materials will be directly informed by the provincial requirements, best practices, Indigenous perspectives provided by community members, and professional experience. The proponent will host meetings with Indigenous communities and groups who express interest in participating in the IK Program to discuss IK Sharing Agreements, funding, timelines, and relevant information and/or existing data communities and groups are willing to share, and to answer questions about the program. The proponent will also continue to solicit interest in the IK Program from other Indigenous communities who have not yet expressed an interest.

The IK Program will be led by each of the participating Indigenous communities. IK/ILRU will be incorporated into each VC assessment as it becomes available. IK/ILRU data will be collected throughout the EA/IAs and will be incorporated directly into a number of aspects of the EA/IA database and assessment, including:

- › Establishment of existing conditions of the study areas as the baseline;
- › Input into the identification and evaluation of alternative road corridors;
- › Identification of Project interactions and potential effects, including potential impacts to community Aboriginal Treaty Rights and Interests;
- › Identification of effective and established mitigation measures to reduce potential effects to Aboriginal and Treaty Rights and Interests;
- › Identification of potential methods to accommodate for potential impacts to Aboriginal and Treaty Rights and Interests that cannot be mitigated;
- › Identification of residual effects (i.e., net effects) after applying mitigation measures and accommodation;
- › Assessment of cumulative effects; and
- › Follow-up commitments and monitoring programs for the assessment.

Information collected by the participating communities will only be applied once it has been validated by the community.

Sharing of Existing Information

Some Indigenous communities and groups may have relevant existing IK and information on ILRU and cultural values from previously completed or ongoing community based land use planning processes or other activities. Existing IK and other relevant information and/or data will be (or has already been) requested from Indigenous communities and groups through the following channels:

- › In-person Project information sessions;
- › Community Based Land Use Plan meetings;
- › Community-specific Project meetings related to the IK Program;
- › Distribution of letters informing Indigenous communities and groups of the IK Program;
- › Distribution of the IK Guidance Document; and
- › Project Website.

It is understood that some communities have existing IK and information that may be relevant to the Project that they may be willing to share. The proponent will continue to meet and work with Indigenous communities and groups, as needed, to facilitate the sharing of existing and relevant IK and information on ILRU, cultural practices and values, and rights and interests. It is anticipated that all IK and information on ILRU shared through the program will be governed by IK Sharing Agreements that indicate how confidential information will be used to inform the effects assessment but will be protected from public or third-party disclosure.

Project-Specific Studies

Project-specific studies are intended to enable primary information and data collection to support the establishment of baseline conditions and the assessment for the Indigenous Use of Land and Resources VC; these studies are also intended to support the collection of IK/ILRU and perspectives relevant to the technical aspects of the EA/IA including environment, health, social and economic conditions, where possible. As described in the earlier section, the Guidance Document and associated materials are intended to facilitate this.

Based on communications to date, it is expected that Indigenous communities or groups interested in participating in the IK Program and specifically in completing a Project-specific study will undertake these studies on their own or with the support of consultants. Thus, it is expected that each participating community or group will implement community-specific cultural protocols throughout the study in terms of participant selection and the type(s) of engagement and information collection activities employed. It is also understood that there have already been significant efforts to collect IK and information on ILRU and cultural values in some of the communities. Given this, it is expected that communities undertaking a Project-specific study will employ a methodology that will suit their needs and community protocols. However, the following general study approach has been included in the Guidance Document:

- › Review existing information that may be available: this could be used to identify any gaps to inform a Project-specific study if one will be undertaken;
- › Select study participants: this should be done with consideration for the importance of selecting a diversity of participants (women, Elders, youth, gender diverse peoples and those with disabilities);
- › Prepare for information collection: this includes an overview of considerations (e.g., whether a translator will be required) with reference to best practices and the toolbox of materials included in the guide;
- › Collect the information: this could be done through workshops, focus groups, interviews, or a combination of these depending on what will work best for each community or group;

- › Digitize data: this will enable mapping for reporting purposes and to inform the Project assessment and planning processes;
- › Validate the information: this is important to confirm that information and spatial data was documented accurately and appropriately; and
- › Report on the information: this should include an overview of how information was collected and present the information both in text and through mapping.

7.1.1.2.4 Potential Project-related Effects

The potential direct effects to the Indigenous Use of Land and Resources VC may include, but not limited to:

- › Project-related alteration/change to or loss of sites and areas used for rights-based activities and other interests (e.g., cultural activities, hunting, trapping, fishing, gathering, teaching) can interfere with ILRU.
- › Project-related disturbance to or loss of natural resources used for rights-based activities and other interests can interfere with ILRU.
- › Project-related activities that have the potential to impact perceived confidence in the quality of natural resources used for rights-based activities and other interests can interfere with ILRU.
- › Project-related activities that have the potential to impact access to sites and areas for rights-based activities and other interests can interfere with ILRU.

In addition, potential indirect effects on the Indigenous Use of Land and Resources VC may include but not be limited to:

- › Changes in the rights-based economy related to changes in the pursuit of traditional activities that are monetized (e.g., trapping);
- › Increased economic burden on Indigenous peoples related to changes in the pursuit and consumption of country foods and associated increased reliance on market foods;
- › Changes in the atmospheric environment (air quality) and or sensory disturbance (noise, vibration) related to construction and operation could affect the availability and/or quality (or perceived quality) of resources that are harvested or gathered;
- › Changes in surface and/or groundwater quality and/or quantity could affect the availability and/or quality (or perceived quality) of resources that are harvested or gathered and/or affect culturally significant species;
- › Vegetation clearing/management associated with the construction and operations phases could result in a loss of habitat for species that are harvested or gathered and/or culturally significant species;
- › An increase in hunting or fishing pressure by non-Indigenous people accessing the area could affect the availability of wildlife and fish that are harvested by Indigenous people;
- › Changes in the atmospheric environment (air quality) and/or sensory disturbance (noise, vibration) related to the construction and operations phases could affect the Indigenous experience of being on the land;
- › Changes in the visual landscape related to the construction and operations phases could affect the Indigenous experience of being on the land;
- › Changes or effects to archaeological sites and resources, built heritage resources, and/or cultural heritage landscapes could affect the Indigenous experience of being on the land and/or the pursuit and teaching of rights-based activities and cultural practices; and
- › Changes in climate could affect the availability of resources that are harvested or gathered and the pursuit and teaching of rights-based activities and cultural practices.

7.1.2 Cultural Continuity and Well-being

The EAR/IS will present in detail the assessment of Project-related effects on the Cultural Continuity and Well-being VC (i.e., the ability to practice and transmit cultural traditions). Cultural continuity and well-being is defined as traditions, customs, protocols, values, spirituality, ceremonies, language, ways of knowing and being, and connections to the land and culturally important sites, areas, and resources including any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance; cultural landscapes and access to travel routes, the experience of being on the land and way of life tied to well-being and outlook of Indigenous communities, community cohesion, cultural knowledge transfer and protection of language as well as diet and food security.

7.1.2.1 Preliminary Indicators

Table 7.1-4 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Cultural Continuity and Well-being VC effects assessment.

Table 7.1-4: Preliminary Indicators for the Cultural Continuity and Well-being VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Culturally important sites and areas (e.g., ceremonial sites, place names, teaching sites, archaeological sites)	<ul style="list-style-type: none"> › Project-related disturbance to or loss of culturally important sites and areas can interfere with cultural continuity and well-being. › Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.
Sufficiency or perceived sufficiency of culturally significant sites, areas and/or resources	<ul style="list-style-type: none"> › VC is reliant on sufficient availability of and access to culturally significant sites and areas (e.g., ceremonial sites, place names, teaching sites, important harvesting sites and areas) and resources (e.g., culturally significant species) including any structure, site, or thing that is of historical, archaeological, paleontological, or architectural significance › Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.
Cultural landscapes and access to travel routes	<ul style="list-style-type: none"> › VC is reliant on safe access to travel routes for practicing of rights within the cultural landscapes. › Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.
Environmental stewardship	<ul style="list-style-type: none"> › VC is reliant on community-led environmental stewardship and Indigenous management of culturally important areas. › Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.
Experience of being on the land	<ul style="list-style-type: none"> › VC is reliant on continued sense of remoteness and experience of being on the land free from disturbance including the perception of availability and fragmentation of land for rights-based activities. › Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.
Cultural traditions and way of life	<ul style="list-style-type: none"> › VC is reliant on continued practice of cultural traditions and way of life. › Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.
Mental well-being and future outlook of community members	<ul style="list-style-type: none"> › Project-related changes to the mental health, emotional resilience, and psychological well-being of community members caused by Project development and connection to the provincial highway system. › Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Social and family interactions and community cohesion	<ul style="list-style-type: none"> › Project-related changes in the ability of community members to connect with friends and family within the community and other communities. › Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.
Diet and food security	<ul style="list-style-type: none"> › Project-related changes to the availability of and access to cost-effective food and other essentials. › Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.
Cultural knowledge transfer and language protection	<ul style="list-style-type: none"> › Project-related changes to the ability of community members to transfer and teach cultural information, including language. › Indicator of importance to Indigenous communities based on the desktop analysis and inputs from communities to date.

7.1.2.2 Baseline Characterization

7.1.2.2.1 Preliminary Baseline Description

A preliminary baseline description is provided in **Section 7.1.1.2.1**.

7.1.2.2.2 Background Information and Data

The baseline for the Cultural Continuity and Well-being VC will be informed by the same background information and data as the baseline for the ILRU VC (see **Section 7.1.1.2.1**). The baseline for the Cultural Continuity and Well-being VC will be informed by the same background information as data as the baseline for the ILRU VC (see **Section 7.1.1.2.1**).

7.1.2.2.3 Proposed Baseline Studies

The proposed baseline studies for the Cultural Continuity and Well-being VC are the same as those proposed for the ILRU VC (see **Section 7.1.1.2.3**), as these proposed studies will collect information for both VCs concurrently.

7.1.2.3 Potential Project-related Effects

The potential direct effects to the Cultural Continuity and Well-being VC may include, but not limited to:

- › Project-related disturbance to or loss of culturally important sites and areas (e.g., ceremonial sites, place names, teaching sites, archaeological sites) can interfere with cultural continuity and well-being (the ability to practice and transmit cultural traditions such as activities and teaching).
- › Project-related alteration/change to sufficient availability or loss of access to culturally significant sites and areas (e.g., ceremonial sites, place names, teaching sites, important harvesting sites and areas) and resources (e.g., culturally significant species) can interfere with cultural continuity and well-being.
- › Project-related alteration/change to safe access to travel routes for practicing of rights within the cultural landscapes can interfere with cultural continuity and well-being.
- › Project-related activities which can potentially increase access by non-Indigenous people to sites and areas that were previously perceived as having a sense of remoteness (and an experience of being on the land free from disturbance) including the perception of availability and fragmentation of land for rights-based activities can interfere with cultural continuity and well-being.

- › Project-related activities that can potentially impact the continued practice of cultural traditions and way of life can interfere with cultural continuity and well-being.

In addition, potential indirect effects on the Cultural Continuity and Well-being VC may include but not be limited to:

- › Changes in food security and the diet of Indigenous people and associated potential effects on human health related to a decrease in country food consumption/increase in market food consumption;
- › Changes to family economics related to changes in the pursuit and consumption of country foods, as well as access (financial and logistical) to market foods and other essentials;
- › Changes in community well-being (e.g., social issues, family relationships, community cohesion) related to changes in access to family members and friends, as well as services outside the community;
- › Changes in the ability of community members to protect and maintain the Indigenous culture through teaching and the transfer of cultural knowledge to others, and protection and proliferation of the Indigenous language;
- › Changes in community well-being could affect the pursuit and teaching of rights-based activities and cultural practices;
- › Changes in human health could affect the pursuit and teaching of traditional activities and cultural practices, as well as experiences on the land;
- › Changes in the social and economic environment could affect mental and psychological health and could affect outlook of the future (restrictions and/or opportunities);
- › Changes or effects on archaeological sites and resources, built heritage resources, and/or cultural heritage landscapes could affect the Indigenous experience of being on the land and/or the pursuit and teaching of rights-based activities and cultural practices; and
- › Changes in climate could affect the availability of resources that are harvested or gathered and the pursuit and teaching of rights-based activities and cultural practices.

7.2 Physical Environment

The EAR/IS will include the assessment of the physical environment. The EA/IA will assess Project-related effects on the identified VCs summarized in **Table 7.2-1**.

Table 7.2-1: Preliminary VCs for the Physical Environment

Preliminary Valued Components
Section 7.2.1 Air Quality
Section 7.2.2 Greenhouse Gas Emissions
Section 7.2.3 Noise
Section 7.2.4 Groundwater
Section 7.2.5 Surface Water
Section 7.2.6 Geology, Terrain and Soils
Section 7.2.7 Visual Environment

7.2.1 Air Quality

The EAR/IS will present in detail the assessment of Project-related effects on the Air Quality VC. The Air Quality VC represents the concentrations of compounds, in the air, within the Project region.

7.2.1.1 Preliminary Indicators

Table 7.2-2 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Air Quality VC effects assessment.

Table 7.2-2: Preliminary Indicators for the Air Quality VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Concentrations of air contaminants: <ul style="list-style-type: none"> › NO_x › CO › SO₂ › TSP › PM₁₀ › PM_{2.5} › Selected VOCs^(a) › PAHs (benzo(a)pyrene) 	<p>The contaminants chosen for the indicators are the most significant ones associated with transportation and construction activities. In addition, these contaminants are prescribed by the Ontario Ministry of Transportation (MTO, 2020b) as the key air quality indicator compounds for environmental assessments of transportation corridors.</p>

Notes: (a) Selected VOCs: acrolein, acetaldehyde, benzene, formaldehyde, 1,3-butadiene, toluene, ethylbenzene and xylene.

7.2.1.2 Baseline Characterization

7.2.1.2.1 Preliminary Baseline Description

The Project is located in a remote region of Ontario away from any significant sources of human induced air emissions, there are no local Ministry operated ambient air monitoring stations within the vicinity of the Project.

Due to the remote location of the Project, the surrounding environment is considered to be a pristine setting. Local air quality is not expected to be significantly influenced by anthropogenic sources of emissions such as large industrial or transportation sources. Forest fires may influence or contribute to particulate matter concentrations in the study area.

7.2.1.2.2 Background Information and Data

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Air Quality VC.

- › Background data assembled for historical reports (e.g., Cliffs Chromite Project Environmental Assessment: Meteorology and Air Quality Technical Supporting Document [Golder, 2013c]);
- › Data from the MFCAR baseline ambient air quality monitoring;
- › Ring of Fire Baseline Environmental Monitoring Program: Preliminary Report (MECP, 2019a);
- › ECCC National Pollutant Release Inventory Program;
- › Historical Weather Data from ECCC; and
- › Air quality monitoring data from the National Air Surveillance Program (NAPS) operated by ECCC.

7.2.1.2.3 Proposed Baseline Studies

Desktop Analysis

A desktop analysis of existing information sources will be completed to identify information gaps that will need to be addressed through further study.

To characterize baseline Air Quality within the LSA, ambient air quality concentrations of select indicator compounds will be captured from the MFCAR ambient air quality monitoring program. Data gathered in the MFCAR monitoring program is considered representative of the preferred corridor due to its proximity and airshed similarity in terms of there not being significant industrial or residential development within the airshed. Additionally, due to the remote location of the Project, deployment of air quality monitoring equipment would face significant challenges.

Data from the MFCAR monitoring program will be used for the following indicator compounds:

- › Particulate matter (PM_{2.5})
- › Ozone
- › Nitrogen oxides (NO_x)
- › Sulphur dioxide (SO₂)
- › BTEX (benzene, toluene, ethylbenzene, and xylene)

Up to one year of ambient air quality data will be collected within the MFFN community and incorporated when establishing baseline air quality. The results of the MFFN monitoring program will be statistically summarized based on the averaging periods of the applicable standards and criteria:

- › Canadian Ambient Air Quality Standards (CAAQS) (CCME, 2021); and
- › Ontario's Ambient Air Quality Criteria (AAQC) (MECP, 2020b).

Other particulate matter size fractions (TSP and PM₁₀) will be determined by using measured PM_{2.5} data to calculate TSP and PM₁₀ background data. As PM_{2.5} is a size fraction subset of PM₁₀, and PM₁₀ is a size fraction subset of TSP, the PM₁₀ and TSP background concentrations can be estimated based on the PM_{2.5} background concentration.

A literature review will be completed to gather representative particulate ratios that are considered to be reflective of the study area. This literature review may include an analysis of historical data collected at representative monitoring stations such as those included within the ECCC's NAPS program, and a review of the United States Environmental Protection Agency (US EPA) studies and supporting documentation.

BTEX and particulate matter will be used as surrogates for polycyclic aromatic hydrocarbons and diesel particulate matter which cannot be sampled for due to equipment limitations coupled with serviceability challenges given the remote location of the community. Concentrations of specific relevant contaminants such as acetaldehyde, formaldehyde, 1,3-butadiene, and acrolein will be estimated based on monitored BTEX concentrations and published emission factors, such as the US EPA AP-42 emissions database (US EPA, 2021).

Ambient concentrations of carbon monoxide (CO) will be estimated based on data collected from representative monitoring stations that are included within the ECCC's NAPS program.

Anticipated diesel particulate matter (DPM) emissions as a result of the Project will be included in the air quality assessment, hence background DPM concentrations will be compiled. Due to the technical limitations of measuring DPM, background DPM concentrations will be estimated based on the relative magnitude of emissions in the community. A cursory emission inventory will be developed for the MFFN community based on available data. This inventory will be used to speciate measured particulate concentrations.

7.2.1.3 Potential Project-related Effects

The following potential effects on the Air Quality VC may be anticipated:

- › Changes to local air quality during the constructions phase due to fugitive dust from land clearing, material handling, and vehicles travelling on gravel roads and other exposed surfaces, and due to tailpipe emissions (e.g., nitrogen oxides and carbon monoxide) from the movement and operation of construction equipment and vehicles.
- › Changes to local air quality during the operations phase due to vehicular traffic, and equipment and vehicles used for operation and maintenance activities. Vehicular exhaust emissions will consist primarily of nitrogen oxide, carbon monoxide, sulphur dioxide, suspended particulates, and volatile organic compounds, as well as GHG gases.

Dispersion modelling will be conducted to assess Project effects. Modelling will be conducted following published guidance, as applicable. The models to be selected for use in this assessment will be ideally suited for near-field effects (i.e., on the scale of metres to less than 50 kilometres). Construction and operation activities (e.g. use of the road) will be the sources of emissions from the Project. These sources will generate emissions in the vicinity of the Project. Emissions will disperse rapidly with downwind distance.

7.2.2 Greenhouse Gas Emissions

The EAR/IS will present in detail the assessment of Project-related effects on the Greenhouse Gas (GHG) Emissions VC. GHG emissions encompass the existing GHG emissions in the environment and GHG emissions from the Project.

7.2.2.1 Preliminary Indicators

Table 7.2-3 identifies preliminary indicators and includes the definition and rationale for their inclusion in the GHG Emissions VC effects assessment.

Table 7.2-3: Preliminary Indicators for the GHG Emissions VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Quantification of GHG emissions (CO ₂ , CH ₄ , N ₂ O) expressed as CO ₂ e	The contaminants chosen as indicators are the most significant greenhouse gases that are associated with construction and transportation projects. Additionally, these contaminants are prescribed by the Ontario Ministry of Transportation (MTO, 2020b) for quantifying GHG emissions from transportation corridors within environmental assessments.

7.2.2.2 Baseline Characterization

7.2.2.2.1 Preliminary Baseline Description

Due to the remote location of the Project, the surrounding environment is considered to be a pristine setting. Significant GHG emissions are not expected to result from anthropogenic sources of emissions such as large industrial or transportation sources. GHG emissions and sequestration processes are expected to occur during the baseline conditions from naturally occurring processes such as the decay of organic matter and carbon update from vegetation.

7.2.2.2.2 Background Information and Data

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the GHG VC.

- › Baseline ambient air monitoring results from the MFCAR baseline air quality monitoring. Ambient air quality monitoring was not conducted for the WSR project;
- › ECCC's Greenhouse Gas Reporting Program;
- › Air quality monitoring data from ECCC's NAPS Program; and
- › ECCC's National Inventory Report (ECCC, 2020a).

7.2.2.2.3 Proposed Baseline Studies

Desktop Analysis

A desktop analysis of existing background information and data sources will be completed to compile existing provincial, federal and sectoral GHG emission totals.

7.2.2.3 Potential Project-related Effects

The following potential effects on the GHG emissions are anticipated:

- › Changes in provincial or sectoral GHGs.

Releases of GHGs and their accumulation in the atmosphere will contribute to provincial and national GHG emissions totals. Anticipated Project GHG emissions will be quantified and compared against sectorial and federal totals. Emissions will be calculated using the following guidance and emission factor resources:

- › ECCC's Greenhouse Gas Reporting Program;
- › USE EPA AP-42: Compilation of Air Emissions Factors (US EPA, 2021); and
- › ECCC's National Inventory Report (ECCC, 2020a).

GHG sinks such as forest sequestration along the proposed development will also be considered in total GHG emissions quantification. Areas of peatland and other vegetated areas that function as carbon sinks affected by the Project will be assessed in the Plants and Vegetation Communities VC assessment. The resulting changes in GHG emissions and carbon capture capacity will be estimated in the GHG Emissions VC assessment.

7.2.3 Noise

The EAR/IS will present in detail the assessment of Project-related effects on the Noise VC. Noise refers to the acoustic environment.

7.2.3.1 Preliminary Indicators

Table 7.2-4 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Noise VC effects assessment.

Table 7.2-4: Preliminary Indicators for the Noise VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
<ul style="list-style-type: none"> › Continuous one-hour equivalent sound and vibration level (Leq,1hr) › Day-night sound and vibration level (Ldn) › Day-time sound and vibration level (Ld) › Night-time sound and vibration level (Ln) › Percent highly annoyed (%HA) 	<p>The noise and vibration level indicators are based on the field investigations, regulator feedback, data from previous EAs, and relevant provincial and federal guidance and legislation.</p>

7.2.3.2 Baseline Characterization

7.2.3.2.1 Preliminary Baseline Description

Due to the remote location of the Project, the acoustic environment within the RSA is expected to be dominated by sounds of nature (e.g., rustling leaves, animal calls) with little to no influence from anthropogenic noise sources. As such, the expected ambient noise levels along much of the Project route are expected to be consistent with those found in rural areas (i.e., 35 to 45 dBA [Health Canada, 2017]).

7.2.3.2.2 Background Information and Data

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Noise VC.

- › A Protocol for Dealing with Noise Concerns during the Preparation, Review and Evaluation of Provincial Highway's Environmental Assessments (MTO and MOE, 1996);
- › Relevant information from noise assessments completed for similar projects in Northern Ontario (e.g., MFCAR, WSR);
- › Environmental Guide for Noise (MTO, 2006);
- › Environmental Noise Guideline, Stationary and Transportation Sources - Approval and Planning, Publication NPC-300 (MOE, 2013);
- › Field investigations where applicable and IK;
- › Guidance for Evaluating Human Health Impacts in Environmental Assessment: Noise (Health Canada, 2017);
- › International Standards Organization (ISO) Standard 9613 Acoustics – Attenuation of sound during propagation outdoors – Part 1: Calculation of absorption of sound by the atmosphere (ISO, 1996a) and Part 2: General method of calculation (ISO, 1996b);
- › Model Municipal Noise Control By-law Noise Pollution Control Guideline - Blasting, Publication NPC-119 (MOE, 1978a);
- › Model Municipal Noise Control By-law Noise Pollution Control Guideline - Construction Equipment, Publication NPC-115 (MOE, 1978b);
- › Ministry of Natural Resources and Forestry: MNRF Land Information Ontario (LIO) geographic datasets;
- › Natural Resources Canada CANVEC: Natural Resources Canada CANVEC (CANVEC) geographic datasets;

- › Ontario Provincial Standard Specification (OPSS) 120, 2014: General Specification for the Use of Explosives (OPSS, 2014);
- › Transit Noise and Vibration Impact Assessment Manual (USFTA, 2018); and
- › Guidelines for Community Noise (WHO, 1999).

7.2.3.2.3 Proposed Baseline Studies

Desktop Analysis

The desktop analysis will consist of identifying representative Noise Sensitive Receptors (NSRs) within the Noise Sensitive Areas (NSAs) for the Project and characterizing their existing acoustical environment.

Locations of NSRs within 1.5 km of the preferred corridor will be identified through the study of available information. The inventory of the NSRs will be reviewed and where appropriate, NSRs will be grouped together based on anticipated similar noise levels. For this Project, NSRs may include (but not limited to): permanent and seasonal residences, hunting/fishing/trapping cabins, camps, SAR habitat features (e.g. Caribou nursing habitat), spiritual or sacred spaces that are identified by Indigenous communities, groups and stakeholders.

Input will be sought to select sensitive receptor locations through discussions with Indigenous communities, government agencies and other stakeholders.

Ambient noise monitoring that is gathered as part the WSR project and MFCAR project near the south and northeast terminuses of the NRL Project and the published Health Canada (2017) noise levels (i.e., 35 to 45 dBA) will be used to appropriately characterize the ambient levels at relevant NSRs, where applicable.

Field Studies

Subsequent to the desktop analysis in determining NSRs and characterizing their respective noise environment through review of relevant information, the need for completing a field study for determining existing ambient noise environment will be assessed. Such determination would rely on proximity of NSRs to existing sources of noise emissions (if any). Sounds of nature will not be used as parameter in determining the ambient noise environment.

If it is determined that a field study, consisting of ambient noise monitoring program, will notably improve data quality and hence the findings of the acoustic assessment, such study will be completed. The ambient noise monitoring program will be based on gathering hourly Leq(A) and various sound level percentiles over a minimum of 48 hours. Relevant noise measurement procedures and ambient determination protocols will be used in executing the ambient noise monitoring program.

7.2.3.3 Potential Project-related Effects

The following potential effects on the Noise VC may be anticipated:

Construction Phase

- › Temporary introduction of anthropogenic noise and vibration sources.
- › Increase in ambient noise levels and ground vibration due to construction activities may have an effect on sensitive receptors.
- › Increase in ambient noise levels and ground vibration due to construction activities may have an effect on wildlife and wildlife habitat through sensory disturbance.
- › Impacts to ambient noise levels from aggregate activities.

Operations Phase

- › Continuous noise impact due to introduction of vehicular traffic.
- › Increase in ambient noise levels due to operation of vehicles may have an effect on noise sensitive receptors.
- › Increase in ambient noise levels due to operation of vehicles may have an effect on wildlife (i.e., sensory disturbance) and wildlife habitat (i.e., reduced habitat footprint and connectivity).
- › Ground vibration due to vehicular traffic, negligible and localized to ROW.

Quantitative noise impact assessments will be undertaken for the preferred corridor for both the construction and operations phases.

For the construction phase, given its expected multi-year duration, a quantitative assessment of noise impact will be completed. Details of the construction phase, including (but not limited to), laydown areas, types and counts of noise generating equipment, equipment noise levels, construction schedule and duration will be used to predict noise levels at key PORs. The noise predictions will be established through noise propagation modelling (based on ISO 9613 Parts 1 and 2).

For the operations phase, an assessment of traffic noise impact will be completed in accordance with the applicable provincial guidelines (i.e., MTO and MECP guidelines). Relevant information, including predicted traffic volumes, percentages of medium and heavy trucks, posted speed limit, type of road surface and topography (PORs in relation to the proposed route) will be used in Ministry-accepted traffic noise model (e.g., U.S. DOT's TNM v2.5) in order to predict the traffic noise impact at key representative PORs.

7.2.4 Groundwater

The EAR/IS will present in detail the assessment of Project-related effects on the Groundwater VC. Groundwater is defined as the subsurface water that occurs beneath the water table in soils and geologic formations that are fully saturated. The study of shallow groundwater involves the near-surface, unsaturated, soil-moisture regime as well.

7.2.4.1 Preliminary Indicators

Table 7.2-5 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Groundwater VC effects assessment.

Table 7.2-5: Preliminary Indicators for the Groundwater VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Groundwater Quantity	<p>The groundwater quantity refers to the amount of water that is stored within the underground water bearing zones or aquifers that can be used directly by plants or pumped out through wells for human consumptions. This indicator is often affected by the changes to groundwater recharge, groundwater level (including seasonal fluctuations), groundwater flow directions/patterns, and groundwater discharge.</p> <p>The groundwater quantity plays an important role in the hydrologic cycle and is essential for balanced ecological systems (e.g., wetlands, peatlands, and fish habitats) by supplying sufficient amount of water through groundwater and surface water interactions. Groundwater is also a critical source in some regions for municipal and private drinking water supplies, irrigation and other commercial and industrial uses (e.g., bottled water, concrete production and dust control).</p>

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Groundwater Quality	<p>The groundwater quality indicator refers to the physical, chemical and biological properties of groundwater that may be affected by the Project activities.</p> <p>Groundwater helps keep a healthy ecological system functioning (e.g., peatlands, wildlife, Species at Risk) through groundwater and surface water interactions and provide suitable and reliable water supplies for human consumption, and livestock, commercial and industrial uses. Contaminated groundwater or low-quality groundwater that does not meet the applicable water quality criteria (e.g., Provincial Water Quality Objectives, Ontario Drinking Water Standards) is not suitable for use by plants or humans and use or long-term consumption may cause illness, cancer or even death.</p>

7.2.4.2 Baseline Characterization

7.2.4.2.1 Preliminary Baseline Description

A hydrogeological study was completed by KBM Resources Group for the MFFN Industrial Supply Road in 2019. The study was focused on desktop analysis and understanding of the existing physical settings including physiography, geology, groundwater and groundwater users in the vicinity of the Project. A very brief description of the hydrogeological conditions was provided in the report. No field work and associated data collection including groundwater level monitoring, groundwater quality sampling and hydraulic conductivity testing were mentioned in the report. In general, the hydrogeological environment can be described as follows (KBM, 2019a):

- › Crystalline (igneous and metamorphic) rocks of the Canadian Shield are characterized by low sparse fracture networks with low-potential aquifers, which also contributes to slow groundwater movement and recharge. Groundwater recharge in these fracture zones is highly localized (Cloutier et al., 2007).
- › Groundwater quality from these fractured rock zones is affected by the presence of metal contents in the bedrock (Chesnaux, 2013).
- › The shallow bedrock groundwater system is characterized by many small, localized aquifers. In most parts of the Canadian Shield, these aquifers may be connected to overburden aquifers. The shallow groundwater system is considered an important source of water supplies, especially in the areas where the overburden is absent or thin (Singer and Cheng, 2002).
- › Overburden aquifers, particularly associated with moraines and eskers, are often important sources for drinking water supplies.

7.2.4.2.2 Background Information and Data

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Groundwater VC.

- › Geological Survey of Canada physiographic regions map (Bostock, 1970);
- › Ontario Geological Survey bedrock and quaternary geology maps and data (Ontario Geological Survey, 2021);
- › An Assessment of the Groundwater Resources of Northern Ontario (Singer and Cheng, 2002);
- › Provincial Groundwater Monitoring Network database and online map (Government of Ontario, 2021b);

- › Cliffs Chromite Project Environmental Assessment Water and Sediment Quality Technical Supporting Document Part 2: Integrated Transportation System, Golder (Golder, 2013e);
- › Eagle's Nest Project Baseline Hydrogeology Report (Knight Piésold Consulting, 2013b);
- › Ring of Fire Baseline Environmental Monitoring Program: Preliminary Report (MECP, 2019a);
- › Marten Falls First Nations Industrial Supply Road, Hydrogeology Baseline Study (KBM, 2019a);
- › Marten Falls First Nations Industrial Supply Road, Surface Water Quality and Quantity Baseline Study (KBM, 2019b); and
- › MECP water well record and Permit to Take Water (PTTW) databases (online resources).

7.2.4.2.3 Proposed Baseline Studies

Desktop Analysis

An overview of the hydrogeological environment will be compiled from existing data sources. Preliminary review of the provincial water well database identified many well records within Regional Study Area. These identified wells will be further categorized and evaluated during the baseline study, and groundwater usage evaluated.

Field Investigations

Field investigations will be completed to fill identified data gaps, including monitoring well installation, groundwater level monitoring, water quality sampling and laboratory analysis, and hydraulic conductivity testing along the road alignment including alternative corridors, and in potential aggregate sites (pits and quarries).

Temporal variation or patterns in potential effects associated with different criteria will also be considered (e.g., differential water quality and related effects of the road versus aggregate sites during the construction and operations phases). In general, baseline data collection will be carried out over three events (e.g., spring, summer, and fall) to capture seasonal variations of groundwater levels and water qualities, unless specified otherwise.

During the preparation of the EAR/IS, data will be collected for the preliminary indicators identified in **Section 7.2.4.1**, through a combination of desktop analysis using the data sources identified in **Section 7.2.4.2.2** and data collected during field investigations. Field investigations will comprise borehole drilling and installation of shallow monitoring wells (less than 5 m) in the overburden in order to cover different soil types and deep wells (more than 5 m, either in overburden or bedrock). In addition, wells will need to be installed at potential aggregates sites (pits and quarries). The final well number and locations will be determined in conjunction with the geotechnical work plan and overall Project approach to addressing the alternate corridors. Surface water crossings will also need to be considered when choosing the well locations. In addition, piezometers will be installed and monitored for groundwater levels in peatland areas, which will be pre-mapped prior to the fieldwork for the assessment of groundwater and surface water interactions and the peatlands functions.

Groundwater sampling is expected to be conducted at least for three events, e.g., spring, summer and fall events to cover seasonal and annual water quality variations. One time hydraulic conductivity testing will also be conducted in all the new wells, expected to be completed during the second sampling event.

7.2.4.3 Potential Project-related Effects

The following potential effects on the Groundwater VC may be anticipated:

- › Temporary construction dewatering of excavations for structure foundations can cause the groundwater levels to be temporarily lowered, thereby reducing groundwater availability to nearby groundwater features (i.e., wetlands, streams, water wells, springs). If not mitigated properly, construction groundwater discharge from dewatering activities has the potential to result in erosion and mobilization of sediment at the discharge point and along the flow path, with elevated suspended solids and potential release of contaminants (i.e., sediment) to receiving waterbodies.
- › Groundwater quality may also be adversely affected by an accidental spill of contaminants (e.g., petroleum or chemical products) during the construction and/or operations phases of the Project.
- › Vegetation clearing, including peatlands, will take place for the road corridor, construction of temporary/permanent access roads, construction camps, laydown areas and aggregate sites. Clearing of vegetation may affect groundwater quantity, quality and flow.
- › The hardening of surfaces to construct the supply road and supportive infrastructure, such as construction camps and laydown/storage yards, has the potential to reduce groundwater recharge and lower the groundwater levels resulting in changes to groundwater quantity or patterns of flow that provide base flow to watercourses or discharge to wetlands.

7.2.5 Surface Water

The EAR/IS will present in detail the assessment of Project-related effects on the Surface Water VC. Surface water includes all surficial water (e.g., streams, rivers, lakes) that may be influenced by Project activities. The purpose of including the Surface Water VC is to determine the short-term and long-term effects the construction and operations phases of the Project will have on the quantity and quality of local surface water.

7.2.5.1 Preliminary Indicators

Table 7.2-6 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Surface Water VC effects assessment.

Table 7.2-6: Preliminary Indicators for the Surface Water VC

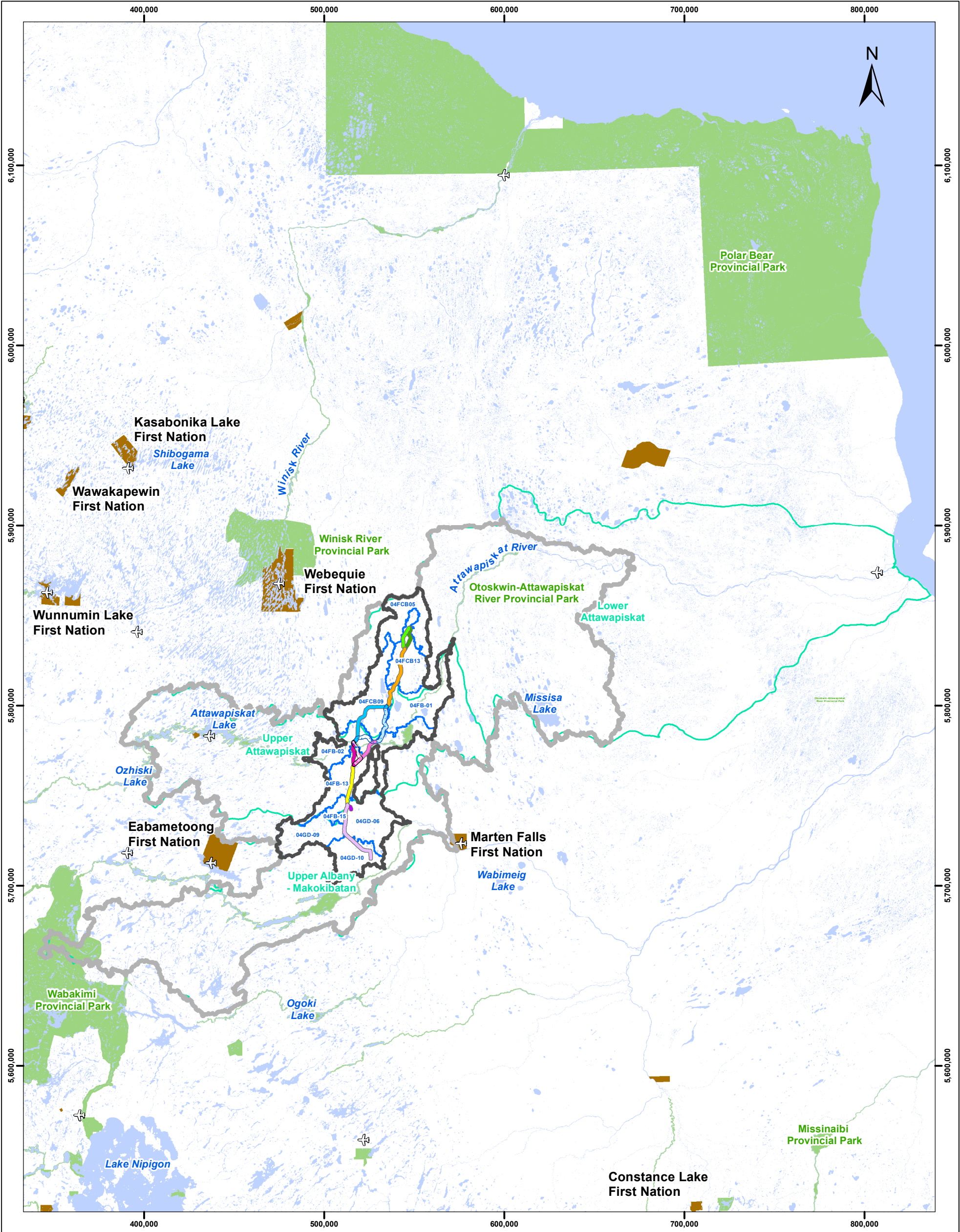
Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Surface water quantity	The surface water quantity indicator refers to the amount, flow and distribution of surface water. A detailed understanding of the potential effects of the Project on surface water quantities is essential. Many regional ecosystems and traditional land uses rely on the seasonal flows of surface water. Water quantities flowing through watercourses in the vicinity of the Project will have important effects on engineering considerations.
Surface water quality	The surface water quality indicator refers to the physical, chemical, and biological properties of surface water that may be affected by the Project activities. Both regional ecosystems and traditional land uses rely on clean waters flowing over the landscape. Maintenance of the water quality in this pristine environment will be a key consideration for all factors of the Project.

7.2.5.2 Baseline Characterization

7.2.5.2.1 Preliminary Baseline Description

The Hudson Bay Lowlands is a vast expanse of pristine wetlands broken up by glacial deposits, large rivers and lakes, and thousands of streams, creeks, ponds and other waterbodies. Water flows over and through this landscape maintaining its aquatic and terrestrial ecosystems and providing navigation and nourishment for local communities.

The proposed Northern Road Link is situated within the watersheds of the Attawapiskat and Albany Rivers. These two rivers drain a combined 185,500 km² area of land, stretching from Hudson Bay and James Bay to the headwaters of the Lake Superior watershed in Northern Ontario. **Figure 7-1** shows the proposed Project in the context of its intersecting tertiary and quaternary watersheds. The streams flowing into these rivers and their tributaries are low gradient and low velocity. Flows peak during the spring freshet, are reduced during the summer, and increase again in the late summer and early fall due to increased precipitation. Flows are lowest during winter due to watercourse freezing and much of the precipitation falling as snow (SNC-Lavalin, 2020).



Legend:

Corridor Alternatives
A1
A2
B1
C1
C2
C3
D1
D2
D3
E1
F1
F2

Preliminary Local Study Area (LSA Includes Quaternary Watersheds Crossed by the Corridor Alternaitves)

Preliminary Regional Study Area (RSA Includes Tertiary Sub-Watersheds Traversed by the LSA)

Quaternary Watersheds

Intersecting Corridor Alternatives

Tertiary Watersheds


Intersecting Corridor Alternatives

Airports

First Nation Reserve

Provincial Park

Waterbody



NRL
Northern Road Link

130650

65

0

Km

SCALE: 1:2,050,000

Northern Road Link

Quaternary and Tertiary Watersheds

Figure Number:7-1REV:PA

Client:Marten Falls and Webequie First NationsProject Number:679878Date:2022-03-24

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Document Path: Wor01\PROJECTS\IE&W\Projects\679878 - Northern Road Link\40_Execution\45_GIS_Dwgs\MXD\TOR\679878_NRL_PLN_TOR_SW_TertiaryQuaternaryWatershedIntersections_0001_0002.mxd

The filtering capacity of wetlands and the lack of regional development contribute to excellent water quality throughout the majority of the LSA and RSA. Common exceedances observed in the area include acidity, hardness, true colour, and dissolve organic carbon. Occasional exceedances observed include iron, manganese and aluminum (Golder, 2013e).

7.2.5.2.2 Background Information and Data

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Surface Water VC.

- › Ontario Flow Assessment Tool, developed by the MNRF and powered by Land Information Ontario (MNRF, 2019);
- › Environment Canada, Water Survey of Canada Monitoring Stations;
- › Cliffs Chromite Project Environmental Assessment Water and Sediment Quality Technical Supporting Document Part 2: Integrated Transportation System, Golder (Golder, 2013e);
- › Hydrological Atlas of Canada (Fisheries and Environment Canada, 1978)
- › Environment and Climate Change Canada, meteorological stations - Lansdowne House AUT (6014353, 6014350) and Big Trout Lake (6010735, 6010738, 6010739);
- › Hydrological functions of a mine-impacted and natural peatland-dominated watershed, James Bay Lowland (Leclair et al., 2015);
- › Ontario Hydro Network – Waterbodies. Land Information Ontario (LIO) Warehouse;
- › Ontario Wetlands: Ontario Ministry of Natural Resources;
- › Provincial (Stream) Water Quality Monitoring Network (PWQMN) Data Catalogue;
- › Ring of Fire Baseline Environmental Monitoring Program: Preliminary Report (MECP, 2019a);
- › Lake Partner: Map & Datasets, water quality information for Ontario's inland lakes (MECP, 2021b);
- › Ontario Benthos Biomonitoring Network (MECP, 2021c); and
- › Ontario Data Catalogue (Government of Ontario, 2022).

7.2.5.2.3 Proposed Baseline Studies

Desktop Analysis

A desktop analysis of existing background sources and data will be completed to:

- › Generate the required data inputs to optimize the precision and accuracy of hydrological modelling, including land use/type information, topography, historical climate data, and future climate projections;
- › Contextualize watercourses within their larger watersheds;
- › Survey surface water impacts and mitigations studied or implemented for other linear infrastructure project in comparable environmental settings; and
- › Inform site selection for field reconnaissance.

Field Studies

Surface water samples will be collected from the maximum feasible number of accessible crossings during field investigations and sent for laboratory analyses. To capture seasonal variability in baseline surface water quality, surface water sampling will be conducted as follows:

- › Fall period (typically October);
- › Spring period (typically April and May); and
- › Summer period (typically July, August).

No winter sampling is proposed due to limited location access and related health and safety concerns.

The surface water field program will include collecting flow data and bathymetry data at the water quality sampling locations, where it is safe to access according to site conditions at the time of site visit. These measurements will provide data on conditions at the time of measurement but may not be representative of maximum and mean surface water flows.

Where flow-related information is unavailable or limited, flow (including maximum and mean) will be estimated based on data from adjacent areas. Regional methods for pro-rating flow data are published in hydrological textbooks for low flows as well as for other flow regimes. These methods are commonly known as: isoline, graphical index, statistical index and regression. The use of these methods is generally qualified based on the transferability of the data. The suitability of applying gauged station data to the study area will be assessed as part of the surface water program.

As part of the baseline assessment, water quality measurements of surface water features located in close proximity (e.g., within 100 m, with consideration given to any steep topography) to the road and other supportive infrastructure will be conducted. It is recognized that it may not be feasible to assess all surface water features within the study area but field work will focus on significant crossings.

In-situ water quality parameters to be monitored during field work will include, at a minimum:

- › Temperature;
- › Dissolved oxygen;
- › Conductivity;
- › Turbidity; and
- › pH.

Samples will also be collected for lab analysis of the following parameters:

- › Alkalinity;
- › Total suspended and dissolved solids;
- › Cations and anions;
- › Metals (including hexavalent chromium and mercury [total mercury and methylmercury]);
- › Total phosphorus;
- › Nitrate and nitrite;
- › Ammonia; and
- › Total Kjeldahl nitrogen.

Surface water quality will be reviewed against the best available water quality guidelines. In most cases sample results will be compared against Provincial Water Quality Objectives; however, the Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guideline for the Protection of Aquatic Life may be more appropriate, specifically for suspended sediment and turbidity, and where CCME guidelines are based on newer available science.

7.2.5.3 Potential Project-related Effects

The following potential effects on the Surface Water VC may be anticipated:

- › Changes in water quantity and distribution due to changes in land cover type (e.g., peatlands to gravel surface), may increase or decrease runoff, thereby affecting downstream flows, water levels and erosion-sedimentation processes;
- › Changes in water quantity and distribution due to the installation of temporary and permanent structures which may convey or obstruct flow (e.g., barrier effects), also affecting downstream flows, water levels and erosion-sedimentation processes;
- › Changes in water quality due to construction and maintenance activities which expose soil, increase rates of erosion and sedimentation; and
- › Changes in water quality due to accidental releases of contaminant substances from vehicles or other machinery used during all Project phases and or maintenance (e.g., road salt/de-icing) during operations.

Hydrological modelling will be conducted using approximative methodologies to determine flows and flow accumulation. This modelling can be used to approximate downstream water quantity and quality impacts, their magnitude and their spatial and temporal extents. Software-based modelling approaches will be used if greater precision is required; for instance, if warranted due to the magnitude of the effect.

7.2.6 Geology, Terrain and Soils

The EAR/IS will present in detail the assessment of Project-related effects on the Geology, Terrain and Soils VC. Geology, Terrain and Soils includes the terrain type and distribution, soil quality and distribution, and associated geochemical and geohazard characteristics.

7.2.6.1 Preliminary Indicators

Table 7.2-7 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Geology, Terrain and Soils VC effects assessment.

Table 7.2-7: Preliminary Indicators for the Geology, Terrain and Soils VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Terrain type and distribution	Terrain, or topographical relief, is the elevation, slope, and orientation of the land surface. Terrain distribution is the amount (or abundance) and distribution of terrain unit types in the landscape. This will be measured qualitatively as a change in overall representation of the terrain units as a result of the Project, and will be analyzed and assessed through mapping.
Soil quality and distribution	Soil quality refers to the physical, chemical and biological characteristics of soil. This will be measured qualitatively in terms of changes to soil quality. Soil quality is defined qualitatively by determining its potential for compaction, erosion, and mixing, as well as chemical influences from Project activities such as accidental spills of hazardous materials. Soil distribution refers to the amount or abundance and spatial configuration of different types of soil. Soil disturbance during the construction phase will occur as a result of site vegetation clearing, salvage/stripping of surface soil, site grading and stockpiling of salvaged material. This will be measured qualitatively as a change in overall abundance and distribution of soil as a result of the Project, and will be analyzed and assessed through examination of mapping.

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Geochemical hazards (potential for metal leaching and acid rock drainage)	Geochemical hazards generally refers to the release of contaminants present in or originating from geological formations into the environment. The potential for increased acid rock drainage (ARD), metal leaching and other geochemical hazards due to Project implementation will be assessed. Potential effect to the receiving environment will be qualified via various tests against relevant water quality guidelines.
Geohazards	Geohazards include landslides, sinkholes or other major geological depressions or anomalies. Though no such geohazards have been observed to date in the vicinity of the Project, an assessment will determine potential increases to the likelihood of occurrence of or effect of these geohazards due to Project implementation.
Permafrost	Permafrost refers to ground that remains frozen for a period of two or more years. Permafrost conditions including distribution of frozen and unfrozen ground will be determined and Project-related potential permafrost effects, such as carbon release, thaw consolidation due to clearing and snow piling along the roadside and settlement will be assessed.

7.2.6.2 Baseline Characterization

7.2.6.2.1 Preliminary Baseline Description

This section includes a description of the baseline of the VC (i.e., existing conditions without the Project) used as the point of comparison in the Geology, Soils & Terrain VC effects assessment.

The Project is within the geographic bounds of the Superior Province, a collage of oceanic and tectonic plates that formed between circa 2.72 and 2.68 Ga and, for the most part, has been stable since circa 2.5 Ga. The Hudson Bay Lowlands are underlain by Phanerozoic rock and bounded by Precambrian (Canadian Shield) structures (Martini, 1988). **Figure 7-2** shows the distribution of bedrock types in the Project area and **Figure 7-3** shows known mineral deposits. The terrain is dominated by wetlands weakly broken by bedrock outcrops, rivers, moraines and eskers, among other surficial formations. Surficial deposits in the region consist of unstratified post-glacial till interspersed by stratified till and bedrock. The surficial materials in the vicinity of the Project are predominantly clayey silt to clay matrices with low to moderate clast content and moderate to high carbonate content (Barnett et al., 2013a,b).



Legend:

Corridor Alternatives

- A1
- A2
- B1
- C1
- C2
- C3
- D1
- D2
- D3
- E1
- F1
- F2

Airports

First Nation Reserve

Provincial Park

Waterbody

56: Limestone, dolostone, shale

55: Sandstone, dolostone, limestone

16: Hornblende - nepheline syenite suite (saturated to undersaturated suite)

15: Massive granodiorite to granite

14: Diorite-monzondiorite-granodiorite suite (saturated to oversaturated suite)

13: Muscovite-bearing granitic rocks

12: Foliated tonalite suite

11: Gneissic tonalite suite

10: Mafic and ultramafic rocks

8: Migmatized supracrustal rocks

7: Metasedimentary rocks

6: Felsic to intermediate metavolcanic rocks

5: Mafic to intermediate metavolcanic rocks

4: Mafic to ultramafic metavolcanic rocks

30 15 0 Km

SCALE: 1:570,000

Northern Road Link

Bedrock Geology

Figure Number: 7-2

REV: PA

Client: Marten Falls and Webequie First Nations

Project Number: 679878

Date: 2022-03-15

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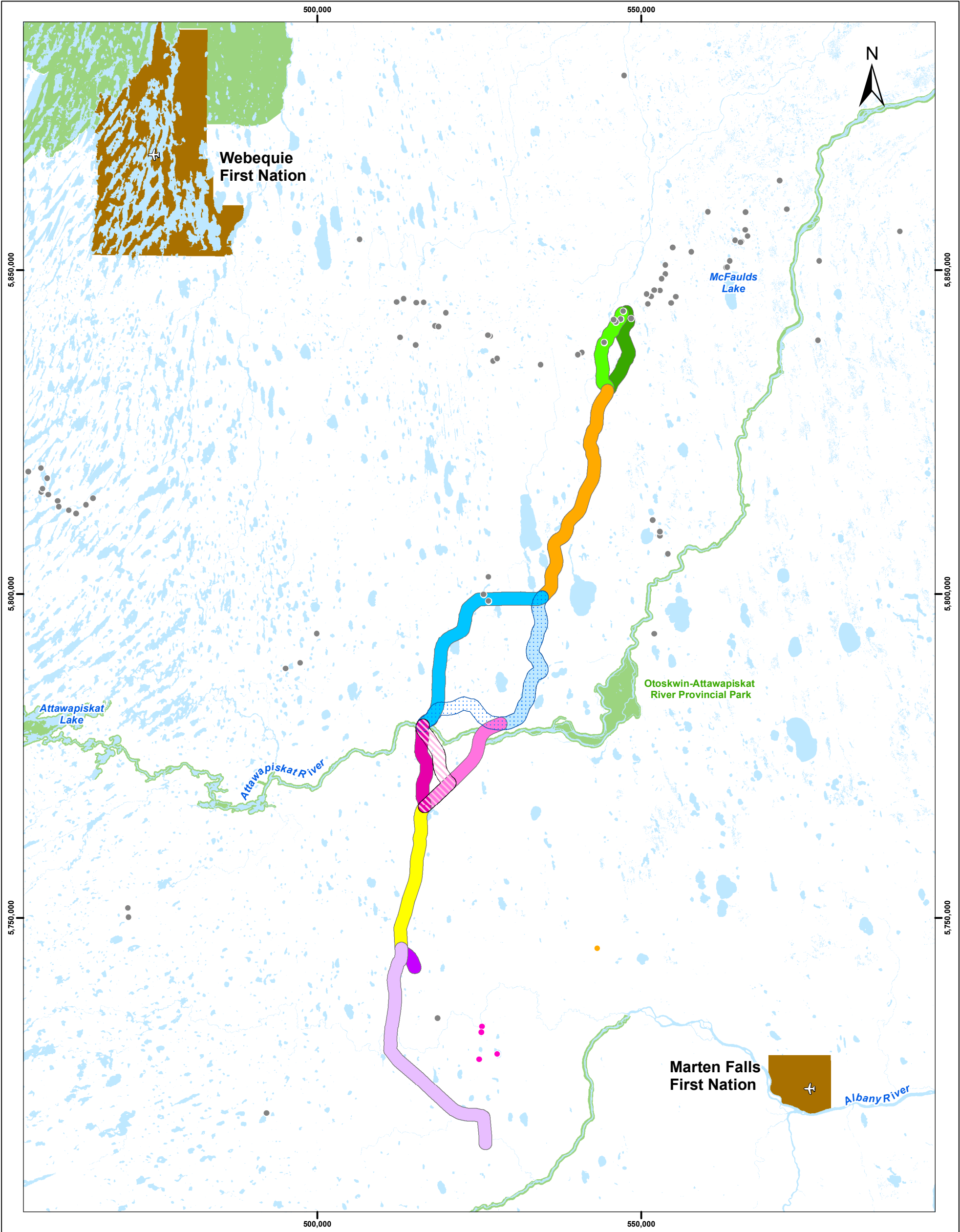
1. Coordinate System: NAD 1983 CSRS UTM Zone 16N.

2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.

3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; Land Information Ontario (LIO) Warehouse Open Data (<https://geoinfo.lio.gov.on.ca/>); Ontario Ministry of Natural Resources and Forestry (OMNRF); and, Ontario Geological Survey 2011, 1:250 000 scale bedrock geology of Ontario, Ontario Geological Survey, Miscellaneous Release—Data 126-Revision 1. Download Date : 2021-02-04

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- Legend:**
- Corridor Alternatives**
 - A1
 - A2
 - B1
 - C1
 - C2
 - C3
 - D1
 - D2
 - D3
 - E1
 - F1
 - F2

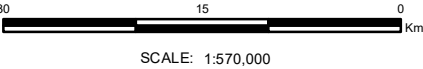
- Ontario Mineral Inventory
 - Wabassi Deposit
 - Tempest Zone Occurrence
 - Airports
 - First Nation Reserve
 - Provincial Park
 - Waterbody

NOTES

1. Coordinate System: NAD 1983 CSRS UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic and/or features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information; Land Information Ontario (LIO) Warehouse Open Data (<https://geoinfo.lio.gov.on.ca/>), Ontario Ministry of Natural Resources and Forestry (OMNRF); and, Ministry of Northern Development, Mines, Natural Resources, and Forestry OGS Earth Ontario Mineral Inventory (<https://www.geology.ontario.mnrm.gov.on.ca/ogsearch.html>) Download Date : 2021-02-04

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Northern Road Link

Known Mineral Deposits

Figure Number:			7-3		REV: PA	
Client: Marten Falls and Webequie First Nations		Project Number: 679878		Date: 2022-03-15		
DSC				DRN	CHK	APP
				AD	CB	CB

Glaciofluvial esker deposits are common in the vicinity of the Project. Eskers are ridges that typically consist of a core of stratified sands and gravels. In esker deposits, the soils are much better drained, there is little surface organic material, and the groundwater table is further below the surface (SNC-Lavalin, 2020). These attributes lead to unique vegetation profiles and wildlife habitats/uses along the eskers.

Soils in the area are primarily organic peat, muck and, marl with slow plant decay and poor drainage. Soil development in the region varies depending on the degree of drainage, with low lying areas containing undeveloped organic and other (regosolic) soils. The organic surface layer typically ranges from 1 to 2 m in thickness. It is underlain by a clay/silt till layer up to 2 m thick, and a Quaternary till layer up to 5 m thick. Depth to bedrock ranges from 5 to 12 m below the surface (JDMA, 2019).

The proposed corridors passes over two distinct bands of Canada's permafrost region (Heginbottom et al., 1995) including the 'Sporadic Discontinuous Permafrost' and 'Isolated Patches of Permafrost'. In the sporadic permafrost band, 10% to 50% of the land area is underlain by permafrost, which varies in thickness, may not be present in the active layer, and contains less than 10% ground ice content in the upper 10 to 20 m. In the isolated patches of permafrost band, less than 10% of the land is underlain by permafrost. The thickness of permafrost in both bands may be influenced by soil and rock type, snow cover and proximity to waterbodies.

7.2.6.2.2 Background Information and Data

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Geology, Terrain and Soils VC.

- › ESRI World Imagery Basemap (Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, 2021);
- › Canadian Digital Elevation Model (GoC, 2021b);
- › Geological Survey of Canada physiographic regions map (Bostock, 2014);
- › Ontario Geological Survey bedrock and quaternary geology maps and data (Ontario Geological Survey, 2021);
- › Geology of the Canadian Shield in Ontario: An Update (Percival and Easton, 2007);
- › The Canadian System of Soil Classification (SCWG, 1998);
- › Carbon storage and potential methane production in the Hudson Bay Lowlands since mid-Holocene peat initiation (Packalen, et al., 2014);
- › The Ecosystems of Ontario, Part 1, Ecozones and Ecoregions (Crins et al., 2009);
- › The Hudson Bay Lowland: major geologic features and assets (Martini, 1988);
- › McFaulds Lake ("Ring of Fire") area lake sediment and water geochemistry, northern Ontario (Handley, 2018);
- › Precambrian geology of the Highbank Lake area, "Ring of Fire" region, Ontario - southern sheet (Metsaranta and Houlé, 2017a);
- › Precambrian geology of the Winiskisis Channel area, "Ring of Fire" region, Ontario - northern sheet (Metsaranta and Houlé, 2017b);

- › Geochronology, mineral deposit, drill-core relogging and drill-core compilation data from the Winiskisis Channel, McFaulds Lake and Highbank Lake areas, “Ring of Fire” region, northern Ontario (Metsaranta and Houlé, 2017c);
- › Precambrian Geology of the McFaulds Lake Area, “Ring of Fire” Region, Ontario - central sheet (Metsaranta and Houlé, 2017d);
- › Lithogeochemical data, magnetic susceptibility data and outcrop photographs from the Winiskisis Channel, McFaulds Lake and Highbank Lake areas, “Ring of Fire” region, northern Ontario (Metsaranta, 2017);
- › Precambrian geology of the Wabassi River area, Fort Hope-Miminiska greenstone belt, northwestern Ontario (Azar et al., 2021);
- › Permafrost - Canada (Heginbottom et al., 1995);
- › Effects of a Changing Climate on Peatlands in Permafrost Zones: A Literature Review and Application to Ontario’s Far North CCRR-34 (MNR, 2013a);
- › Surficial geology of the Lansdowne House area northeast, Northern Ontario (P3697) (Barnett et al. 2013a);
- › Surficial geology of the Lansdowne House area northwest, Northern Ontario (P3696) (Barnett et al. 2013b);
- › Quaternary geology of Ontario, northern sheet (M2553) (Pala et al., 1991);
- › Quaternary geology of Ontario, west-central sheet (M2554) (Barnett et al. 1991a);
- › Quaternary geology of Ontario, east-central sheet (M2555) (Barnett et al. 1991b);
- › Quaternary geology, seamless coverage of the province of Ontario, Data Set 14 (Ontario Geological Survey, 2021);
- › Preliminary results from the McFaulds Lake (“Ring of Fire”) area lake sediment geochemistry pilot study, northern Ontario (Dyer and Burke, 2012);
- › Standard Practice for Aggregate Resource Evaluation (MTO, 2002);
- › Ring of Fire Baseline Environmental Monitoring Program: Preliminary Report (MECP, 2019a);
- › Ontario Land Cover Compilation v2.0 (Land Information Ontario, 2016);
- › McFaulds Lake Project – Webequie to Esker Camp road route location (JDMA, 2010a);
- › McFaulds Lake Project – McFaulds Lake Peat Sampling Field Trip Report (JDMA, 2010b); and
- › Cliffs Natural Resources Road (JDMA, 2011a).

7.2.6.2.3 Proposed Baseline Studies

Baseline data collection for the Geology, Terrain and Soils VC will rely on investigations being conducted to support preliminary engineering design for the Project, including a geotechnical investigation and terrain mapping.

Desktop Analysis

A desktop analysis of existing background information and data sources will be completed to compile existing data and identify information gaps that will need to be addressed through further study. Satellite and aerial imagery, regional and higher resolution Light Detection and Ranging (LiDAR) digital elevation data, surficial geology, hydrology, and land cover data will be used to document the surficial materials, topography, hydrology, peatlands and ground conditions within the 2-km wide preferred corridor and to develop a terrain map. The mapping will be accompanied by descriptions of the various terrain units and will delineate the different landforms within the corridors, including glaciofluvial deposits/eskers, glaciolacustrine deposits, till, peatlands/wetlands, bedrock, etc. Maps of potential aggregate sources will also be developed for the preliminary engineering design and presented in the baseline description for the Geology, Terrain and Soils VC.

Field Studies

Field studies will be conducted to further develop the terrain map along the 2-km wide preferred corridor, including a ground-truthing terrain survey, assessment of potential aggregate sources, and a geotechnical drilling program. The field geotechnical investigation program will include drilling and sampling in conjunction with field Standard Penetration testing (SPT) to determine the subsurface stratigraphic units. Samples will be collected and sent for laboratory analysis which are anticipated to include but not be limited to moisture content, grain size distribution, Atterberg Limit for soil classification, compaction testing, soundness testing, strength testing, and acid rock drainage/metal leaching (ARD/ML). Detailed stratigraphic borehole logs will be prepared.

7.2.6.3 Potential Project-related Effects

The following potential effects on the Geology, Terrain and Soils VC may be anticipated:

- › Changes to terrain (topography and surficial geology) due to site clearing, re-contouring, cut and fill requirements, aggregate extraction, overburden removal and other activities.
- › Changes to the potential development of known mineral deposits in the area.
- › Changes in soil quality due to compaction, rutting, admixing, and spills of contaminating substances, and acid mine drainage or metal leaching during the construction and operations phases.
- › Changes in soil quality due to accidental releases of chemical or other hazardous materials during all Project phases.
- › Changes in soil quality and quantity due to increased rates of erosion and sedimentation processes caused by soil exposure and stockpiling during the construction phase.

7.2.7 Visual Environment

The EAR/IS will present in detail the assessment of Project-related effects on the Visual Environment VC. Visual environment is the landscape in the vicinity of the Project.

7.2.7.1 Preliminary Indicators

Table 7.2-8 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Visual Environment VC effects assessment.

Table 7.2-8: Preliminary Indicators for the Visual Environment VC

Preliminary Indicator	Definition and Rationale for Inclusion in the VC Assessment
Visual contrast/character	Alteration of the visual character of the area (i.e., scenic quality and viewsheds). The indicator is used to determine how differently the landscape is perceived by the stakeholders with the introduction of the Project and if there is an effect on significant features of the landscape (i.e., how compatible is the Project with the existing landscape).
Visibility	Introduction of a new object (i.e., the Project). The indicator is used to determine the degree of visibility/proximity of the Project from key viewpoints (i.e., how visible is the Project from selected viewpoints).
Visual sensitivity	Landscape sensitivity of the viewsheds. The indicator is used to determine if the introduction of the Project into the landscape has a negative effect on a site with traditional, cultural or heritage importance.

7.2.7.2 Baseline Characterization

7.2.7.2.1 Preliminary Baseline Description

The general area of the Project is dominated by wetlands (e.g., bogs, fens, swamps and marshes) within the Hudson Bay Lowlands physiographic region, which is characterized by low lying, poorly drained terrain dominated by muskeg and bog. The thickness and distribution of unconsolidated (Quaternary) sediments are the result of extensive glacial activity. As the ice sheet stagnated, major sand and gravel deposits were laid down, including eskers and ice-contact deposits. As a result, features in the Project area include wetlands, bedrock outcrops, eskers and moraines.

7.2.7.2.2 Background Information and Data

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Visual Environment VC.

- › Ecological Land Classification mapping where available;
- › Non-Sensitive and Sensitive Spatial Data:
 - Land Information Ontario (NDMNRF, 2021d);
 - CanVec (GoC, 2021c); and
 - Indigenous Services Canada (GoC, 2021d).
- › High Resolution Orthophotos (20cm), ESRI World Imagery; and
- › LiDAR 1m Bare Earth DEM, NDMNRF 30m PDEM.

7.2.7.2.3 Proposed Baseline Studies

Desktop Analysis

A desktop analysis of existing information sources will be completed to identify information gaps that will need to be addressed. It is anticipated that concurrent studies related to natural environment and IK will supplement the data that is currently available through existing information sources.

To define the existing visual aesthetic environment, the team will prepare a detailed mapping dataset for the purpose of the Visual Environment Assessment, from existing project LiDAR and MNRF Provincial Digital Elevation Model (PDEM), and potential additional imagery and topography, provincial vector base mapping, provincial reports and plans, community based land use plans, tourism and recreation resources, natural features (waterways), natural heritage resources, Indigenous lands and sensitive locations identified by other study disciplines (i.e., IK, land and resource uses, socio-economic) and from previous studies.

The detailed mapping datasets will be supported by a description of the landscape units within the Project identifying landscape settings and features of importance. The focus will be on valued viewpoints by Indigenous community members and the stakeholders identified by other study team disciplines as contributing to the visual character of an area.

Field Study

Primary data will also be collected through fieldwork. Selected sensitive receptor locations will be inventoried through field reconnaissance using a high-accuracy professional GPS receiver paired with ruggedized tablets running Esri Collector field mapping software and photographed with a single lens reflex camera with a 55 mm focal length. Each location will be recorded to accuracies required by the Project and then immediately classified, evaluated and ranked (view Subject, vantage point, and visual corridor) in the field using a custom-built Collector mapping application.

7.2.7.3 Potential Project-related Effects

The following potential effects on the Visual Environment VC may be anticipated:

- › Alteration of the existing undisturbed landscape and visual character during the construction and operations phases.
- › Degradation of valued natural, cultural and Indigenous visual resources including sensitive sites and viewpoints.

Visibility mapping will be prepared for the regional study area up to 8 km from the preferred corridor, and determine whether there will be views from sensitive receptor locations. The GIS based 3D landscape modelling tool VNS will be used to create the visual simulation modelling and images to evaluate visual impact. Visibility mapping will use advanced tools, such as Visual Nature Studio (VNS), Esri (Environmental Systems Research Institute), ArcGIS Desktop/Pro and Spatial Analyst rule-based software, to build objective and data driven mapping that describes where the Project will be visible from. The visibility mapping will be a tool for assisting the Indigenous communities, stakeholders, and decision makers in understanding potential effects of the Project on the Visual Environment VC.

7.3 Biological Environment

The EAR/IS will include the assessment of the biological environment. The EA/IA will assess Project-related effects on the identified VCs summarized in **Table 7.3-1**.

Table 7.3-1: Preliminary VCs for the Biological Environment

Preliminary Valued Components
Section 7.3.1 Fish and Fish Habitat
Section 7.3.2 Wildlife and Wildlife Habitat
Section 7.3.3 Birds and Bird Habitat
Section 7.3.4 Plants and Vegetation Communities
Section 7.3.5 Species at Risk

7.3.1 Fish and Fish Habitat

The EAR/IS will present in detail the assessment of Project-related effects on the Fish and Fish Habitat VC. The Fish and Fish Habitat VC includes the following components:

- › Fish habitat
- › Fish and aquatic species, including Species at Risk

Fish species include all fish that occur within the study areas, but the following species are highlighted because of their ecological status, cultural importance and/or recreational value:

- › Walleye (*Sander vitreus*)
- › Brook Trout (*Salvelinus fontinalis*)
- › Northern Pike (e)
- › Lake Whitefish (*Coregonus clupeaformis*)
- › Burbot (*Lota lota*)
- › Yellow Perch (*Perca flavescens*)
- › Common White Sucker (*Catostomus commersonii*)
- › Lake Sturgeon (*Acipenser fulvescens*)
- › Lake Chub (*Couesius plumbeus*)

Lake Sturgeon are the only fish Species at Risk that is likely to occur within the LSA and RSA.

7.3.1.1 Preliminary Indicators

Table 7.3-2 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Fish and Fish Habitat VC effects assessment.

Table 7.3-2: Preliminary Indicators for the Fish and Fish Habitat VC

Preliminary Indicator	Definition and Rationale for Inclusion in the VC Assessment
Fish and aquatic species, including fish Species at Risk: <ul style="list-style-type: none"> › Habitat quantity › Distribution and connectivity to habitat and migration › Survival, reproduction, and abundance 	This VC includes the Fish species which are important cultural and subsistence species for many of the local communities in the area. Lake Sturgeon is also a Species at Risk in Ontario and Canada. This VC was selected because the Project may cause effects to fish species either directly through mortality during construction or indirectly through increased fishing accessibility.
Fish habitat: <ul style="list-style-type: none"> › In-situ water quality › Physical habitat conditions (e.g., substrate, cover, depth) › Benthic invertebrate community 	Fish and aquatic habitat are required for continued fish species production. Fish habitat may be subject to short-term and long-term effects caused by the Project. This VC was selected because the Project may have direct effects on the VC as a result of physical activities (e.g., habitat loss from changes caused by bridge construction) or indirect effects such as increases fish accessibility.

7.3.1.2 Baseline Characterization

7.3.1.2.1 Preliminary Baseline Description

There are many different waterbodies in the RSA, including streams, rivers, lakes, ponds and wetlands that provide direct habitat and support many different fish species. The Attawapiskat River is the largest river crossing. There is also a vast network of smaller connected headwater streams, ponds and lakes. Many of these smaller streams are part of open fens. The larger lakes and watercourses provide year-round fish habitat; the smaller, shallower lakes and wetlands often do not, as oxygen levels can drop to hypoxic conditions. The smaller watercourses and lakes can also provide suitable habitat for rearing and feeding for some parts of the year, usually early spring.

There are a vast number of streams in region that connect to many shallow lakes and wetlands in the area. In general, waterbodies in the RSA are considered to support a variety of cool and cold-water fish. The Attawapiskat River supports populations of Walleye (*Sander vitreus*), Lake Sturgeon (*Acipenser fulvescens*), Brook Trout (*Salvelinus fontinalis*), Lake Whitefish (*Coregonus clupeaformis*) and other fish species. A number of lower energy watercourses connected to these rivers provide habitat for Walleye and Northern Pike (*Esox lucius*). Typically, Yellow Perch (*Perca flavescens*), White Sucker (*Catostomus commersonii*) and other small foraging fish species are present with these larger bodied fish. Smaller streams and lakes in the area also support a variety of smaller bodied fish including cyprinid species, Brook Stickleback (*Culaea inconstans*).

There are 32 fish species and one fish Species at Risk that have been identified as potentially present within the RSA, through the review of various sources, and are presented in **Tables 7.3-3**.

Table 7.3-3: Potential Fish Species Present in Regional Study Area

Fish Species Common Name	Scientific Name
Brook Stickleback	<i>Culaea inconstans</i>
Ninespine Stickleback	<i>Pungitius</i>
Brook Trout	<i>Salvelinus fontinalis</i>
Northern Pike	<i>Esox lucius</i>
Lake Sturgeon	<i>Acipenser fulvescens</i>
Walleye	<i>Sander vitreus</i>
Yellow Perch	<i>Perca flavescens</i>
Lake Whitefish	<i>Coregonus clupeaformis</i>
Round Whitefish	<i>Prosopium cylindraceum</i>
Fathead Minnow	<i>Pimephales promelas</i>
Finescale Dace	<i>Phoxinus neogaeus</i>
Lake Chub	<i>Couesius plumbeus</i>
Mottled Sculpin	<i>Cottus bairdii</i>
Slimy Sculpin	<i>Cottus cognatus</i>
Spoonhead Sculpin	<i>Cottus ricei</i>
Mimic Shiner	<i>Notropis volucellus</i>
Blacknose Shiner	<i>Notropis heterolepis</i>
Emerald Shiner	<i>Notropis atherinoides</i>
Spottail Shiner	<i>Notropis hudsonius</i>
Northern Pearl Dace	<i>Margariscus margarita</i>
Longnose Dace	<i>Rhinichthys cataractae</i>
Trout-Perch	<i>Percopsis omiscomaycus</i>
White Sucker	<i>Catostomus commersonii</i>
Longnose Sucker	<i>Catostomus</i>
Shorthead Redhorse	<i>Moxostoma macrolepidotum</i>
Silver Redhorse*	<i>Moxostoma anisurum</i>
Iowa Darter	<i>Etheostoma exile</i>
Johnny Darter	<i>Etheostoma nigrum</i>
Logperch	<i>Percina caprodes</i>
Burbot	<i>Lota</i>
Sauger	<i>Sander canadensis</i>
Cisco (Lake Herring)	<i>Coregonus artedii</i>

Species are within the RSA range according to the Royal Ontario Museum Field Guide to Freshwater Fishes of Ontario (Holm et al., 2009).

* Silver Redhorse is on border of RSA range.

7.3.1.2.2 Background Information and Data

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Fish and Fish Habitat VC.

- › iNaturalist.com;
- › DFO Aquatic Species at Risk Maps;
- › Species at Risk in Ontario (SARO) List;
- › MNRF Natural Heritage Information Centre (Geohub Ontario, 2022);
- › Significant Wildlife Habitat Technical Guide (MNR, 2000);
- › Range maps for fishes of Ontario;
- › The Fisheries of an Ojibwa Community in Northern Ontario (Hopper and Power, 1991);
- › The ROM Field Guide to Freshwater Fishes of Ontario (Holm et al., 2009);
- › Freshwater fishes of Canada (Scott and Crossman, 1973);
- › Fish use of wetlands in northwestern Ontario: A literature review and bibliography (Hall-Armstrong et al., 1996);
- › COSEWIC Status Reports for Fish Species;
- › Marten Falls First Nation Industrial Supply Road Fish Habitat Baseline Study (KBM and EDI, 2019);
- › Eagle's Nest Project Federal/Provincial Environmental Impact Statement/Environmental Assessment Report (Knight Piésold Consulting, 2013a);
- › Aquatic Ecology Technical Supporting Document Part 1: Mine Site, Cliffs Chromite Project (Golder, 2013l);
- › Aquatic Ecology Technical Supporting Document Part 2: Integrated Transportation System, Cliffs Chromite Project (Golder, 2013f);
- › All-season Community Road Study (Webequie First Nation et al., 2016);
- › Ring of Fire Baseline Environmental Monitoring Program: Preliminary Report (MECP, 2019a);
- › Marten Falls First Nation Industrial Supply Road, Fish Habitat Baseline Study (KBM, 2019c);
- › Marten Falls First Nation Northern Road Link, Fish Habitat Baseline Study (KBM, 2020); and
- › TPA1B Webequie Community Supply Road Project Description (SNC-Lavalin, 2018a);
- › Ongoing WSR and MFCAR studies and data (pending appropriate data sharing agreements).

Desktop Analysis

Numerous Indigenous/academic/NGO/governmental research studies have been conducted in the Attawapiskat River, Albany River and Muketei River watersheds and may provide a description of the existing fish habitat and fish community. A review of available reports, as well as range maps of Ontario fishes, will be conducted to identify fish community composition and other information relevant to existing fish and fish habitat. The desktop review will also include an analysis of satellite and other available imagery to determine watercourses crossings and potential fish and fish habitat within the RSA. A query of government databases will also be conducted during this stage, and relevant data sharing agreements will be completed, as required.

Field Studies

Aquatic investigations will be conducted to collect data on biophysical habitat conditions and sensitivity, spawning habitat, Species at Risk, surface water quality and fish community present. Field studies are already underway, and these current and future studies include:

- › Fish habitat assessment (commenced in 2021 and ongoing);
- › Environmental DNA (eDNA) sampling will be conducted to characterize fish community and/or augment conventional fish capture (commenced in 2021 and ongoing);
- › Conventional fish capture may be conducted in select waterbodies using some or all of the following fish capture methods including hoop nets, angling, seine nets, minnow traps or backpack electrofishing (commenced in 2021 and ongoing); and
- › Opportunistic benthic sampling using eDNA and conventional sampling methods (2021 and 2022).

Protocols such as the Ontario Stream Assessment Protocol and methods outlined in the Ontario Benthos Biomonitoring Network will be utilized to collect field data, including data on fish habitat.

Environmental DNA (eDNA) sampling will be conducted to characterize fish community and/or augment conventional fish capture. Sample collection and analysis will be based on federal Guidance on the Use of Targeted Environmental DNA (eDNA) Analysis for the Management of Aquatic Invasive Species and Species at Risk (Abbott et al., 2021) and/or comparable guidance.

Conventional fish capture may be conducted in select waterbodies using some or all of the following fish capture methods including hoop nets, angling, seine nets, minnow traps or backpack electrofishing. Fish will be identified to species and released back to the waterbody from which they were captured. Fish capture will be conducted under a License to Collect Fish for Scientific Purposes issued by MNRF under the provincial *Fish and Wildlife Conservation Act*. Opportunistic benthic macroinvertebrate sampling is proposed at select waterbody locations using eDNA sampling and/or conventional sampling in accordance with provincial guidance (i.e., Ontario Benthic Biomonitoring Network [OBBN]) where feasible.

Field data collection for fish and fish habitat commenced in 2021 and are ongoing. Data will be collected using digital tablet-based software (i.e., Collector 123) which will enable location marking and photograph geo-reference tagging.

7.3.1.3 Potential Project-related Effects

The following potential effects on the Fish and Fish Habitat VC may be anticipated:

- › Physical loss or destruction of fish and aquatic species habitat during construction (e.g., permanent loss underneath bridge piers or embankment roads);
- › Physical habitat alternation through changes to shape of streambed, bank composition, vegetation community, and/or bank stability due to construction;
- › Reductions in habitat accessibility and/or increased habitat fragmentation for life processes due to crossing construction (e.g., perched culverts);
- › Changes in fish and aquatic species habitat due to water quality changes such as changes in temperature regime, flow regime, increased contaminants due to accidental releases, or changes to water quality as a result of erosion/sedimentation. This in turn may lead to changes in survival and reproductive success;

- › Death of fish, aquatic species, and/or eggs caused by increased turbidity, physical contact with construction materials and equipment, blasting operations, stranding during temporary isolations, and/or accidental releases of contaminants;
- › Increased concentrations of contaminants (e.g., methylmercury) in fish tissue;
- › Increased recreational and sustenance angling pressure due to increased human access (fish and aquatic species mortality/injury); and
- › Effects on fish and aquatic species from invasive aquatic life introduced via construction or by increased human access.

7.3.2 Wildlife and Wildlife Habitat

The EAR/IS will present in detail the assessment of Project-related effects on the Wildlife and Wildlife Habitat VC.

The following subsections includes the assessment of the Wildlife and Wildlife Habitat VC identified during the VC scoping and selection process. Wildlife and Wildlife Habitat is of interest to Indigenous groups, regulators, and the general public for its spiritual, cultural, ecological, economic, scientific, subsistence and aesthetic values. Many taxa of wildlife and wildlife habitat are actively managed by the province and protected by legislation, and some are considered federally or provincially at risk.

Wildlife and wildlife habitat includes wildlife taxa known or suspected to be present in the vicinity of the Project, excluding migratory bird species and fish. Generally speaking, this refers to ungulates, furbearing mammals, bats, amphibians and reptiles. Fish and birds are considered separate VCs and are addressed in **Sections 7.3.1** and **7.3.3**, respectively. Species at Risk are addressed in **Section 7.3.5**.

The following wildlife species or guilds will be included in the EA/IA to assess the effects of the Project on wildlife and their habitat:

- › Guild – Amphibians;
- › Guild – Bats;
- › Species – Moose;
- › Species – Black Bear;
- › Species – Gray Wolf;
- › Species – American Marten; and
- › Species – Beaver.

Two wildlife guilds (bats and frogs) were selected based on similarity in habitat features used by multiple species included in the guilds (i.e., wetlands for frog breeding or forested ecosites for bat roosting) and similar effects that would be expected across multiple species in a guild (i.e., frog road mortality from vehicle collisions). Wildlife guild VCs will also be used to assess the effects of the Project on species that occur with regularity within the LSA and RSA. Species-specific wildlife VCs will assess Project effects on species which are important, but are not Species at Risk, which may be either common and abundant within the RSA or may occur locally, sporadically, or in rare habitat types within the RSA. One example includes Moose, which are an important food source for local communities

7.3.2.1 Preliminary Indicators

Table 7.3-4 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Wildlife and Wildlife Habitat VC effects assessment.

Table 7.3-4: Preliminary Indicators for the Wildlife and Wildlife Habitat VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Abundance and distribution	<p>This indicator describes changes to abundance and distribution of wildlife species and is based on direct changes to the population (i.e., mortality of individuals resulting from physical activities of the Project); or indirect changes to the population as a result of changes to habitat availability (quantity and quality) that may affect survival and reproduction, and therefore measurable changes in abundance. Abundance refers to the relative number of individuals detected in a given study unit and corresponds to how common or rare a species is within the RSA during an ecologically relevant time period. This indicator will also include data on federally (<i>Species at Risk Act</i>) or provincially (<i>Endangered Species Act, 2007</i>) listed species that are afforded protection or provincially managed game animals. Distribution relates to the spatial configuration of wildlife species in the study area, and the spatial distribution and movement of wildlife species. Distribution will be addressed using a quantitative assessment of changes to distribution that may occur via direct or indirect changes to habitat or species abundance. Abundance and distribution are proposed to be combined into one indicator for the EA/IA as changes to distribution (i.e., connectivity) are tied to abundance (i.e., number of animals in the population).</p> <p>This indicator was selected because the Project may have direct effects on the VC due to physical activities (e.g., wildlife directly killed or deterred due to road construction and tree clearing). The Project may also have indirect effects such as increased access to future developments such as mines, which may further affect wildlife abundance and distribution.</p>
Habitat availability (quantity, quality, configuration, and connectivity)	<p>This indicator includes habitat quantity (the amount of habitat available for wildlife and their various life history stages) and habitat quality (the quality of habitat available for wildlife and their various life history stages). Habitat quantity will involve a quantitative assessment of potential changes to total area of habitat and any known or assumed critical life cycle habitat (e.g., breeding, rearing) as a result of implementing the Project and will be calculated and presented as absolute (i.e., area – hectares or square metres) as appropriate. The calculation will be based on the likely presence of each indicator species within each habitat type, the availability of the specific habitat type, and the area of disturbance in the preferred corridor. Habitat distribution, including configuration and connectivity, will also be assessed here. Where the likelihood of an indicator species* is unknown due to limited information, a precautionary approach will be used, and it will be assumed that the indicator species may be present. These effects on habitat quality will be a qualitative assessment of the changes in habitat suitability for use by wildlife (i.e., quality of breeding, rearing, or overwintering type habitats for indicators species).</p> <p>This indicator was selected because the Project may have direct effects on the VC due to physical activities (e.g., habitat loss due to road construction and tree clearing). The Project may also have indirect effects such as increased access to future developments such as mines, which may further affect habitat availability.</p>
Species richness	<p>This indicator refers to changes in diversity based on direct changes to the species presence within the preferred corridor and the LSA (i.e., extirpation of individual populations resulting from physical activities of the Project); or indirect changes to the population matrix as a result of changes to habitat availability (quantity and quality) that may affect survival and reproduction, and therefore measurable changes in species richness.</p> <p>This indicator was selected because the Project may have direct effects on the VC due to physical activities (e.g., some sensitive wildlife species may be deterred more than other species). The Project may also have indirect effects such as increased access to future developments such as mines, which may further affect habitat availability.</p>

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Species habitat specificity	<p>Refers to species habitat specificity and changes to populations based on direct changes to availability of specific habitat types (i.e., extirpation or reduction of individual populations resulting from physical activities of the Project); or indirect changes to the population matrix as a result of changes to habitat availability (quantity and quality) that may affect survival and reproduction, and therefore measurable changes in species habitat specificity. Specific habitat types include:</p> <p>Specific habitat types include:</p> <ul style="list-style-type: none"> › Specialized upland landcover type; › Specialized wetland landcover type (e.g., bog, fen, swamp, marsh); › Specialized riparian habitat; › Critical land forms/habitats of conservation concern, resulting from combinations of unique landforms and specific vegetation communities (e.g., eskers, old growth); and, › Rare species occurrence/potential. <p>This indicator was selected because the Project may reduce the amount of available habitat types and push certain wildlife species into non-ideal habitat that may affect abundance and diversity.</p>
Predation/habitat usage (other wildlife) and human access	<p>Refers to increased predator access and habitat utilization by new species (including humans) to specific areas resulting in potential changes to populations due to increased hunting access, increased predation, introduction of new species competition for available resources resulting from physical activities of the Project (e.g., new travel corridors, and increased edge habitat, introduction of invasive species, increased fire potential).</p> <p>This indicator was selected because the increased access may alter how predators, new wildlife, or hunters access the area, and in turn could have effects on various species and/or their habitat.</p>

* An **indicator species** is an organism whose presence, absence or abundance reflects a specific environmental condition and can signal a change in the biological condition of a particular ecosystem, and thus may be used as a proxy to diagnose the health of an ecosystem.

7.3.2.2 Baseline Characterization

7.3.2.2.1 Preliminary Baseline Description

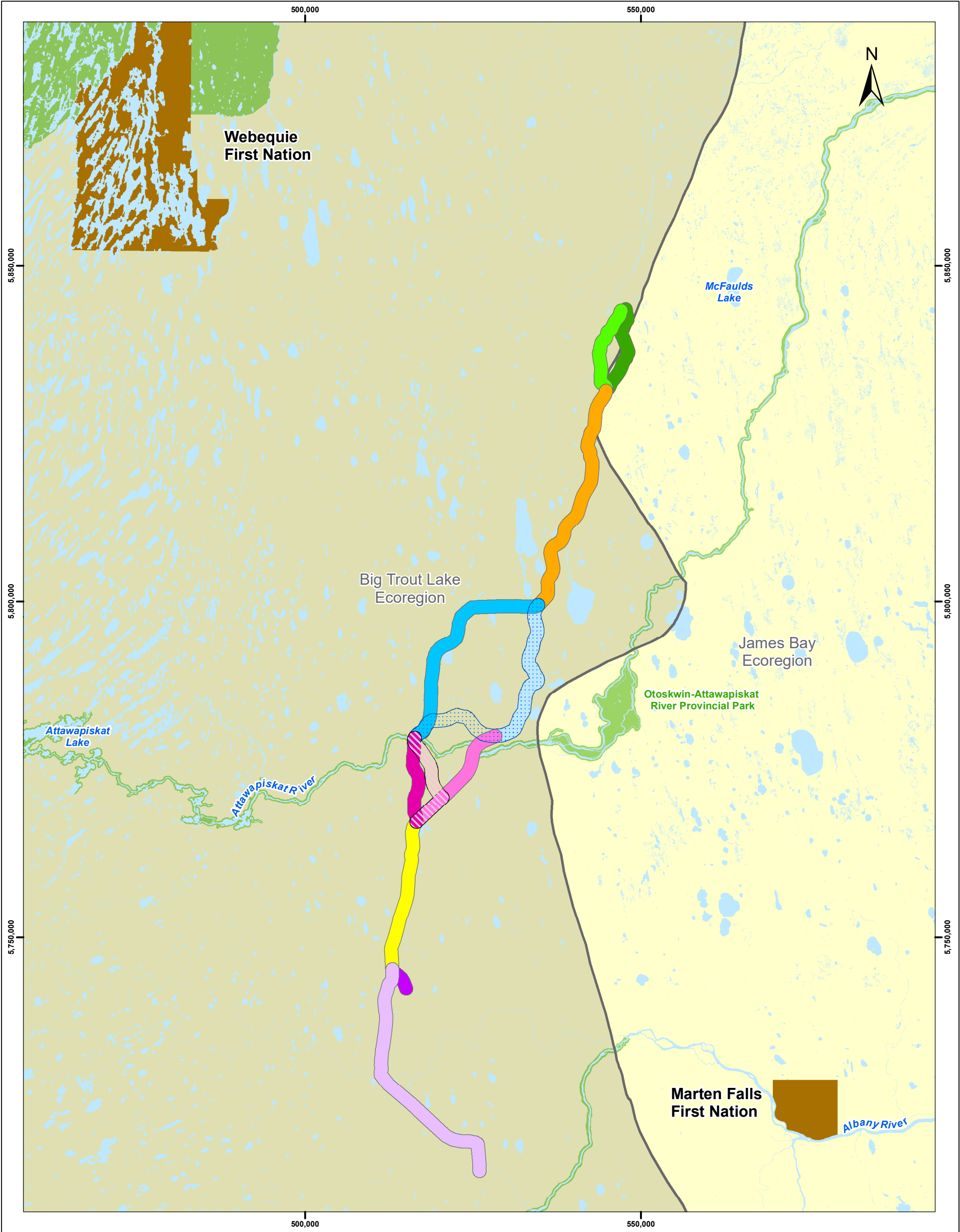
This section includes a description of the baseline of the VC (i.e., existing conditions without the Project) used as the point of comparison in the Wildlife and Wildlife Habitat VC effects assessment.

Forty-one mammal species may occur in the region based on data presented in Dobbyn (1994). Species known or likely present include Shrews (*Sorex* spp.), Snowshoe Hare (*Lepus americanus*), a variety of rodents including furbearers such as Beaver (*Castor canadensis*) and Muskrat (*Ondatra zibethicus*), mustelids such as American Marten (*Martes americana*), Fisher (*Pekania pennanti*), and Wolverine (*Gulo gulo*), and larger carnivores such as Lynx (*Lynx canadensis*), Gray Wolf (*Canis lupus*) and Black Bear (*Ursus americanus*). Ungulate species are expected to be limited to Moose and Caribou, both of which are important traditional food sources for Indigenous groups (Anonymous, 2009).

Five bat species may occur in the vicinity of the Project. These species include Big Brown Bat (*Eptesicus fuscus*) Silver-haired Bat (*Lasionycteris noctivagans*), Hoary Bat (*Lasiurus cinereus*), Little Brown Myotis (*Myotis lucifugus*) and Northern Myotis (*Myotis septentrionalis*). Two bat Significant Wildlife Habitat (SWH) types are recognized for Ecoregion 3W, which include maternity colonies or maternity roosting habitat and hibernacula (MNRF, 2017a). The project straddles the border of the Hudson Bay Lowlands and Ontario Shield Ecozones. The project is also contained entirely within the James Bay and Big Trout Lake Ecoregions (**Figure 7-4**). Technically there are no SWH schedules for Ecoregion 2E or 2W, however, the SWH guidelines apply across the province.

Wildlife tracking surveys were conducted in 2011 and 2012 at three general locations along the proposed all season road and one location around the Eagle's Nest Mine site (Knight Piésold Consulting, 2013a). The surveys resulted in detection of 16 mammal species, the most abundant of which included American Marten, Snowshoe Hare, Fisher, Moose, Gray Wolf, and Red Fox (*Vulpes vulpes*). Wolverine was also recorded during the surveys.

Wildlife surveys were conducted in 2017 in the vicinity of the project, as reported in the reports 'Baseline Environmental and Geotechnical Studies Report - Webequie Community Supply Road (TPA1B)' (SNC-Lavalin, 2018b) and 'Baseline Environmental and Geotechnical Studies: Nibinamik-Webequie Community Road (TPA1A)' (SNC-Lavalin, 2018b). Similar wildlife surveys that overlap with the NRL study areas were conducted by AECOM (2020b), Zoetica (2019), and Golder (2013g). The AECOM, Zoetica, and Golder studies found the same wildlife species that were identified in the WSR study areas, plus a number of additional species. Mammals detected totaled 14 species (**Table 7.3-5**).



Legend:

Corridor Alternatives

A1
A2
B1
C1
C2
C3
D1
D2
D3
E1
F1
F2

Ecoregion

Hudson Bay Lowlands

Ontario Shield

First Nation Reserve

Provincial Park

Waterbody

Northern Road Link

Ecoregions and Ecozones

Figure Number:

7-4

REV:

PA

Client:

Marten Falls and Webequie First Nations

Project Number:

679878

Date:

2022-03-15

DSC

DRN

CHK

APP

AD

HY

HY

NOTES

1. Coordinate System: NAD 1983 CSRS UTM Zone 16N.
2. Cadastral boundaries are for informational purposes only and should not be considered suitable for legal, engineering, or surveying purposes.
3. Topographic/landcover features obtained from CanVec v12.0 dataset, Natural Resources Canada Earth and Sciences Sector Centre for Topographic Information and Land Information Ontario (LIO) Warehouse Open Data (<https://geohub.lio.gov.on.ca/>), Ontario Ministry of Natural Resources and Forestry (OMNRF) Download Date : 2021-02-04

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Table 7.3-5: Mammals Recorded During Wildlife Surveys in the Study Areas

Common Name	Scientific Name
American Marten	<i>Martes americana</i>
American Mink	<i>Neovison vison</i>
Beaver	<i>Castor canadensis</i>
Moose	<i>Alces americanus</i>
Gray Wolf	<i>Canis lupus</i>
Red Fox	<i>Vulpes</i>
Red Squirrel	<i>Tamiasciurus hudsonicus</i>
Snowshoe Hare	<i>Lepus americanus</i>
Weasel sp.	<i>Mustela</i> sp.
Caribou (Boreal population)	<i>Rangifer tarandus caribou</i>
Fisher	<i>Pekania pennanti</i>
North American River Otter	<i>Lontra canadensis</i>
Canada Lynx	<i>Lynx canadensis</i>
White-tailed Deer	<i>Odocoileus virginianus</i>

7.3.2.2.2 Background Information and Data

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Wildlife and Wildlife Habitat VC.

- › Aerial photography;
- › Natural Heritage Reference Manual (MNR, 2010a);
- › Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales (MNR, 2010b);
- › Significant Wildlife Habitat Technical Guide (MNR, 2000);
- › Significant Wildlife Habitat Ecoregion Criteria Schedules (MNR, 2015a, 2017a);
- › Significant Wildlife Habitat Mitigation Support Tool (MNR, 2014a)
- › Natural Heritage Information Centre / GeoHub (NDMNRF, 2021d);
- › Provincial Park Management Plans and Life Science Reports (various dates);
- › Committee on the Status of Endangered Wildlife in Canada (COSEWIC) species status reports (various dates);
- › Species at Risk in Ontario (SARO) List;
- › Ontario Mammal Atlas (Dobbyn, 1994);
- › The Ecosystems of Ontario, Part 1, Ecozones and Ecoregion (Crins et al., 2009);
- › ArcGIS World Topographic Map (Environmental Systems Research Institute, 2016)
- › All-season Community Road Study (Webequie First Nation, Nibinamik First Nation, Neskantaga First Nation and Eabametoong First Nation, 2016);
- › McFaulds Lake Project - Airphoto Mapping for Route Location and Terrain Assessment Scoping/Prefeasibility-Level Study Alternative Road Route Locations (JDMA, 2010c);
- › 2009 Baseline Bird and Habitat Survey - McFaulds Lake and the Muketui River (Ring of Fire) Area (AECOM, 2010);
- › McFaulds Lake Project - Report on Mineral and Organic Terrain Mapping in a 10 km Radius Around Esker Camp (JDMA, 2010a);

- › McFaulds Lake Project - High Level Terrain Mapping McFaulds Lake Winter Road Route (JDMA, 2011b);
- › Marten Falls First Nation, Terrestrial Existing Conditions Report, Northern Road Link (AECOM, 2020b);
- › Nibinamik-Webequie Community Road Baseline Environmental and Geotechnical Studies (SNC-Lavalin, 2018b);
- › Eagle's Nest Project - Federal/Provincial Environmental Impact Statement/Environmental Assessment Report - Draft Copy (Knight Piésold Consulting, 2013a);
- › Cliffs Chromite Project Environmental Assessment Terrestrial Wildlife Technical Supporting Documents (Golder, 2013g);
- › Noront Resources Ltd. Eagle's Nest Project Terrestrial Baseline Studies: Mammals (Knight Piésold Consulting, 2013c);
- › Marten Falls All Season Road Project Winter Woodland Caribou and Moose Population and Distribution Surveys, Phase 2 (Zoetica, 2019);
- › TPA1B Webequie Community Supply Road Project Description (SNC-Lavalin, 2018a);
- › Communications with MECP;
- › Communications with NDMNRF;
- › NDMNRF publications;
- › Ongoing WSR and MFCAR studies and data (pending appropriate data sharing agreements).

7.3.2.2.3 Proposed Baseline Studies

Desktop Analysis

Numerous Indigenous academic/NGO/governmental research studies have been conducted within and adjacent to the RSA. These studies provide data on the existing wildlife and wildlife habitat in the region. A review of available reports, information on publicly available databases as well as information from ongoing studies such as the MFCAR and WSR studies (pending data sharing agreements) will be conducted to identify the wildlife and wildlife habitat within the region. TA literature review will also be completed during the desktop survey that will assess the effects of similar projects and developments on wildlife and wildlife habitat.

The desktop analysis will include a habitat classification exercise based on interpretation of satellite imagery and other available datasets to determine potential vegetation communities and natural features (and as a result, potential wildlife habitat) within the RSA. For that program, original source data will be taken from the most recent Land Information Ontario (LIO) Wetland, Watercourse/Waterbody dataset, and the Far North Land Cover files. Digital satellite imagery will be sourced from the ArcGIS base maps. The Wildlife Habitat Technical Guide (MNR, 2000) will be used to define significant wildlife habitat based on the results of the habitat classification. The project straddles the border of the Hudson Bay Lowlands and Ontario Shield Ecozones. The project is also contained entirely within the James Bay and Big Trout Lake Ecoregions (**Figure 7-4**). Ecoregions 2E and 2W have no Ecological Criteria Schedule exists at this time. However, existing schedules in other ecoregions (3W and 3E) will be used along with the Technical Guide to classify habitat.

A query of government databases will also be conducted during this stage, and including those that will require sensitive data use agreements will be completed, as required. The desktop analysis will commence in 2022, and the results will be reported in a baseline report appended to the EAR/IS. Preliminary results from the desktop will also be reported in the Wildlife and Wildlife Habitat Study Plan, and assist with the design of field programs.

Field Studies

To gather the information required to support the EA/IA for the NRL, the following field surveys have been proposed:

- › Bat Hibernacula and Maternity Roost Screening (MNR, 2011; to begin in 2022);
- › Significant Wildlife Habitat Field Classification (Verification of Desktop Results, ongoing);
- › Winter Aerial Distribution Surveys (to begin in 2022);
- › eDNA collection (watercourses and waterbodies, ongoing);
- › Opportunist observations of terrestrial wildlife (ongoing); and,
- › Acoustic Surveys (bats and vocalizing anurans, ongoing).

Table 7.3-6 provides a summary of data collection methods and applicability. Surveys began in 2021 and will continue until at least 2023. Detailed methods for all these surveys will be presented in the Wildlife and Wildlife Habitat Study Plan being developed for this project. Additional surveys may be initiated as a result of consultation with provincial or federal regulators.

Table 7.3-6: Summary of Data Collection

Species	Data Collection Methods	Data Applicability
Moose	<ul style="list-style-type: none"> › Indigenous Consultation › Incidental field observations › MNRF (now NDMNRF) Moose habitat mapping › MNRF Moose survey and Moose harvest data › Winter Aerial Distribution Surveys › Secondary sources review 	<ul style="list-style-type: none"> › social value › life cycle › habitat requirements › seasonal habitat use › migration and movements › relative abundance and population status › winter distribution and location › sensitive periods (e.g., seasonal, diurnal and nocturnal)
Furbearers: American Marten River Otter Snowshoe Hare Beaver Muskrat Wolf	<ul style="list-style-type: none"> › Indigenous Consultation › Incidental field observations › MNRF Trapping harvest data › Winter Aerial Distribution Surveys › Secondary sources review 	<ul style="list-style-type: none"> › social value › life cycle › habitat requirements › location › relative abundance and population status › migration and movements › sensitive periods (e.g., seasonal, diurnal and nocturnal) › winter distribution and location › seasonal ranges (spring, summer and fall)
Bats	<ul style="list-style-type: none"> › Indigenous Consultation › Aerial reconnaissance › Acoustic surveys (acoustic surveys for bats will be conducted according to the methodology outlined in the MNRF guidance document Bat Survey) 	<ul style="list-style-type: none"> › social value › habitat requirements › relative abundance and population status › distribution and location › seasonal ranges (spring, summer and fall) › life cycle › sensitive periods (e.g., seasonal, diurnal and nocturnal)

Species	Data Collection Methods	Data Applicability
	<ul style="list-style-type: none"> Protocol for Treed Habitats [MNRF, 2017b]) › Field Bat Hibernacula and Maternity Roost Surveys (MNR, 2011) › Abandoned Mine Information System (NDMNRF, 2022) › Nearby study (WSR and MFCAR) data, pending data sharing agreements › Incidental Observations Secondary sources review 	
Frogs Toads Salamanders and Newts	<ul style="list-style-type: none"> › Indigenous Consultation › ARU surveys (calling amphibians) › eDNA surveys › Incidental observations during vegetation community and wetlands assessment studies › Secondary sources review 	<ul style="list-style-type: none"> › social value › species diversity and richness › distribution and location › seasonal ranges (spring, summer and fall) › sensitive periods (e.g., seasonal, diurnal and nocturnal) › habitat requirements › life cycle › population status › sensitive periods (e.g., seasonal, diurnal and nocturnal)
Black Bear	<ul style="list-style-type: none"> › Indigenous Consultation › Secondary sources review › Incidental observations 	<ul style="list-style-type: none"> › social value › seasonal ranges (spring, summer and fall) › sensitive periods (e.g., seasonal, diurnal and nocturnal) › life cycle › population status › seasonal ranges › den distribution

7.3.2.3 Potential Project-related Effects

The following potential effects on the Wildlife and Wildlife Habitat VC may be anticipated:

- › Habitat loss directly through vegetation clearing required for road construction, laydown areas, stockpiles, and excavations;
- › Habitat degradation caused by alterations in hydrology patterns, erosion, dust and air emissions, vegetation changes (including introduction of invasive species which may displace natural vegetation), reductions in habitat connectivity, loss of travel corridors, and habitat fragmentation/habitat avoidance. This in turn may lead to changes in survival and reproductive success;
- › Death of wildlife or reduction in habitat quality as a result of accidental releases of contaminants;
- › Sensory disturbance related to proximity (noise and visual) impacts from construction equipment, roadway traffic, and increased air traffic, which can affect habitat suitability and use is especially possible in species that are sensitive;
- › Loss of wildlife and/or traditional use of wildlife, as a result of construction or vehicle collision;

- › Attraction of wildlife to construction camps or the road corridor (e.g., food waste, ease-of-use) which can affect predator-prey relationships and thus wildlife survival and reproduction;
- › Increase beaver activity and impoundment along the constructed roadway; and
- › Increased harvest of wildlife by humans for recreational or traditional use due to increased public access.

7.3.3 Birds and Bird Habitat

The EAR/IS will present in detail the assessment of Project-related effects on the Birds and Bird Habitat VC. The Birds and Bird Habitat VC consists of migratory and sedentary bird species including the following six (6) guilds. Species at Risk are addressed in **Section 7.3.5**, which will be included in the EA/IA to assess the effects of the Project on birds and bird habitat:

- › Guild – Forest Birds
- › Guild – Raptors
- › Guild – Shorebirds
- › Guild – Waterfowl
- › Guild – Bog/fen Birds
- › Guild – Wetland Obligate Birds

The six guilds were identified for the assessment of potential Project effects on birds and bird habitat, in part because they are guilds of value to Indigenous communities, government agencies, the public and stakeholders based on the input from the consultation undertaken to date. These guilds also represent collective species assemblages which occur within the RSA. As such, bird guilds selected for the EA/IA will be used to assess the effects on the Project on species that occur with regularity within the RSA.

7.3.3.1 Preliminary Indicators

Table 7.3-7 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Birds and Bird Habitat VC effects assessment.

Table 7.3-7: Preliminary Indicators for the Birds and Bird Habitat VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Abundance and distribution	<p>This indicator describes changes to abundance and distribution of bird species and is based on direct changes to the population (i.e., mortality of individuals resulting from physical activities of the Project); or indirect changes to the population as a result of changes to habitat availability (quantity and quality) that may affect survival and reproduction, and therefore measurable changes in abundance. Abundance refers to the relative number of individuals or breeding pairs detected in a given study unit and corresponds to how common or rare a species is within the RSA during an ecologically relevant time period. Distribution relates to the spatial configuration and connectivity of habitats for birds in the study area, and the spatial distribution and movement of bird species. Distribution will be addressed using a quantitative assessment of changes to distribution that may occur via direct or indirect changes to habitat or species abundance. Abundance and distribution are proposed to be combined into one indicator for the EA/IA as changes to distribution (i.e., connectivity) are tied to abundance (i.e., number of birds in the population).</p> <p>This indicator was identified for consideration because the Project may have direct effects on the VC due to physical activities (e.g., birds or nests are directly affected due to road construction and tree clearing). The Project may also have indirect effects such as increasing access to future developments such as mines, which may further affect bird abundance and distribution.</p>

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Habitat availability (quantity, quality, configuration, and connectivity)	<p>This indicator includes habitat quantity (the amount of habitat available for birds and their various life history stages) and habitat quality (the quality of habitat available for birds and their various life history stages). Habitat quantity will involve a quantitative assessment of potential changes to total area of habitat and any known or assumed critical life cycle habitat (e.g., breeding, rearing) as a result of implementing the Project and will be calculated and presented as absolute (i.e., area – hectares or square metres) as appropriate. The calculation will be based on the likely presence of each indicator species within each habitat type, the availability of the specific habitat type, and the area of disturbance in the preferred corridor. Habitat distribution, including configuration and connectivity will also be assessed here. Habitat availability also considers each species ability to occupy multiple habitats (i.e., availability of alternative habitats for individual populations to mitigate losses resulting from physical activities of the Project. Some alternative habitats may be present in the RSA/LSA that are available for birds affected by the Project to utilize. Where the likelihood of a indicators species is unknown due to limited information, a precautionary approach will be used, and it will be assumed that the indicators species may be present. These effects on habitat quality will be a qualitative assessment of the changes in habitat suitability for use by birds (i.e., quality of breeding, rearing, or overwintering type habitats for indicators species).</p> <p>This indicator was selected because the Project may have direct effects on the VC due to physical activities (e.g., habitat loss due to road construction and tree clearing). The Project may also have indirect effects such as increasing access to future developments such as mines, which may further affect habitat availability.</p>
Species richness	<p>This indicator refers to changes to diversity based on direct changes to the species presence within the preferred corridor and the LSA (i.e., extirpation of individual populations resulting from physical activities of the Project); or indirect changes to the population matrix as a result of changes to habitat availability (quantity and quality) that may affect survival and reproduction, and therefore measurable changes in species composition.</p> <p>This indicator was selected because the Project may have direct effects on the VC due to physical activities (e.g., some sensitive bird species may be deterred more than other species). The Project may also have indirect effects such as increasing access to future developments such as mines, which may further affect habitat availability.</p>
Species habitat specificity	<p>Refers to species habitat specificity and changes to populations based on: direct changes to availability of specific habitat types (i.e., extirpation or reduction of individual populations resulting from physical activities of the Project); or indirect changes to the population matrix as a result of changes to habitat availability (quantity and quality) that may affect survival and reproduction, and therefore measurable changes in species abundance. Specific habitat types include:</p> <ul style="list-style-type: none"> › Specialized upland landcover type; › Specialized wetland landcover type (e.g., bog, fen, swamp, marsh); › Specialized riparian habitat; › Critical land forms/habitats of conservation concern, resulting from combinations of unique landforms and specific vegetation communities (e.g., eskers, old growth); and, › Rare species occurrence/potential. <p>This indicator was selected because the Project may reduce the amount of a certain type of available habitat and push bird species into non-ideal habitat which may have an effect on bird abundance and distribution.</p>

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Predation/habitat usage (other wildlife) and human access	<p>This indicator refers to increased predator access and habitat utilization by new species (including humans) to specific areas resulting in potential changes to populations due to increased hunting access, increased raptor and mammal predation, introduction of new species competition for available resources resulting from physical activities of the Project (e.g., new travel corridors, and increased edge habitat, introduction of invasive species, increased fire potential).</p> <p>This indicator was identified for consideration because the increased access may alter how predators or hunters access the area, and in turn could have effects on bird species and/or their habitat.</p>

7.3.3.2 Baseline Characterization

7.3.3.2.1 Preliminary Baseline Description

A review of secondary sources indicates that at least 130 bird species occur within the corridor alternatives for the Project. Surveys conducted in 2018 by Zoetica (Zoetica, 2019) detected 73 breeding species including Canada Warbler (*Cardellina canadensis*), Eastern Wood-Pewee (*Contopus virens*), Olive-sided Flycatcher (*Contopus cooperi*) and Rusty Blackbird (*Euphagus carolinus*). In 2019, surveys completed by AECOM (2020c) detected 56 species, including Common Nighthawk, Olive-sided Flycatcher, and Rusty Blackbird. Bald Eagle (*Haliaeetus leucocephalus*) was observed incidentally.

Waterfowl stopover and staging SWH consists of water bodies used for migration, including ponds, marshes, lakes, bays, and coastal inlets (MNRF, 2017a). Local species aggregations of Ruddy Ducks, Canvasbacks, Trumpeter Swans or Tundra Swans may be considered significant for this area. Some of the species that were observed during 2021 waterfowl surveys include: Canada Goose (*Branta canadensis*), Tundra Swan (*Cygnus columbianus*), Mallard (*Anas platyrhynchos*), Green-winged Teal (*Anas carolinensis*), Lesser Scaup (*Aythya affinis*), Ring-necked Duck (*Aythya collaris*), Bufflehead (*Bucephala albeola*), Common Goldeneye (*Bucephala clangula*), Common Merganser (*Mergus merganser*), Red-breasted Merganser (*Mergus serrator*), and Hooded Merganser (*Lophodytes cucullatus*). Common Goldeneye and Common Merganser were the most widely observed of the numerous waterfowl species observed.

7.3.3.2.2 Background Information and Data

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Birds and Bird Habitat VC.

Data sources that will be evaluated include:

- › Canadian Conservation Data Centres;
- › North American Landbird Conservation Plan (Bird Conservation Regions 7 and 8);
- › eBird.org;
- › iNaturalist.com;
- › Species at Risk in Ontario (SARO) List;
- › Significant Wildlife Technical Habitat Guide (MNR, 2000);
- › Significant Wildlife Habitat Ecoregion Criteria Schedules (MNRF, 2015a, 2017a);
- › Significant Wildlife Habitat Mitigation Support Tool (MNRF, 2014a)
- › Natural Heritage Information Centre / GeoHub (NDMNRF, 2021d);
- › The Atlas of the Breeding Birds of Ontario (Ontario Bird Breeding Atlas, 2001);

- › Environment and Climate Change Canada's guidance on Bird Surveys;
- › Eagle's Nest Project Federal/Provincial Environmental Impact Statement/Environmental Assessment Report (Knight Piésold Consulting, 2013a);
- › Cliffs Chromite Project Environmental Assessment Terrestrial Wildlife Technical Supporting Documents (Golder, 2013g);
- › All-Season Community Road Study (Webequie First Nation et al., 2016);
- › Marten Falls First Nation, Terrestrial Existing Conditions Report, Northern Road Link (AECOM, 2020c);
- › TPA1B Webequie Community Supply Road Project Description (SNC-Lavalin, 2018a); and
- › Ongoing WSR and MFCAR studies and data (pending appropriate data sharing agreements).

7.3.3.2.3 Proposed Baseline Studies

Desktop Analysis

Numerous Indigenous/academic/NGO/governmental research studies have been conducted within and adjacent to the RSA. These studies provide data on the existing wildlife and wildlife habitat in the region. A review of available reports, information on publicly available databases as well as information from ongoing studies such as the MFCAR and WSR studies (pending data sharing agreements) will be conducted to identify the bird and bird habitat within the region. A literature review will also be completed during the desktop survey that will assess the effects of similar projects and developments on birds and bird habitat.

The desktop analysis will include a habitat classification exercise based on interpretation of satellite imagery and other available datasets to determine potential vegetation communities and natural features (and as a result, potential bird habitat) within the RSA. For that program, original source data will be taken from the most recent Land Information Ontario (LIO) Wetland, Watercourse/Waterbody dataset, and the Far North Land Cover files. Digital satellite imagery will be sourced from the ArcGIS base maps. The Significant Wildlife Habitat Technical Guide (MNR, 2000) will be used to define significant wildlife habitat based on the results of the habitat classification. The project straddles the border of the Hudson Bay Lowlands and Ontario Shield Ecozones. The project is also contained entirely within the James Bay and Big Trout Lake Ecoregions (**Figure 7-4**). Ecoregions 2E and 2W have no Ecological Criteria Schedule exists at this time. However, existing schedules in other ecoregions (3W and 3E) will be used along with the Technical Guide to classify habitat.

A query of government databases will also be conducted during this stage, and including those that will require sensitive data use agreements will be completed, as required. The desktop analysis will commence in 2022, and the results will be reported in a baseline report appended to the EAR/IS. Preliminary results from the desktop will also be reported in the Birds and Bird Habitat Study Plan, and assist with the design of field programs.

Field Studies

The primary purpose of the avian field program will be to characterize and describe the existing bird community and their habitats that are found or are likely to be found in the RSA. Data collected through field studies will be sufficient to fulfill the basic requirements of the EA/IA. Surveys began in 2021 and are ongoing. Detailed methods for all these surveys will be presented in the Birds and Bird Habitat Study Plan being developed for this project. Additional surveys may be initiated as a result of consultation with provincial or federal regulators.

The following field surveys are proposed:

- › Breeding Bird Point Count Survey (conducted in accordance with Instructions for Point Counts [Ontario Breeding Bird Atlas, 2021; Konze and McLaren, 1997], conducted in June 2021 and ongoing)
- › Acoustic Bird Surveys using ARUs (conducted in accordance with Instructions for Point Counts [Ontario Breeding Bird Atlas, 2021], ARUs deployed and data collected spring, summer, fall and winter over a 2 year period, ongoing);
- › Comparative ARU and Point Count Surveys (ongoing);
- › Significant Wildlife Habitat Field Classification (verification of Desktop Results, ongoing);
- › Waterfowl Migration Aerial Surveys targeting waterfowl migration routes and waterfowl staging areas (conducted in accordance with United States Fish and Wildlife Service and Canadian Wildlife Service standards [USFWS and CWS, 1987], British Columbia Ministry of Environment, Lands and Parks [1999] standards, and Ducks Unlimited Canada [2003] protocols, spring and fall and over a two-year period, ongoing); and
- › Raptor Nesting Data Collection (collected incidentally during aerial and other surveys, ongoing).

7.3.3.3 Potential Project-related Effects

The following potential effects on the Birds and Bird Habitat VC may be anticipated:

- › Habitat loss directly through vegetation clearing required for road construction, laydown areas, stockpiles, and excavations;
- › Habitat degradation caused by alterations of in hydrology patterns, erosion, dust and air emissions, vegetation changes (including introduction of invasive species which may displace natural vegetation), habitat connectivity, and habitat fragmentation. This in turn may lead to changes in survival and reproductive success;
- › Death of birds or reduction in habitat quality as a result of accidental releases of contaminants;
- › Sensory disturbance related to proximity (noise) impacts from construction equipment, roadway traffic, and increased air traffic, which can affect habitat suitability and use. More sensitive bird species may avoid areas with high noise temporarily or permanently;
- › Death of birds and/or eggs, including SAR and/or traditional use birds, as a result of construction (vegetation clearing) or vehicle collision;
- › Attraction of bird species to construction camps or the road corridor (e.g., food waste, light causing insect attraction) which can affect predator-prey relationships and thus bird survival and reproduction; and
- › Increased harvest of wildlife, including SAR by humans for recreational or traditional use due to increased public access.

7.3.4 Plants and Vegetation Communities

The EAR/IS will present in detail the assessment of Project-related effects on the Plants and Vegetation Communities VC. The following have been selected as components to assess the effect of the Project on plants and vegetation communities.

- › Upland Vegetation Communities;
- › Wetland Vegetation Communities;
- › Peatland Communities; and
- › Rare plants or rare vegetation communities.

7.3.4.1 Preliminary Indicators

Table 7.3-8 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Plants and Vegetation Communities VC effects assessment.

Table 7.3-8: Preliminary Indicators for the Plants and Vegetation Communities VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Vegetation type and abundance (quantity and quality)	<p>This indicator refers to the quantity of each vegetation community type, as well as the quality of vegetation community types. Quantitative assessment of potential changes to total area communities as a result of implementing the Project and will be calculated and presented (i.e., area – hectares or square metres) as appropriate. This includes the quantification of rare species, as well as valuable community types such as peatlands. The calculation will be based on the extent of each identified vegetation community, and the area of disturbance within the preferred corridor.</p> <p>This indicator was selected because the Project may have effects on vegetation type and abundance through direct changes caused by physical Project activities or indirect changes as a result of changes to vegetation communities. This in turn may have an effect on overall habitat quality (e.g., fragmentation of communities, changes to wetland function, or indirect effects from the installation of Project infrastructure).</p>
Vegetation biodiversity	<p>This indicator refers to the species richness and diversity found within the LSA and RSA. This indicator was selected because the Project may have effects on this which could include direct changes to the species presence (i.e., extirpation of individual populations resulting from physical activities of the Project); or indirect changes as a result of changes to habitat availability (quantity and quality) that may cause measurable alterations in species composition.</p>

7.3.4.2 Baseline Characterization

7.3.4.2.1 Preliminary Baseline Description

This section includes a description of the baseline of the VC (i.e., existing conditions without the Project) used as the point of comparison in the Plant and Vegetation Community VC effects assessment.

The Project is located within the James Bay and Big Trout Lake Ecoregion (Ecoregion 2E and 2W, respectively). Treed and open fen (22.3% and 7.3%) and treed and open bog (21.2% and 17.7%) comprise the primary vegetation associations in the James Bay Ecoregion. Coniferous forest is the predominant forest class (12.6%) followed by sparse forest (7.6%). Open water covers 5.6% of the area. This ecoregion notably includes the most extensive treed fens in the ecozone and in Ontario (Crins et al., 2009).

Black Spruce dominates both upland and lowland sites, with Jack Pine and White Birch and Poplar species as associates. The shrub layers tend to be dominated by ericaceous shrubs, willow, and alder. The ground cover primarily consists of mosses and lichens, low ericaceous shrubs, and some herbs. Bedrock exposures have fewer trees and greater lichen cover. Closed to open stands of stunted Black Spruce, with ericaceous shrubs and a ground cover of sphagnum moss, dominate poorly drained peat-filled depressions. These peat-filled depressions, typically made up of decaying sphagnum moss species are common in the area and make up a part of the largest contiguous patches of peatland in Canada. These peatlands are also responsible for storing significant amounts of organic carbon, (approximately 56% of all stored carbon in Canadian soils) while only occupying 12% of the Canadian landscape (Tarnocai, 2006). As such, they are important carbon sinks in the environment and are important for offsetting the effects of climate change. Peatlands are also important maintaining water quality and preventing and mitigating floods.

From the review of available information sources the following is a general description of the vegetation communities in the RSA.

Vegetation has been grouped according to the Far North Land Cover Classification system and is briefly described as follows.

Coniferous Treed

The dominant canopy species are Black Spruce or Jack Pine. Jack Pine dominated sites often had strong regeneration of Black Spruce in the understorey, likely reflective of previous fire events. Balsam Poplar and Trembling Aspen were also present at some sites as smaller components of the canopy. Tall shrub growth is typically sparse, consisting of Alder species when present. Low shrub growth was variable, dominated commonly by Labrador Tea (*Rhododendron groenlandicum*), with other common species including Leatherleaf (*Chamaedaphne calyculata*) and Bunchberry (*Cornus canadensis*). Moss cover is variable, though generally more prevalent at Black Spruce sites. Feathermoss species is the most common component, frequently dominating sites. Peat-forming sphagnum species are occasionally found in depressions at wetter sites. Lichens are present at most sites, principally Reindeer Lichen (*Cladina rangiferina*) and Coral Lichen (*Cladina stellaris*).

Mixed Treed

Tree species are Black Spruce, Jack Pine, Trembling Aspen, Balsam Poplar, White Birch and Tamarack (*Larix laricina*). Tall shrubs are present, usually mixed with subcanopy trees, and consist mainly of Green Alder (*Alnus viridis*) and Speckled Alder (*Alnus incana*), with occasional willow species (*Salix* spp.). Low shrub growth is fairly sparse, with Labrador Tea, Prickly Rose (*Rosa acicularis*), Bunchberry, and Velvet Leaf Blueberry (*Vaccinium myrtilloides*) being the most common species. Moss cover is sparse at most sites, with Feathermosses the most consistently present; other moss species, including Ground Cedar (*Lycopodium complanatum*) and Ground Pine (*Lycopodium obscurum*), present in lower abundances.

Deciduous Treed

Dominant canopy species are Balsam Poplar and Trembling Aspen, with Jack Pine. Subcanopy growth is variable, consisting mainly of poplar species, along with White Birch. Black Spruce also present in subcanopy. Tall shrub growth is variable, consisting of mostly alder with some willow. Common low shrubs included Prickly Rose, Velvet Leaf Blueberry and Bunchberry, with Labrador Tea also present. Moss cover is sparse at most sites. Other moss species include Ground Pine and Ground Cedar, as well as Club Moss species.

Esker Vegetation Communities

Vegetation communities located along the project area's esker feature generally consist of the non-wetland communities located within the RSA (mixed treed, deciduous treed, and coniferous treed) as described above. Canopy composition in these areas are dominated by Black Spruce, Trembling Aspen, White Birch, with smaller contributions from Jack Pine, Balsam Fir, Balsam Poplar and Tamarack, frequently in discrete enclaves. Elevation on the esker communities tends to be higher, and slopes are steeper allowing for vegetation more tolerant of well-drained soils. The presence of granular and mineral substrates results in better drained and more nutrient rich soils, leading to larger trees compared to other upland and wetland locations. Another result of this is generally increased plant diversity, and these communities are frequently home to orchids and a wider variety of wildflowers and fruit bearing shrubs. Deadfall/blowdown of mature trees is also a notable feature of these communities either as a result of fire or wind damage.

Coniferous Swamp

Black Spruce is the dominant canopy species, and usually dominated subcanopy layers as well. Tamarack is present as a canopy species. Tall shrub growth is sparse and typically restricted to Speckled Alder. Low shrub growth is variable, but quite dense at some sites. Labrador Tea is the most common species. Leatherleaf and Dwarf Birch (*Betula glandulosa*) are also present at wetter sites. Moss coverage is near complete at all sites. Peat-forming sphagnum species are generally dominant, with Feathermosses also present and, in some cases, codominant.

Sparse Treed Fen

Tamarack is the primary tree species, with Black Spruce also present. Tall shrubs are also sparse, typically consisting of willow species where present. Low shrubs included Dwarf Birch, Leatherleaf, Bog Rosemary (*Andromeda polifolia*), and occasionally Red Osier Dogwood (*Cornus stolonifera*). Ground cover is a combination of peat forming - sphagnum mosses and herbaceous growth consisting of grass and sedge species, with most sites having primarily herbaceous cover.

Open Fen

Trees are rare, consisting of Tamarack or, more rarely, Black Spruce, usually less than 2 m tall. Tall shrubs, where present, consist of Speckled Alder and willow species. Low shrubs present include Leatherleaf, Dwarf Birch, and Bog Rosemary. Ground cover is dominated by grass and sedge species.

Rare Plant Species and Communities

Based on previous work in the area around the Eagle's Nest Project (Knight Piésold Consulting, 2013a), a list of rare plant species and plant communities was generated for the region from their contact with the MNRF. However, none of the plants identified in the list were observed in 2017 (MFFN, 2017). However, based on the timing of the surveys, the presence of these species will be reassessed as part of the additional field surveys to be completed to support the NRL EA. NRF will be contacted for a list of rare plants potentially in the area during the EA/IA.

Known plant species of cultural value or significance to Indigenous communities include: wild berries or nuts (Blueberry, Wild Strawberry, Gooseberry/Currant, Raspberry), wild plants (Labrador Tea Leaves, Muskrat Root, Wild Rice, Mint Leaves, and Dandelions), and Tree Foods (Cedar Tea, Maple Syrup, and Poplar Inner Bark).

7.3.4.2.2 Background Information and Data

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Plants and Vegetation Communities VC.

- › iNaturalist.com;
- › Natural Heritage Reference Manual (MNR, 2010a);
- › Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales (MNR, 2010b);
- › Ontario Species at Risk (COSSARO, 2020);
- › Natural Heritage Resources of Ontario Rare Vascular Plants (Oldham and Brinker, 2009);
- › Natural Heritage Information Centre (NHIC) Biodiversity Explorer databases;

- › Significant Wildlife Habitat Technical Guide (MNR, 2000);
- › Significant Wildlife Habitat Mitigation Support Tool (MNRF, 2014a)
- › Significant Wildlife Habitat Ecoregion Criteria Schedules (MNRF, 2015a, 2017a);
- › Committee on the Status of Endangered Wildlife in Canada (COSEWIC) reports;
- › Species at Risk in Ontario (SARO) List;
- › MNRF Natural Heritage Information Centre (Geohub Ontario, 2022);
- › The Ecosystems of Ontario, Part 1, Ecozones and Ecoregions (Crins et al., 2009);
- › The Ecosystems of Ontario, Part 2, Ecodistricts (Wester et al., 2018);
- › Guiding Principles of Wetland Ecological Functions Assessment: An Overview of Approaches, (Hanson et al., 2008);
- › Ecosites of Ontario, Boreal, Operational Draft (Banton et al., 2009);
- › Field Guide to the Wetland Ecosystem Classification for Northwestern Ontario. Ontario Ministry of Natural Resources, Northwest Sci. Technol. Field Guide (Harris, 1996);
- › Ecological Land Classification for Southern Ontario: First Approximation and Its Application (Lee. et al., 1998);
- › Field manual for Describing Soils in Ontario. (Ontario Centre for Soil Resource Evaluation, 1993);
- › Terrestrial and Wetland Ecosites of Northwestern Ontario. Ontario Ministry of Natural Resources, Northwest Sci. & Technol. Field Guide, (Racey et al., 1996);
- › Ecosystem Classification for northwestern Ontario (Sims, et al., 1997);
- › A Field Guide to Forest Ecosystems of Northeastern Ontario. 2nd Edition. Ontario Ministry of Natural Resources, Northeast Sci. & Technol (Taylor, 2000);
- › A Guide to Translate Northwestern Ontario Ecosites into “Ecosites of Ontario” (Northwest Science and Information Tech, 2012);
- › The Northwestern Ontario Chupper Debris Working GroupL A summary of activites and findings, 2011-2014 (Buda et al., 2015);
- › The Canadian Wetland Classification System, Second Edition (National Wetlands Working Group, 1997);
- › Forest Research Partnership ELC Papers and Fact Sheets;
- › Ontario Wetland Evaluation System, Northern Manual (MNRF, 2014b);
- › Ring of Fire Baseline Environmental Monitoring Program: Preliminary Report (MECP, 2019a);
- › All-Season Community Road Study (Webequie First Nation et al., 2016);
- › Marten Falls First Nation, Terrestrial Existing Conditions Report, Northern Road Link (AECOM, 2020c);
- › Cliffs Chromite Project Environmental Assessment: Vegetation and Soils Technical Supporting Document. Part 2: Integrated Transportation System (Golder, 2013h);
- › McFaulds Lake Project - Airphoto Mapping for Route Location and Terrain Assessment Scoping/Prefeasibility-Level Study Alternative Road Route Locations (JDMA, 2010c);

- › McFaulds Lake Project - Report On Mineral and Organic Terrain Mapping in a 10 km Radius Around Esker Camp (JDMA, 2010a);
- › McFaulds Lake Project - High Level Terrain Mapping McFaulds Lake Winter Road Route (JDMA, 2011b);
- › Eagle's Nest Project - Federal/Provincial Environmental Impact Statement/Environmental Assessment Report (Knight Piésold Consulting, 2013a);
- › TPA1B Webequie Community Supply Road Project Description (SNC-Lavalin, 2018a); and
Ongoing WSR and MFCAR studies and data (pending appropriate data sharing agreements).

7.3.4.2.3 Proposed Baseline Studies

Desktop Analysis

Numerous Indigenous/academic/NGO/governmental research studies have been conducted within and adjacent to the RSA. These studies provide data on the existing plant and vegetation communities habitat in the region. A review of available reports, information on publicly available databases as well as information from ongoing studies such as the MFCAR and WSR studies (pending data sharing agreements) will be conducted to identify the plants and vegetation communities within the region.

The desktop analysis will include a habitat classification exercise based on interpretation of satellite imagery and other available datasets to determine potential vegetation communities and natural features (and as a result, potential bird habitat) within the RSA. For that program, original source data will be taken from the most recent Land Information Ontario (LIO) Wetland, Watercourse/Waterbody dataset, and the Far North Land Cover files. Digital satellite imagery will be sourced from the ArcGIS base maps.

The Wildlife Habitat Technical Guide (MNR, 2000) will be used to define significant wildlife habitat, and the plants and vegetation communities study will describe the vegetation communities that make up the criteria in this document. The Project occurs within Ecoregion 2E and 2W for which no Ecological criteria Schedule exists at this time. However, existing schedules in other ecoregions (3W and 3E) will be used along with the Technical Guide to classify habitat. The desktop analysis will include an interpretation of satellite and other available imagery to determine potential vegetation communities within the RSA. A query of government databases will also be conducted during this stage, and including those that will require sensitive data use agreements will be completed, as required. The desktop analysis will commence in 2022, and the results will be reported in a baseline report appended to the EAR/IS. Preliminary results from the desktop will also be reported in the Plants and Vegetation Communities Study Plan, and assist with the design of field programs.

Field Studies

To gather the information required, vegetation surveys in accordance with provincial standards for Ecological Land Classification (ELC) will be used to identify and classify vegetative communities. ELC uses a hierarchical approach to identify recurring ecological patterns on the landscape to compartmentalize complex natural variation into a reasonable number of meaningful ecosystem units. This facilitates a comprehensive and consistent approach for ecosystem description, inventory and interpretation (Lee et al., 1998). The functional units from field assessments will follow the Ecosites of Ontario (Operational Draft) – Boreal Region (Banton et al., 2009), which is the current standard arising from the previous Forest Ecosystem and Wetland Ecosystem Classification systems for the Northeast and Northwest regions of the province (Harris et al., 1996; Racey et al., 1996; Sims et al., 1997; Taylor et al., 2000).

Vegetation surveys began in 2021 and are ongoing. Detailed methods for these surveys will be presented in the Plants and Vegetation Study Plan being developed for this project. Additional surveys may be initiated as a result of consultation with provincial or federal regulators.

Generally, the goal of the sample location selection will be to confirm/compare the classifications assigned from the publicly available datasets. The survey plan will consider multiple survey locations in each vegetation type to get an accurate representation of relative abundance and diversity. Transects and circular plots will be completed as part of the field work when assessing vegetation communities. This will allow for the capture of species presence and transition zone dynamics. When possible, vegetation team members will also accompany the aquatic and wildlife/SAR teams to characterize vegetation on those study areas to support their work and characterize wildlife habitat.

7.3.4.3 Potential Project-related Effects

The following potential effects on the Plants and Vegetation Communities VC may be anticipated:

- › Loss of plants or plant communities, including potential SAR and traditional use plants as a result of vegetation clearing for construction, stockpiling, excavation, and/or laydown areas;
- › Changes to community species composition and diversity (increases or decreases in certain species with a community), due to construction, changes in local hydrology or water quality, dust and air emissions, changes to soil quality, and accidental releases of contaminants;
- › Reduction in wetland habitat (including peatlands) or wetland quality/function due to construction, changes in local hydrology or water quality, dust and air emissions, changes to soil quality, and accidental releases;
- › Reduction in esker landforms and esker vegetation community habitat;
- › Increased harvest of plants for recreational or traditional use due to increased public access;
- › Introduction or proliferation of invasive plant species through construction or through increased access to the public, which may reduce the competitiveness of local plant species; and
- › Reduced soil quantity during earth moving activities may affect revegetation and restoration success.

7.3.5 Species at Risk

The EAR/IS will present in detail the assessment of Project-related effects on Species at Risk. Generally speaking, individual species are considered Species at Risk if they or their habitat has additional regulatory protection (provincial or federal), or are identified as a species that has special significance to stakeholders. The following species have been selected as components to assess the effect of the Project on Species at Risk:

- › Caribou (Boreal Population)
- › Wolverine
- › Little Brown Myotis
- › Northern Myotis
- › Tri-coloured Bat
- › Barn Swallow
- › Bank Swallow
- › Chimney Swift
- › Eastern Whip-poor-will
- › Species at Risk – Bald Eagle (*Haliaeetus leucocephalus*)
- › Canada Warbler (*Cardellina canadensis*)

- › Common Nighthawk (*Chordeiles minor*)
- › Evening Grosbeak (*Coccothraustes vespertinus*)
- › Olive-sided Flycatcher (*Contopus cooperi*)
- › Peregrine Falcon (*Falco peregrinus*)
- › Rusty Blackbird (*Euphagus carolinus*)
- › Short-eared Owl (*Asio flammeus*)
- › Yellow Rail (*Coturnicops noveboracensis*)

7.3.5.1 Preliminary Indicators

Table 7.3-9 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Species at Risk effects assessment. Indicators that apply to all Species at Risk are presented in **Table 7.3-9**, whereas indicators specific to certain Species at Risk (Caribou and Wolverine) are presented in **Table 7.3-10**.

Table 7.3-9: Preliminary Indicators for the Species at Risk VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Abundance and distribution	<p>This indicator describes changes to abundance and distribution of wildlife species and is based on direct changes to the population (i.e., mortality of individuals resulting from physical activities of the Project); or indirect changes to the population as a result of changes to habitat availability (quantity and quality) that may affect survival and reproduction, and therefore measurable changes in abundance. Abundance refers to the relative number of individuals detected in a given study unit and corresponds to how common or rare a species is within the RSA during an ecologically relevant time period. This indicator will also include data on federally (<i>Species at Risk Act</i>) or provincially (<i>Endangered Species Act, 2007</i>) listed species that are afforded protection or provincially managed game animals. Distribution relates to the spatial configuration of wildlife species in the study area, and the spatial distribution and movement of wildlife species. Distribution will be addressed using a quantitative assessment of changes to distribution that may occur via direct or indirect changes to habitat or species abundance. Abundance and distribution are proposed to be combined into one indicator for the EA/IA as changes to distribution (i.e., connectivity) are tied to abundance (i.e., number of animals in the population).</p> <p>This indicator was selected because the Project may have direct effects on the VC due to physical activities (e.g., wildlife directly killed or deterred due to road construction and tree clearing). The Project may also have indirect effects such as increased access to future developments such as mines, which may further affect wildlife abundance and distribution.</p>
Habitat availability (quantity, quality, configuration, and connectivity)	<p>This indicator includes habitat quantity (the amount of habitat available for wildlife and their various life history stages) and habitat quality (the quality of habitat available for wildlife and their various life history stages). Habitat quantity will involve a quantitative assessment of potential changes to total area of habitat and any known or assumed critical life cycle habitat (e.g., breeding, rearing) as a result of implementing the Project and will be calculated and presented as absolute (i.e., area – hectares or square metres) as appropriate. The calculation will be based on the likely presence of each indicator species within each habitat type, the availability of the specific habitat type, and the area of disturbance in the preferred corridor. Habitat distribution, including configuration and connectivity, will also be assessed here. Where the likelihood of an indicator species* is unknown due to limited information, a precautionary approach will be used, and it will be assumed that the indicator species may be present. These effects on habitat quality will be a qualitative assessment of the changes in habitat suitability for use by wildlife (i.e., quality of breeding, rearing, or overwintering type habitats for indicators species).</p> <p>This indicator was selected because the Project may have direct effects on the VC due to physical activities (e.g., habitat loss due to road construction and tree clearing). The Project may also have indirect effects such as increased access to future developments such as mines, which may further affect habitat availability.</p>

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Species richness	<p>This indicator refers to changes in diversity based on direct changes to the species presence within the preferred corridor and the LSA (i.e., extirpation of individual populations resulting from physical activities of the Project); or indirect changes to the population matrix as a result of changes to habitat availability (quantity and quality) that may affect survival and reproduction, and therefore measurable changes in species richness.</p> <p>This indicator was selected because the Project may have direct effects on the VC due to physical activities (e.g., some sensitive wildlife species may be deterred more than other species). The Project may also have indirect effects such as increased access to future developments such as mines, which may further affect habitat availability.</p>
Species habitat specificity	<p>Refers to species habitat specificity and changes to populations based on direct changes to availability of specific habitat types (i.e., extirpation or reduction of individual populations resulting from physical activities of the Project); or indirect changes to the population matrix as a result of changes to habitat availability (quantity and quality) that may affect survival and reproduction, and therefore measurable changes in species habitat specificity. Specific habitat types include:</p> <p>Specific habitat types include:</p> <ul style="list-style-type: none"> › Specialized upland landcover type; › Specialized wetland landcover type (e.g., bog, fen, swamp, marsh); › Specialized riparian habitat; › Critical land forms/habitats of conservation concern, resulting from combinations of unique landforms and specific vegetation communities (e.g., eskers, old growth); and, › Rare species occurrence/potential. <p>This indicator was selected because the Project may reduce the amount of available habitat types and push certain wildlife species into non-ideal habitat that may affect abundance and diversity.</p>
Predation/habitat usage (other wildlife) and human access	<p>Refers to increased predator access and habitat utilization by new species (including humans) to specific areas resulting in potential changes to populations due to increased hunting access, increased predation, introduction of new species competition for available resources resulting from physical activities of the Project (e.g., new travel corridors, and increased edge habitat, introduction of invasive species, increased fire potential).</p> <p>This indicator was selected because the increased access may alter how predators, new wildlife, or hunters access the area, and in turn could have effects on various species and/or their habitat.</p>

* An **indicator species** is an organism whose presence, absence or abundance reflects a specific environmental condition and can signal a change in the biological condition of a particular ecosystem, and thus may be used as a proxy to diagnose the health of an ecosystem.

Table 7.3-10: Preliminary Indicators for the Caribou and Wolverine

Species	Species-Specific Indicators
Caribou (Boreal population)	<ul style="list-style-type: none"> › Caribou (Habitat Protection) – Range Condition › Caribou (Species Protection) – Population Size Estimates at the Range Level e.g., minimum animal count based on available information › Caribou (Species Protection) – Population Trend Estimates at the Range Level › Caribou (Habitat Protection) – Cumulative Disturbance at Range Level <ul style="list-style-type: none"> – Quantify additional disturbance being added to the range (footprint and footprint + 500 m buffer) – Length of new linear disturbances – Alignment with existing disturbance

Species	Species-Specific Indicators
Caribou (Boreal population) (Cont'd)	<ul style="list-style-type: none"> › Caribou (Habitat Protection) – Habitat Amount and Arrangement › Caribou (Habitat Protection) – Categorized Habitat at the Sub-range Level <ul style="list-style-type: none"> – Category 1: High Use Area – Nursery Areas Habitat potentially impacted <ul style="list-style-type: none"> ▪ Number of Nursery Areas within the Range ▪ Number of Nursery Areas potentially impacted by the Project (e.g., how many intersect with project footprint, are within 2 km, are within 10 km) ▪ Relevant information on that habitat, such as average age of forest, condition of forest, etc. for each Nursery Area potentially impacted by the Project ▪ Area (ha) of each Nursery Area potentially being impacted ▪ Area (ha) of each Nursery Area removed by Project – Category 1 High Use Area – Winter Use Areas potentially impacted <ul style="list-style-type: none"> ▪ Number of Winter Use Areas within the Range ▪ Number of Winter Use Areas potentially impacted by the Project (e.g., how many intersect with project footprint, are within 2 km, are within 10 km) ▪ Relevant information on that habitat, such as average age of forest, condition of forest, etc. for each Winter Use Area potentially impacted by the Project ▪ Area (ha) of each Winter Use Area potentially being impacted ▪ Area (ha) of each Winter Use removed by Project – Category 1: High Use Area – Travel Corridors potentially impacted <ul style="list-style-type: none"> ▪ Number of Nursery Areas within the Range ▪ Number of Nursery Areas potentially impacted by the Project (e.g., how many intersect with project footprint, are within 2 km, are within 10 km) ▪ Relevant information on that habitat, such as average age of forest, condition of forest, etc. for each Nursery Area potentially impacted by the Project ▪ Area (ha) of each Nursery Area potentially being impacted ▪ Area (ha) of each Nursery Area removed by Project – Category 2: Seasonal Ranges impacted <ul style="list-style-type: none"> ▪ Area (ha) of Seasonal Ranges potentially being impacted ▪ Relevant information on that habitat, such as average age of forest, condition of forest, etc. for Seasonal Ranges potentially impacted by the Project ▪ Area (ha) of Seasonal Range removed by Project – Category 3: Remaining Areas in the Range impacted <ul style="list-style-type: none"> ▪ Area (ha) of Seasonal Ranges potentially being impacted ▪ Relevant information on that habitat, such as average age of forest, condition of forest, etc. for Seasonal Ranges potentially impacted by the Project ▪ Area (ha) of Seasonal Range removed by Project › Caribou (Species Protection) – Incidental mortality due to anthropogenic impacts (e.g. vehicular collisions, increased hunting pressure) › Caribou (Species Protection) – Indirect mortality due to increase in alternate prey sources (moose and deer) leading to increased predation (wolves, bears, etc.) and increased potential for spread of disease (e.g., brainworm) › Caribou (Species Protection) – Indirect impacts due to sensory disturbance (e.g. light, sound, vibration, olfactory) within 10 km of the Project

Species	Species-Specific Indicators
Wolverine	<ul style="list-style-type: none"> › Spatial and temporal distribution › Abundance › Harvest (both targeted and incidental) › Survival and reproduction › Den site selection and use › Habitat availability (quantity and quality) › Habitat distribution (configuration and connectivity)

7.3.5.2 Baseline Characterization

7.3.5.2.1 Preliminary Baseline Description

This section includes a description of the baseline of the VC (i.e., existing conditions without the Project) used as the point of comparison in the Species at Risk VC effects assessment.

A number of Species at Risk have been previously observed in the region in other studies or known the range of the many Species at Risk overlaps with the Project. A preliminary SAR screening was completed and identified a number of species that may occur in the area (SNC-Lavalin, 2022). Species at Risk known or potentially present in the vicinity of the Project, along with a description of each species, are summarized in **Table 7.3-11**.

Table 7.3-11: Species at Risk Known or Potentially Present in the Regional Study Area

Scientific Name	Common Name	ESA Status	SARA Status	Habitat Requirements	Habitat Exists Within RSA
<i>Gulo gulo</i>	Wolverine	THR	SC	<p>Wolverines usually live alone and roam across large territories that vary from 500 km² to 1,500 km² or more. Females build dens under snow-covered boulders, fallen logs, and occasionally in snow drifts. Researchers are still learning about the ecology and habitat needs of the Wolverine in Ontario.</p> <p>A wide variety of forested and tundra habitats is used by wolverines in wilderness areas. Habitats must have an adequate year-round supply of food that consists of smaller prey species, such as rodents and Snowshoe Hares, used more in summer, and the carcasses of larger animals, like Moose and Caribou, which are an important part of the winter diet. Females den at higher elevations under rocks, logs or snow. The snow cover must persist late into the spring to insulate the den and food must be close at hand. Forestry, hydroelectric developments, oil and gas and mineral exploration and development, and transportation corridors continue to alter, remove or fragment habitats. About 6% of all current Wolverine range is within parks and protected areas.</p>	Candidate habitat present, animals have been previously observed in RSA

Scientific Name	Common Name	ESA Status	SARA Status	Habitat Requirements	Habitat Exists Within RSA
<i>Myotis lucifugus</i>	Little Brown Myotis	END	END	<p>Bats are nocturnal. During the day they roost in trees and buildings. They often select attics, abandoned buildings, and barns for summer colonies where they can raise their young. Bats can squeeze through very tiny spaces (as small as 6 mm across) and this is how they access many roosting areas. Little Brown Bats hibernate from October or November to March or April, most often in caves or abandoned mines that are humid and remain above freezing. Their specific physiological requirements limit the number of suitable sites for overwintering. In the east, large numbers (i.e., >3,000 bats) of several species typically overwinter in relatively few hibernacula. In the west, there are fewer known hibernacula, and numbers appear lower per site. Females establish summer maternity colonies, often in buildings or large-diameter trees. Foraging occurs over water, along waterways and forest edges. Large open fields or clear cuts generally are avoided. In autumn, bats return to hibernacula, which may be hundreds of kilometres from their summering areas, swarm near the entrance, mate, and then enter that hibernaculum, or travel to different hibernacula to overwinter. Associated Ecological Land Classification communities include: Coniferous Forest, Mixed Forest, Deciduous Forest, Coniferous Swamp, Mixed Swamp and Deciduous Swamp where suitable roosting (e.g., cavity trees and trees with loose bark) habitat is available.</p>	Candidate Habitat Present
<i>Myotis septentrionalis</i>	Northern Myotis	END	END	<p>Northern Myotis inhabit a variety of treed habitats, including boreal forests, choosing to roost within knot holes, under loose bark and in the cracks and cavities found within the bole, branches or trunks of trees. These bats hibernate from October or November to March or April.</p>	

Scientific Name	Common Name	ESA Status	SARA Status	Habitat Requirements	Habitat Exists Within RSA
<i>Myotis Septentrionalis</i> (Cont'd)	Northern Myotis	END	END	<p>The Northern Myotis overwinters in cold and humid hibernacula (caves/mines). Their specific physiological requirements limit the number of suitable sites for overwintering. In the eastern portion of the species range, large numbers (i.e., >3,000 bats) of several species typically overwinter in relatively few hibernacula. In the western part of the species range, there are fewer known hibernacula, and numbers appear lower per site. Females establish summer maternity colonies in buildings or large-diameter trees. Foraging occurs along waterways, forest edges and in gaps in the forest. Large open fields or clear cuts generally are avoided. In autumn, bats return to hibernacula, which may be hundreds of kilometres from their summering areas, swarm near the entrance, mate, and then enter that hibernaculum, or travel to different hibernacula to overwinter. Associated Ecological Land Classification communities include: Coniferous Forest, Mixed Forest, Deciduous Forest, Coniferous Swamp, Mixed.</p> <p>Swamp and Deciduous Swamp where suitable roosting (e.g., cavity trees and trees with loose bark) habitat is available.</p>	Candidate Habitat Present
<i>Perimyotis subflavus</i>	Tri-coloured bat	END	END	<p>In summer, Tri-coloured bats preferentially occupy mature forest stands that have with good availability of snags for roosting and foraging under a closed canopy. Females tend to roost alone in small colonies, often found in clumps of dead lofiage and lichens. Males also tend to roost individually in similar habitats. Tri-colored bats have the most rigid overwintering habitat requirements, requiring the deepest parts of caves or mines where temperature is the least variable. They tend to use the same hibernacula as Little Brown Myotis and Northern Myotis, but relatively few individuals (<10) are typically recorded in any one hibernacula. The species is thought to hibernate individually, a possible reason for discoveries in low numbers.</p>	Candidate Habitat Present

Scientific Name	Common Name	ESA Status	SARA Status	Habitat Requirements	Habitat Exists Within RSA
<i>Rangifer tarandus</i>	Caribou (Boreal Population)	THR	THR	<p>Caribou habitat in the boreal forest is constantly changing. Much of the forest is naturally in an unsuitable condition for Caribou at any one time, but Caribou need and use the entire landscape over time as habitat changes. Disturbances from fires, blowdown and insects can quickly change the amount and distribution of habitat. There is also great ecological variation in Caribou habitat across the province ranging from upland fire-dependent forests in the northwest, to extensive lowland forests in the northeast where fire is much less frequent. At the broad landscape scale, Caribou require large, undisturbed areas of old or mature conifer upland forest and lowlands dominated by Jack Pine and/or Black Spruce. These areas allow Caribou to effectively separate themselves from higher densities of Moose, White-tailed Deer, Grey Wolves and Black Bears which tend to be associated with younger mixed or deciduous forest. At smaller scales, Caribou seasonally select specific habitat features and areas that support successful reproduction and calf rearing, provide summer and/or winter forage, and/or facilitate movement between discrete areas of use. In winter, Caribou tend to use mature and old growth coniferous forests wherever they occur. These forests are generally associated with marshes, bogs, lakes, rivers, and upland eskers. In summer, the Caribou occasionally feed in young stands, after fire or logging. Many subpopulations of the Boreal Caribou population show a preference for peatlands; they generally avoid clear cuts, shrub-rich habitat and aspen-poplar dominated sites.</p>	Candidate Habitat Present, animals have been previously observed in RSA

Scientific Name	Common Name	ESA Status	SARA Status	Habitat Requirements	Habitat Exists Within RSA
<i>Rangifer tarandus</i> (Cont'd)	Caribou (Eastern Migratory Population)	SC	SC	<p>The Eastern Migratory population of caribou typically uses tundra and forest-tundra transitional areas along the Hudson Bay coast during the spring and summer periods, and they move south to boreal forest habitat in the fall and winter, although individuals can be found in all habitat types at all times of year.</p> <p>In Ontario, movement and habitat use of the Eastern Migratory caribou population is complex. During the spring calving season, male caribou are thought to remain in the forest and forest-tundra areas, while females move further north to the calving grounds. Following calving, the caribou form large, loosely-knit groups containing both male and female animals of all ages. By late summer, the large herds separate into smaller groups, including pairs of female caribou and their calves. After spending approximately six months in the open tundra and forest-tundra transitional area near the coast, the caribou gradually move south and inland in the fall, reaching the most distant points from the coast in mid-winter before slowly returning to the coast the following spring.</p>	Candidate Habitat Present
<i>Haliaeetus leucocephalus</i>	Bald Eagle	SC	No status	Prefer to nest in large trees, almost always near a major lake or river where they do most of their hunting	Candidate habitat present, bird has been previously observed in RSA
<i>Hirundo rustica</i>	Barn Swallow	THR	THR	<p>Prefer open habitat for foraging: grassy fields, pastures, ROWs, agriculture crops and wetlands. Post-European settlement: Nest in human structures, including barns, garages, houses, bridges, and culverts.</p> <p>Barn swallows generally reuse nests from year to year and are, therefore, sensitive to the removal of nesting structures.</p>	Candidate Habitat Present although limited
<i>Riparia riparia</i>	Bank Swallow	THR	THR	Habitat includes nest sites, foraging areas, and nocturnal roost sites. Build nest burrows in eroding vertical banks, such as lakeshore bluffs, riverbanks, and banks or stockpiles created in aggregate pits and construction sites.	Candidate Habitat Present

Scientific Name	Common Name	ESA Status	SARA Status	Habitat Requirements	Habitat Exists Within RSA
<i>Cardellina canadensis</i>	Canada Warbler	SC	THR	Northern from conifer swamps to riparian woodlands. Nests are commonly found in cool, damp, mixed forests with dense shrub layers. Nests are built hidden among dense ferns, mosses, and fallen logs.	Yes, bird has been previously observed in RSA
<i>Chaetura pelagica</i>	Chimney Swift	THR	THR	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys.	Candidate Habitat May be Present
<i>Chlidonias niger</i>	Black Tern	SC	No Status	Shallow freshwater marshes (> 20 ha.) with cattails and emergent vegetation interspersed with open water. Smaller wetlands with the same features also used.	No
<i>Chordeiles minor</i>	Common Nighthawk	SC	THR	Open ground; clearings in dense forests; peat bogs; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs	Candidate Habitat Present, bird has been previously observed in RSA
<i>Antrostomus vociferus</i>	Eastern Whip-poor-will	THR	THR	Dry, open, deciduous woodlands of small to medium trees; oak or beech with lots of clearings and shaded leaf litter, wooded edges; pine plantations.	Candidate Habitat May be Present
<i>Contopus virens</i>	Eastern Wood-pewee	SC	THR	Mostly associated with the mid-canopy layer of forest clearings and edges of deciduous and mixed forests; preferred habitats are intermediate-age forest stands and mature stands with little understory vegetation.	Candidate Habitat Present, bird has been previously observed in RSA
<i>Coccothraustes vespertinus</i>	Evening Grosbeak	SC	SC	This breeds in secondary growth and mature mixed forests; however, habitat selection is likely influenced by food availability, rather than habitat structure. Presence is most likely based on the presence of Spruce Budworm, a primary food source for this species.	Candidate Habitat Present
<i>Contopus cooperi</i>	Olive-sided Flycatcher	SC	THR	Semi-open, conifer forest; prefers Spruce, Jack Pine, and Balsam Fir; near pond, lake, or river; treed wetlands for nesting; burns with dead trees for perching	Candidate Habitat Present, bird has been previously observed in RSA
<i>Falco peregrinus anatum/tundrius</i>	Peregrine Falcon	SC	SC	Nests on cliff ledges or crevices, preferably 50 to 200 m in height, but sometimes on the ledges of tall buildings or bridges, always near good foraging areas.	No
<i>Euphagus carolinus</i>	Rusty Blackbird	SC	SC	Nests in the boreal forest; prefers shores of wetlands, peat bogs, swamps, and beaver ponds.	Candidate Habitat Present, bird has been previously observed in RSA

Scientific Name	Common Name	ESA Status	SARA Status	Habitat Requirements	Habitat Exists Within RSA
<i>Asio flammeus</i>	Short-eared Owl	SC	SC	Resides in open habitats, including arctic tundra, grasslands, peat bogs, marshes, sand-sage concentrations and old pastures. Preferred nesting sites are dense grasslands, as well as tundra with areas of small willows.	No
<i>Coturnicops noveboracensis</i>	Yellow Rail	SC	SC	Large, freshwater or brackish grass and sedge marshes with dense vegetation, including bullrushes, horsetails and grasses.	Candidate Habitat Present
<i>Acipenser fulvescens</i>	Lake Sturgeon	SC	SC	The Lake Sturgeon lives almost exclusively in freshwater lakes and rivers with soft bottoms of mud, sand or gravel. They are usually found at depths of 5 m to 20 m. They spawn in relatively shallow, fast-flowing water (usually below waterfalls, rapids, or dams) with gravel and boulders at the bottom. However, they will spawn in deeper water where habitat is available. They also are known to spawn on open shoals in large rivers with strong currents. The species occupies a wide variety of aquatic ecosystem types (e.g., stepped-gradient Boreal Shield rivers, low gradient meandering Prairie rivers, low gradient Hudson lowland rivers, Great Lakes and associated tributaries). Lake Sturgeon requires a variety of habitats to complete its lifecycle, and the species has evolved to exploit typical upstream to downstream hydraulic and substrate gradients. Hatch is contingent on aeration by flowing water, after which larvae apparently require gravel substrate in which to bury and remain while development continues. Once the yolk sac is absorbed, larvae drift downstream via water currents. Habitat requirements at the age-0 stage are not well understood but may not be as strict as previously assumed. Aside from the requirement of adequate benthic prey items, the habitat requirements for middle to later life stages (juveniles and adults) are not particularly narrow. Habitat trends vary across the species' range. In some areas, the construction of dams has ceased but, in other areas, it is expected to continue into the foreseeable future. Sediment and water quality has improved in many areas formerly affected by pollution from the pulp-and-paper industry. Large lakes/rivers > 20 m deep with soft mud, sand or gravel bottoms required.	Candidate habitat present

SC = Special Concern, THR = Threatened, END = Endangered

7.3.5.2.2 Background Information and Data

Many of the sources used for the other biological environment sections will also be used to inform the baseline for the Species at Risk VC. The following is a preliminary list of information and data sources that may be used to inform the baseline for the Wildlife and Wildlife Habitat VC.

- › iNaturalist.com;
- › Committee on the Status of Endangered Wildlife in Canada (COSEWIC) species status reports (various dates);
- › Ontario Species at Risk Evaluation Reports (COSSARO, various dates);
- › Species at Risk in Ontario (SARO) List;
- › MNRF Natural Heritage Information Centre (Geohub Ontario, 2022);
- › Significant Wildlife Habitat Technical Guide (MNR, 2000);
- › Significant Wildlife Habitat Mitigation Support Tool (MNRF, 2014a)
- › Significant Wildlife Habitat Ecoregion Criteria Schedules (MNRF, 2015a, 2017a);
- › Atlas of the Mammals of Ontario (Dobbyn, 1994);
- › Ontario Natural Heritage Information Centre databases (NDMNRF, 2021e);
- › Natural Heritage Reference Manual (MNR, 2010a);
- › Ontario Species at Risk (COSSARO, 2020);
- › Little Brown Myotis, Northern Myotis, and Tri-colored Bat in Ontario (Humphrey and Fotherby, 2019);
- › Little Brown Myotis, Northern Myotis, and Tri-colored Bat Ontario Government Response Statement (MECP, 2020c);
- › Wolverine Recovery Strategy (Ontario Wolverine Recovery Team, 2013);
- › Wolverine Government Response Statement (MOECC, 2016);
- › Woodland Caribou Recovery Strategy (Ontario Woodland Caribou Recovery Team, 2008);
- › Woodland Caribou Conservation Plan (MNR, 2009);
- › General Habitat Description for the Forest-dwelling Woodland Caribou (MNR, 2013b);
- › Range Management Policy in Support of Woodland Caribou Conservation and Recovery (MNRF, 2014c);
- › Integrated Range Assessment for Woodland Caribou and their Habitat. The Far North of Ontario 2013 (MNRF, 2014d);
- › Best Management Practices for Aggregate Activities and Forest-dwelling Woodland Caribou (MNRF, 2016);
- › Best Management Practices for Mineral Exploration and Development Activities and Woodland Caribou in Ontario (MECP, 2020d);
- › State of the Woodland Caribou Resource Report (MNRF, 2014e);

- › Best Management Practices for Renewable Energy, Energy Infrastructure, and Energy Transmission Activities and Woodland Caribou (MECP, 2020e);
- › Woodland caribou (*Rangifer tarandus caribou*) in the Far North of Ontario: background information in support of land use planning (Berglund et al., 2014);
- › Policy Guidance on Harm and Harass under the *Endangered Species Act* (MNRF, 2014f);
- › Categorizing and Protecting Habitat under the *Endangered Species Act* (MNR, 2012a);
- › Endangered Species Act Submission Standards for Activity Review and 17(2)(c) Overall Benefit Permits (MNR, 2021b);
- › Barn Swallow Recovery Strategy (Heagy et al., 2014);
- › Bank Swallow Recovery Strategy (Falconer et al., 2016);
- › Eastern Whip-poor-will Recovery Strategy (MECP, 2019b);
- › Bank Swallow Government Response Statement (MNRF, 2017c);
- › Barn Swallow Government Response Statement (MNRF, 2015b);
- › Eastern Whip-Poor-Will Government Response Statement (MECP, 2020f);
- › Bank Swallow General Habitat Description (MNRF, 2015c);
- › Barn Swallow General Habitat Description (MNR, 2013c);
- › Eastern Whip-poor-will General Habitat Description (MNR, 2013d);
- › Noront Resources Ltd. Eagle's Nest Project Terrestrial Baseline Studies: Mammals (Knight Piésold Consulting, 2013c);
- › Cliffs Chromite Project Environmental Assessment Terrestrial Wildlife Technical Supporting Documents (Golder, 2013g);
- › Eagle's Nest Project Environmental Impact Statement/Environmental Assessment Report (Knight Piésold Consulting, 2013a);
- › All-Season Community Road Study (Webequie First Nation et al., 2016);
- › Marten Falls All Season Road Project Winter Woodland Caribou and Moose Population and Distribution Surveys, Phase 2 (Zoetica, 2019);
- › Marten Falls First Nation, Terrestrial Existing Conditions Report, Northern Road Link (AECOM, 2020c);
- › Nibinamik-Webequie Community Road Baseline Environmental and Geotechnical Studies (2017-2018); and
- › Ongoing WSR and MFCAR studies and data (pending appropriate data sharing agreements).

7.3.5.2.3 Proposed Baseline Studies

Desktop Analysis

Numerous Indigenous/academic/NGO/governmental research studies, such as those mentioned above, have been conducted within and adjacent to the RSA. These studies provide data on the existing Species at Risk and their habitat in the region. A review of available reports, information on publicly available databases as well as information from ongoing studies such as the MFCAR and WSR studies (pending

data sharing agreements) will be conducted to identify the Species at Risk, and their habitat within the region within the region. A gap analysis of Species at Risk data will be completed as part of the desktop analysis to determine where additional baseline data collection may be required. A literature review will also be completed during the desktop survey that will assess the effects of similar projects and developments on Species at Risk.

The desktop analysis will include a habitat classification exercise based on interpretation of satellite imagery and other available datasets to determine potential vegetation communities and natural features (and as a result, potential Species at Risk habitat) within the RSA. For that program, original source data will be taken from the most recent Land Information Ontario (LIO) Wetland, Watercourse/Waterbody dataset, and the Far North Land Cover files. Digital satellite imagery will be sourced from the ArcGIS base maps. The Wildlife Habitat Technical Guide (MNR, 2000) will be used to define significant wildlife habitat based on the results of the habitat classification. The project straddles the border of the Hudson Bay Lowlands and Ontario Shield Ecozones. The project is also contained entirely within the James Bay and Big Trout Lake Ecozones (**Figure 7-4**). Ecozones 2E and 2W have no Ecological criteria Schedule exists at this time. However, existing schedules in other ecozones (3W and 3E) will be used along with the Technical Guide to classify habitat.

A query of government databases will also be conducted during this stage, and including those that will require sensitive data use agreements will be completed, as required. The desktop analysis will commence in 2022, and the results will be reported in a baseline study included with the EA. Preliminary results from the desktop will also be reported in the Species at Risk Study Plan, and assist with the design of field programs.

Field Studies

Many of the field studies described in **Sections 7.3.1 to 7.3.4** will obtain Species at Risk data as a result of their field programs. Point counts and acoustic surveys for both birds and bats will capture bird Species at Risk data as well, as ARUs will be deployed in locations and at times where bird Species at Risk may be found. For example, ARUs will be scheduled to record in esker habitat during times when Common Nighthawk and Eastern whip-poor-will are likely to be active (Knight et al., 2019). SAR bird species identified during field studies, especially during breeding season will be presumed to be nesting/breeding in the area. Aerial Distribution surveys will capture mammal data, including caribou and wolverine data.

Surveys began in 2021 and are ongoing. Detailed methods for all these surveys will be presented in the Species at Risk Study Plan being developed for this project. Targeted Species at Risk field programs will also take place if suitable habitat is identified in the desktop or field studies. To gather the information required to support the EA/IA, the following field surveys have been proposed that exclusively target Species at Risk:

- › Winter Aerial Distribution Surveys;
- › Field Collaring Programs (Caribou);
- › Significant Wildlife Habitat Field Classification (Verification of Desktop Results, ongoing);
- › Acoustic Bird Surveys using ARUs in locations where SAR may be found (ARUs deployed and data collected spring, summer, fall and winter over a 2 year period, ongoing);
- › Hair Snag and Camera Trap Surveys (Wolverine); and
- › Opportunist observations of Species at Risk (ongoing).

Table 7.3-12 provides a summary of data collection methods and applicability. Some surveys began in 2021, while others will begin in subsequent years. Surveys will likely continue for several years, and effort will be based on consultation with provincial and federal regulators. Additional studies may be initiated as a result of consultation with provincial or federal regulators.

Table 7.3-12: Summary of Data Collection – SAR Species

Species	Data Collection Methods	Data Applicability
Caribou	<ul style="list-style-type: none"> › Indigenous Consultation › Trapper Interviews and Harvest Records › Incidental field observations › MNRF Caribou Collaring data (subject to licensing agreement) › MECP General Habitat Descriptions (Missisa and Ozhiski Range) › Nearby study (WSR and MFCAR) data, pending data sharing agreements › Secondary sources review › Field Collaring Program › Winter Aerial Distribution Surveys 	<ul style="list-style-type: none"> › social value › life cycle › habitat requirements › seasonal habitat use › migration and movements › relative abundance and population status › winter distribution and location › sensitive periods (e.g., seasonal, diurnal and nocturnal)
Wolverine	<ul style="list-style-type: none"> › Indigenous Consultation › Trapper Interviews and Harvest Records › Nearby study (WSR and MFCAR) data, pending data sharing agreements › Incidental field observations › Hair Snag (DNA) and Camera Trap Surveys › Winter Aerial Distribution Surveys 	<ul style="list-style-type: none"> › social value › life cycle › habitat requirements › seasonal habitat use › migration and movements › relative abundance and population status › winter distribution and location › sensitive periods (e.g., seasonal, diurnal and nocturnal)
Bat Species at Risk (Little Brown Myotis, Northern Myotis, Tri-Coloured Bat)	<ul style="list-style-type: none"> › Indigenous Consultation › Aerial reconnaissance › Acoustic surveys (Acoustic surveys for bats will be conducted according to the methodology outlined in the MNRF guidance document Bat Survey Protocol for Treed Habitats (MNRF, 2017b)) › Nearby study (WSR and MFCAR) data, pending data sharing agreements › Field Bat Hibernacula and Maternity Roost Surveys (MNR, 2011) › Abandoned Mine Information System (NDMNRF, 2022) › Secondary sources review 	<ul style="list-style-type: none"> › social value › habitat requirements › relative abundance and population status › distribution and location › seasonal ranges (spring, summer and fall) › life cycle › sensitive periods (e.g., seasonal, diurnal and nocturnal)

Species	Data Collection Methods	Data Applicability
Bird Species at Risk	<ul style="list-style-type: none"> › Indigenous Consultation › Trapper Interviews and Harvest Records › Nearby study (WSR and MFCAR) data, pending data sharing agreements › Incidental field observations › Breeding Bird Point Count Surveys › Acoustic Recording Unit Surveys 	<ul style="list-style-type: none"> › social value › habitat requirements › relative abundance and population status › distribution and location › seasonal ranges (spring, summer and fall) › life cycle › sensitive periods (e.g., seasonal, diurnal and nocturnal)

7.3.5.3 Potential Project-related Effects

The following potential effects on the Species at Risk VC may be anticipated:

- › Habitat loss directly through vegetation clearing required for road construction, laydown areas, stockpiles, and excavations;
- › A loss or a reduction of available landscape features that contribute to Boreal Caribou winter habitat at a range scale as a direct result of vegetation clearing on the esker;
- › Habitat degradation caused by alterations in hydrology patterns, erosion, dust and air emissions, vegetation changes (including introduction of invasive species which may displace natural vegetation), reductions in habitat connectivity, loss of travel corridors, loss of migration routes, disruption to breeding and calving grounds, and habitat fragmentation/habitat avoidance. This in turn may lead to changes in survival and reproductive success;
- › Death of wildlife or reduction in habitat quality as a result of accidental releases of contaminants;
- › Sensory disturbance related to proximity (noise and visual) impacts from construction equipment, roadway traffic, and increased air traffic, which can affect habitat suitability and use is especially possible in species that are noise sensitive;
- › Loss of Species at Risk as a result of construction or vehicle collision;
- › Attraction of wildlife to construction camps or the road corridor (e.g., food waste, ease-of-use) which can affect predator-prey relationships and thus wildlife survival and reproduction; and
- › Increased harvest of wildlife, including SAR by humans for recreational or traditional use due to increased public access.

7.3.5.3.1 *Endangered Species Act* Permits and Authorizations

Construction and operation of the Project may have effects on species or species habitat (described above) protected by the Ontario *Endangered Species Act*. If such effects are unavoidable, authorizations or permits under these acts may be required in order to proceed with the Project. In order to collect adequate data to meet application requirements for these permits, data collection and study planning will follow guidelines published by both provincial and federal regulators (MNR, 2012b; MNR, 2012c; GoC, 2016). Species-specific surveys, where required, will be conducted according to appropriate protocols. These guidelines will be followed in all stages of the EA/IA, including project planning, field data collection, assessment of alternatives, assessment of Project effects, and during the development of mitigation measures.

7.4 Socio-Economic Environment

The EAR/IS will include the assessment of the socio-economic environment. The EA/IA will assess Project-related effects on the identified VCs summarized in **Table 7.4-1**.

Table 7.4-1: Preliminary VCs for the Socio-Economic Environment

Preliminary Valued Components
Section 7.4.1 Regional and Local Economy
Section 7.4.2 Community Services and Infrastructure
Section 7.4.3 Land Use and Recreation
Section 7.4.4 Community Safety

7.4.1 Regional and Local Economy

The EAR/IS will present in detail the assessment of Project-related effects on the Regional and Local Economy VC. Regional and local economy is defined as economic activity at both regional (limited to the RSA) and local (limited to the LSA) scales including employment, businesses and procurement, and the flow of goods and services. The Project has the potential to increase employment and business opportunities in road construction and the mining sector, as well as facilitating the supply of and reducing the costs of goods and services.

7.4.1.1 Preliminary Indicators

Table 7.4-2 summarizes the preliminary indicators and rationale for selection for the Regional and Local Economy VC effects assessment.

Table 7.4-2: Preliminary Indicators for the Regional and Local Economy VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Employment: <ul style="list-style-type: none"> › Employment and unemployment rates › Labour force participation rate › Jobs available 	Potential increase in employment and training opportunities. Potential for limited employment and training opportunities for women due to childcare and other domestic responsibilities.
Income: <ul style="list-style-type: none"> › Median annual income (total, after-tax, employment income) › Proportion of population with low income 	Community standards of living could increase with increased employment opportunities.
Cost of living: <ul style="list-style-type: none"> › Annual Average Consumer Price Index (CPI) › Monthly average retail prices for select products (e.g., food, fuel, transportation, health and personal care, recreation) › Average annual spending on goods and services per household 	Potential for reduction in price to goods and services due to future road network (e.g., food, access to services such as health care providers, travel, etc.).

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
<p>Government finances:</p> <ul style="list-style-type: none"> › Total Revenue by type (e.g., own source, consumption taxes, property taxes, capital taxes) › Total Expenditures by type (e.g., transportation, health, education, recreation and culture) 	Project may result in changes to government expenditures and provide revenue from taxation.
<p>Mining and forestry activity:</p> <ul style="list-style-type: none"> › Area (ha) or number of active mines › Area (ha) or number of mining claims › Area (ha) or number of potential tenures affected 	Potential effects on mining operations, forestry and mineral exploration industry.

7.4.1.2 Baseline Characterization

7.4.1.2.1 Preliminary Baseline Description

Baseline labour activity data from Statistics Canada (2017a)¹ shows that of those potentially interested or affected Indigenous communities² actively engaged in and eligible to participate in the labour market (the participation rate), the average employment rate is 40% while the average unemployment rate is 21%. The LSA communities have a similar employment rate of 41% with an average unemployment rate of 17%. By comparison, the average employment rate (based on the participation rate) of the cities, towns, or municipalities potentially interested in or affected by the Project is significantly higher at 61%, while their average unemployment rate is 9%.

7.4.1.2.2 Background Information and Data Sources

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Regional and Local Economy VC.

- › Statistics Canada Census Profiles (2016 census sources are listed; however, 2021 census data is being released throughout 2022) (Statistics Canada, 2021);
- › First Nation Profiles (Indigenous Services Canada, 2021);
- › Census Profile, 2016 Census – Thunder Bay (Statistics Canada, 2017b);
- › Census Profile, 2016 Census – Sioux Lookout (Statistics Canada, 2017c);
- › Census Profile, 2016 Census – Timmins (Statistics Canada, 2017d);
- › Census Profile, 2016 Census – Greenstone (Statistics Canada, 2017e);
- › Census Profile, 2016 Census – Pickle Lake (Statistics Canada, 2017f);
- › Draft Webequie First Nation Community Plan (Webequie Lands and Resources Department, 2021);
- › Community Documents such as land use plans, comprehensive community plans, economic development plans as available/accessible;
- › Community Well-Being Index (GoC, 2021d); and
- › Hardrock Project Environmental Assessment (Greenstone Gold, 2017).

¹ Based on 25% sample data

² Not all Indigenous communities and groups have employment data available

7.4.1.2.3 Proposed Baseline Studies

Baseline information collection for the Regional and Local Economy VC will rely on primary information (where available) and secondary information obtained from the 2016 and/or 2021 Censuses, Community Well-Being Index, and recent community documents (e.g., Land Use Plans (LUPs), Comprehensive Community Plans (CCPs), economic development plans). Primary information for the Regional and Local Economy VC will be collected for communities in the LSA through community surveys and interviews with band administration and council portfolio holders. The community documents and primary information will be especially important in providing more updated and potentially accurate information at the local scale.

Community scale baseline information including the number of community-owned businesses will be obtained through interviews in LSA communities with band administration staff and/or council portfolio holders (e.g., economic development); community documents such as economic development plans or Land Use Plans; and community surveys.

Community scale baseline information including the supply and costs of goods and services such as groceries will be obtained through interviews with band administration staff and community surveys. While some of the Indigenous communities potentially interested in and/or affected by the Project participated in a First Nations Food, Nutrition and Environment Study (2011 to 2012) that documented the average weekly cost of groceries for a family of 4 to be \$247, this information needs to be updated, and community-specific information is needed.

7.4.1.3 Potential Project-related Effects

The following potential effects on the Regional and Local Economy VC may be anticipated:

- › Changes in labour force participation and unemployment.
- › Changes to training and education programs.
- › Changes in income levels.
- › Changes in living costs including prices of goods.
- › Changes in municipal government revenues and costs.
- › Changes to area (ha) of significant aggregate deposits.

7.4.2 Community Services and Infrastructure

The EAR/IS will present in detail the assessment of Project-related effects on the Community Services and Infrastructure VC. Community services and infrastructure are the resources available to a community that assist in bettering the lives of its members. This may include housing, health care, emergency and protection services, childcare or eldercare, and water and waste management. Community services and infrastructure is a VC because of the potential for the Project to affect the ability of nearby communities to deliver physical and social infrastructure and services. The communities most likely to be affected are those that will provide Project-related services and infrastructure and may be places of residence of the Project workforce. Project effects on community infrastructure and services, both positive and adverse, are established based on the Project's need for workers, including those living in the region and Project-related in-migration of workers and their families, and its need for amenities, specifically community infrastructure. Housing availability and quality has been an important issue for many Indigenous communities in Canada.

7.4.2.1 Preliminary Indicators

Table 7.4-3 summarizes the preliminary indicators and rationale for selection for Community Services and Infrastructure VC effects assessment.

Table 7.4-3: Preliminary Indicators for the Community Services and Infrastructure Services VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
<p>Housing and accommodation:</p> <ul style="list-style-type: none"> › Rate of homeownership › Percent of household income on shelter costs › Vacancy rate › Average housing cost (by dwelling type) › Average rent (by dwelling type) › Total number of new housing starts and completions › Total number of individuals experiencing homelessness 	<p>Project requirements for worker accommodation (both off-reserve members or other workers) during construction and operations phases may result in temporary in-migration and increased demand for housing.</p> <p>Housing costs could increase due to increased demand</p> <p>Increased demand for housing could result in more overcrowded housing conditions.</p>
<p>Health care services:</p> <ul style="list-style-type: none"> › Inflow/outflow ratios › Average wait time for access to health care services (e.g., practitioner/doctor, mental health and family services, emergency services) › Percentage of population that has a regular health care provider › Total number of physicians in region/area 	<p>Potential changes to access to and quality of health care due to increased pressure from other workers in construction and operations phases.</p> <p>Increased availability due to better access to health care services.</p>
<p>Air transportation:</p> <ul style="list-style-type: none"> › Number of arrivals and departures by air › Passenger volume › Type of arrivals by air (e.g., resident/non-resident arrivals) 	<p>The Project may change the demand for air transit services due to the new all season road access created.</p>

7.4.2.2 Baseline Characterization

7.4.2.2.1 Preliminary Baseline Description

Examples of types of community services and infrastructure available at the regional scale to the LSA communities include housing, fire and ambulance services.

Both the LSA and RSA primarily fall into two Public Health Units in the North West and North East: the Thunder Bay District Health Unit and the Porcupine Health Unit. The Thunder Bay Health District Unit has six locations within the region. Specialized medical services are provided in Thunder Bay at the Thunder Bay Regional Health Centre. Community health programs focus on mental health, addiction, prenatal and maternal health. The Porcupine Health Unit has nine branch offices throughout Northeastern Ontario.

In addition, Health Canada funds the Muskeg Thunder Clinic, located in Ogoki Post, which operates five days per week. Health staff provide nursing services, health promotion and community health programs. Emergency medical services are provided in Greenstone with medivac aircraft used for transportation. Matawa First Nations Management Inc., Nishnawbe Aski Nation and the Ontario government provide family support, prevention and intervention programs within the MFFN community.

The Aroland Health Centre operates with the Aroland First Nation. The Health Centre provides services that promote physical and mental health for community members including coordinating home care and community health nurses, One-on-One prenatal care, coordinating clinics on immunization, sexual health and communicable diseases and programs for alcohol and drug abuse. The Family Well Being Program

assists each Indigenous community to design and deliver their own holistic, prevention-focused services/programs and cultural supports to promote a healthy community and support families as needed in the community. Activities and programs provided can include but are not limited to the following:

- › Activities that revitalize Native language
- › Alcohol and drug abuse prevention and intervention
- › Community events such as feasts
- › Family circles, counselling and child/youth support groups
- › Referrals to other programs and services
- › School programs
- › Traditional land-based healing events

Emergency services in the community include the Aroland First Nation Fire Department. Emergency medical services are provided by the Township of Nakina and the Township of Geraldton.

According to Statistics Canada (2017a), the average percentage of Indigenous homes considered not suitable (30%) and in need of major repairs (55%) is significantly higher compared to the Ontario averages of 6% for both indicators. The LSA communities reflect this comparison. Of the LSA communities, WFN has the highest percentage of homes considered not suitable (42%) as well as in need of major repairs (77%). A 2018 housing assessment was also completed for WFN. Of 168 houses surveyed, 103 or 61% of homes required remediation and repair, and it was recommended that 18 be condemned because of extensive repairs with costs totalling more than \$350,000. Thirty-one houses or 18% were considered overcrowded.

7.4.2.2.2 Background Information and Data Sources

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Community Services and Infrastructure VC.

Community Level

- › Indigenous communities and groups websites;
- › Information from local airports (e.g. traffic information):
 - Fort Hope Airport;
 - Lansdowne House Airport;
 - Summer Beaver Airport;
 - Ogoki Post Airport; and
 - Webequie Airport.
- › Draft Webequie First Nation Community Plan (Webequie Lands and Resources Department, 2021).

Statistics Canada Census Profiles:

- › First Nation Profiles (Indigenous Services Canada, 2021);
- › Census Profile, 2016 Census – Thunder Bay (Statistics Canada, 2017a);
- › Census Profile, 2016 Census – Sioux Lookout (Statistics Canada, 2017b);
- › Census Profile, 2016 Census – Timmins (Statistics Canada, 2017c);
- › Census Profile, 2016 Census – Greenstone (Statistics Canada, 2017c);
- › Census Profile, 2016 Census – Pickle Lake (Statistics Canada, 2017e);

- › Community Documents such as on-reserve housing assessments as well as land use plans, comprehensive community plans as available and accessible; and
- › Community Well-Being Index (GoC, 2021e).

Regional Level

- › Information from regional airports (e.g. traffic information):
 - Armstrong Airport;
 - Attawapiskat Airport;
 - Big Trout Lake Airport;
 - Carey Lake Airport;
 - Fort Albany Airport;
 - Geraldton (Greenstone Regional) Airport;
 - Hearst (René Fontaine) Municipal Airport;
 - Kasabonika Airport;
 - Kashechewan Airport;
 - Kingfisher Lake Airport;
 - Miminiska Airport;
 - Nakina Airport;
 - Thunder Bay International Airport (Thunder Bay Airport);
 - Angling Lake/Wapekeka Airport; and
 - Wunnummin Lake Airport.
- › Matawa First Nations website (Matawa First Nations, 2021);
- › Mushkegowuk Council website (Mushkegowuk Council, 2021);
- › Shibogama First Nations Council website (Shibogama First Nations Council, 2021);
- › Independent First Nations Alliance website (Independent First Nations Alliance, 2021);
- › Nokiwin Tribal Council website (Nokiwin Tribal Council, 2021);
- › Nishnawbe Aski Nation website (Nishnawbe Aski Nation, 2021); and
- › 211 Ontario North website (211 Ontario North, 2021).

7.4.2.2.3 Proposed Baseline Studies

Baseline information collection for the Community Services and Infrastructure VC will rely heavily on primary information (where available) and secondary information obtained from various community websites and other resources. Primary information for the Community Services and Infrastructure VC will be collected through community surveys and key informant interviews in LSA communities.

7.4.2.3 Potential Project-related Effects

The following potential effects on the Community Services and Infrastructure VC may be anticipated:

- › Changes in demand for accommodations and affordability.
- › Changes in demand on health care services.
- › Changes in demand on major roads and highway infrastructure.
- › Changes in demand on airports.

7.4.3 Land Use and Recreation

The EAR/IS will present in detail the assessment of Project-related effects on the Land Use and Recreation VC. Land use and recreation is defined as commercial and non-commercial recreational activities that take place in the vicinity of the Project. Land use and recreation is a VC because of the anticipated interactions between the Project and a variety of land use and recreation activities. The Project will intersect areas currently used for both commercial (e.g., mining, forestry, trapping and guide outfitting) and non-commercial (e.g., hunting, fishing and canoeing) land use. Land use and recreation is important to Indigenous communities and a wide variety of stakeholders.

7.4.3.1 Preliminary Indicators

Table 7.4-4 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Land Use and Recreation VC effects assessment.

Table 7.4-4: Preliminary Indicators for the Land Use and Recreation

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
<p>Outdoor recreation:</p> <ul style="list-style-type: none"> › Number of households participating in outdoor activities, by activity type (e.g., walking, cross-country skiing, trapping, ATV, snowmobiling, snowshoeing, hunting, fishing). › Increase of non-locals (tourists) using area for outdoor activities. 	Of importance to communities to identify, maintain and protect recreational features and pursuits.
<p>Parks and protected areas:</p> <ul style="list-style-type: none"> › Total disturbed area (ha) of provincial parks, ANSIs, IPCAs, and/or Conservation Reserves. 	Parks and protected areas have social, recreational, environmental and health/well-being values to communities and users.

7.4.3.2 Baseline Characterization

7.4.3.2.1 Preliminary Baseline Description

The Project is located on Crown land. The Project intersects registered traplines registered to MFFN and WFN community members. There are 5 traplines that intersect with the LSA. The total area covered by traplines within the LSA is just under 4 km² and the total area covered by traplines within the RSA is approximately 12,500 km².

No Areas of Natural and Scientific Interest (ANSIs) intersect the LSA, however two candidate ANSIs are located within the RSA. The two Candidate ANSIs are the Upper Ekwan River (Earth Science) and the Attawapiskat Upriver Section (Life Science). Approximately 254 km² of the Upper Ekwan River Candidate ANSI is located within the RSA and approximately 289 km² of the Attawapiskat Upriver Section Candidate ANSI is located within the RSA.

An ANSI is an area of land and/or water containing natural landscapes or features which have been identified as having life science or earth science (or both) values related to natural heritage protection, scientific study or education. Life Science ANSIs include specific types of forests, valleys, prairies and wetlands, their native plants and animals and their supportive environments. They contain relatively undisturbed vegetation and landforms and their associated species and communities. Earth Science ANSIs are geological in nature and consist of examples of the bedrock, fossil and landforms in Ontario and include examples of ongoing geological processes.

Candidate ANSIs are areas of natural and scientific interest that have been identified and recommended for protection by the NDMNRF (formerly the Ministry of Natural Resources) or other sources but have not been formally confirmed through the confirmation procedure. The NDMNRF confirms whether the ANSI is provincially, regionally, or locally significant.

Two provincial parks intersect the Regional Study Area (RSA). Approximately 88 km² of the Albany River Provincial Park intersects with the RSA and is located within 10K of the LSA. The Otonkwin-Attawapiskat River Provincial Park intersects with the LSA and approximately 190 km² of it intersects with the RSA.

7.4.3.2.2 Background Information and Data Sources

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Land Use and Recreation VC.

Community Level

- › Indigenous communities and groups websites;
- › Land use planning documents;
- › Draft Webequie First Nation Community Plan (Webequie Lands and Resources Department, 2021); and
- › Marten Falls First Nation Community Based Land Use Plan (in development).

Regional Level

- › Spatial data on existing planned land uses;
- › Land use plans (municipal, provincial and federal);
- › Matawa First Nations website (Matawa First Nations, 2021);
- › Mushkegowuk Council website (Mushkegowuk Council, 2021);
- › Shibogama First Nations Council website (Shibogama First Nations Council, 2021);
- › Independent First Nations Alliance website (Independent First Nations Alliance, 2021);
- › Nokiwin Tribal Council website (Nokiwin Tribal Council, 2021);
- › Nishnawbe Aski Nation website (Nishnawbe Aski Nation, 2021); and
- › 211 Ontario North website (211 Ontario North, 2021).

7.4.3.2.3 Proposed Baseline Studies

Baseline information collection for the Land Use and Recreation VC will rely heavily on primary information (where available) and secondary information obtained from various community websites and other resources. Primary information for the Land Use and Recreation VC is being collected through surveys and key informant interviews business owners, municipal staff or council portfolio holders in the LSA.

7.4.3.3 Potential Project-related Effects

The following potential effects on the Land Use and Recreation VC may be anticipated:

- › Changes in outdoor recreation use.
- › Changes to number and area (ha) of Provincial Parks, Areas of Natural and Scientific Interest (ANSI), and Conservation Reserves affected.

7.4.4 Community Safety

The EAR/IS will present in detail the assessment of Project-related effects on the Community Safety VC. Community safety is the experience of being protected from experiencing hurt, injury, or loss and includes the level of connectedness that community members have with one another, and with members of other communities in the region.

7.4.4.1 Preliminary Indicators

Table 7.4-5 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Community Safety VC effects assessment.

Table 7.4-5: Preliminary Indicators for the Community Safety VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Crime rate (domestic violence, sexual and physical assault) <ul style="list-style-type: none"> › Police-reported crime rate (by population and by type) › Incarceration rate 	Potential for increase in crime due to increased access to the community and presence of non-member construction workers in proximity to the community. Potential for increase in domestic violence, sexual assault, and physical assault due to increased access to the community and presence of non-member construction workers in proximity to the community. Vulnerable communities (e.g., may include women, elders, youth and gender diverse individuals) may be disproportionately affected by changes to crime rates.
Substance abuse: <ul style="list-style-type: none"> › Proportion of population with an addiction problem or substance use disorder › Total number of individuals seeking treatment for substance use › Rate of overdose deaths 	Project may increase rates of substance abuse due to increase in incomes and increased exposure/opportunities to obtain substances through greater outsider access to communities. Project may decrease rates of substance abuse due to increased employment opportunities. Potential for decreased capacity of emergency services due to the above.

7.4.4.2 Baseline Characterization

7.4.4.2.1 Preliminary Baseline Description

Baseline information collected through secondary information documents that violence-related deaths among Indigenous women is five times higher than the national average for Canadian women (Kuokkanen, 2011, cited in Bond and Quinlan [2018]). This includes various forms of financial abuse such as being denied knowledge of or access to family income (Brennan, 2011). Daoud et al. (2012) found that self-reported abuse toward Indigenous mothers was higher (31%) than that reported by non-Indigenous mothers (12%). The study also showed high proportions of abuse among lone mothers (35%). The severity of these issues is often exacerbated by the presence of industrial projects near Indigenous communities (Bond and Quinlan, 2018). It is not only rates of violence against Indigenous women and girls that is a concern with industrial camps and development projects, however, but also employment opportunities and economic benefits. Indigenous women are less likely to benefit from employment opportunities associated with resource development projects (Dalseg et al., 2018).

Further secondary information regarding crime rates and violence statistics was obtained from the Canadian Community Crime Tracker. These statistics are aggregated by the Police Department servicing the communities. The Nishnawbe Aski Police Service is responsible for the majority of the Indigenous communities, including the LSA communities. Total crime rates recorded by the Nishnawbe Aski Police

Service are about twice that recorded by the Thunder Bay OPP (Statistics Canada, 2021). Total violent and non-violent crime, as well as physical and sexual assault rates were higher in the Indigenous communities, while total drug violations were higher in the Thunder Bay area (Statistics Canada, 2021).

Secondary information also documents illicit drug use rates is high among youth in Ontario compared to many other provinces and there are significant regional differences in substance use rates among youth have been found in Ontario (e.g., between the province's Local Integrated Health Networks (LHINs)) with higher rates of certain substances (e.g., alcohol) reported in Northern Ontario. Prescription opioid use in particular has been found significantly higher among youth in Northern Ontario; accordingly, in 2014, the rate of methadone maintenance treatment patients per 100,000 among youth (ages 15 to 24) was approximately 2-fold and 6-fold higher among the North East and North West LHIN, respectively, compared to the other LHINs in Ontario (Kurdyak et al., 2018). Remote communities have been found to have critical service gaps for addictions and mental health needs and Northern and rural communities often have few mental health and addictions services; where these do exist, they are generally fragmented and disconnected from one another (Russell et al., 2019).

7.4.4.2.2 Background Information and Data Sources

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Community Safety VC.

Provincial, Regional, and National Scale

Data Sources for the Community Safety VC:

- › Crime Reported by Police Serving Areas where the Majority of the Population is Indigenous, 2018 (Allen, 2020);
- › Women in Canada: A Gender-based Statistical Report (Arriagada, 2016);
- › Indigenous Gender-Based Analysis for Informing the Canadian Minerals and Metals Plan (Bond and Quinlan, 2018);
- › Violent victimization of Aboriginal women in the Canadian provinces, 2009 (Brennan, 2011);
- › Gendered Environmental Assessments in the Canadian North: Marginalization of Indigenous Women and Traditional Economies (Dalseg et al., 2018);
- › Prevalence of Abuse and Violence Before, During, and After Pregnancy in a National Sample of Canadian Women (Daoud et al., 2012);
- › Just Facts: Indigenous Overrepresentation in the Criminal Justice System (Government of Canada Department of Justice, Research and Statistics Division, 2019).
- › Patterns of methadone maintenance treatment provision in Ontario: Policy success or pendulum excess? (Kurdyak et al., 2018);
- › From Indigenous Economies to Market-Based Self-Governance: A Feminist Political Economy Analysis (Kuokkanen, 2011);
- › Assessing service and treatment needs and barriers of youth who use illicit and non-medical prescription drugs in Northern Ontario, Canada (Russell et al., 2019);
- › Canadian Community Crime Trackers, 2018 data (Statistics Canada, 2021); and
- › Draft Webequie First Nation Community Plan (Webequie Lands and Resources Department, 2021).

7.4.4.2.3 Proposed Baseline Studies

Baseline information collection for the Community Safety VC will rely heavily on primary information at the community scale (where available) and secondary information obtained from sources such as Statistics Canada and academic sources. Primary information will be collected through community surveys and focus groups (the latter for the LSA potentially most affected communities), as well as in-depth interviews with social service and emergency service providers.

7.4.4.3 Potential Project-related Effects

The following potential effects on the Community Safety VC may be anticipated:

- › Changes to participation in social and/or cultural events.
- › Changes in crime rates.
- › Changes in rates of domestic violence, sexual and physical assault.
- › Changes in levels of substance use (e.g., drugs, alcohol).

7.5 Cultural Heritage Resources

The EAR/IS will present a description of the Cultural Heritage Resources and an assessment of Project-related effects on those resources. Cultural Heritage Resources VC is defined as existing archaeological resources (e.g., burial sites, registered or known archaeological sites, sacred sites) as well as built heritage resources and cultural heritage landscapes that may be affected by the Project. The VCs for this assessment are summarized in **Table 7.5-1**.

Table 7.5-1: Preliminary VCs for Cultural Heritage Resources

Preliminary Valued Component
Archaeological Resources
Cultural Heritage Resources

7.5.1 Preliminary Indicators

Table 7.5-2 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Cultural Heritage Resources effects assessment.

Table 7.5-2: Preliminary Indicators for Cultural Heritage Resources

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Archaeological resources	Archaeological resources include artifacts, archaeological sites, and marine archaeological sites, as defined under the <i>Ontario Heritage Act</i> . Archaeological resources may have spiritual or cultural importance to Indigenous communities. Project activities may disturb or damage archaeological resources, through ground disturbance activities (e.g., ROW clearing and grubbing, construction and use of pits and quarries), and vibration generated by heavy equipment (e.g., drilling, blasting and aggregate production).

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Built heritage resources and cultural heritage landscapes	<p>Built heritage features means a building, structure, monument, installation or any manufactured or constructed part or remnant that contributes to a property's cultural heritage value or interest as identified by a community, including an Indigenous community.</p> <p>Cultural heritage landscape means a defined geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including an Indigenous community. The area may include features such as buildings, structures, spaces, views, archaeological sites or natural elements that are valued together for their interrelationship, meaning, or association.</p> <p>Project activities may displace built heritage resources and cultural heritage landscapes by removal and/or demolition, and/or disruption of resources by the introduction of physical, visual, audible or atmospheric elements that are not in keeping with the character and setting of the resource. Deterioration of cultural resources may also happen as a result of environmental changes.</p>

7.5.2 Baseline Characterization

7.5.2.1 Preliminary Baseline Description

Some archaeological assessments have been undertaken in the broader region where the Project is located. Archaeological research to date for the region suggests that the area was occupied by humans as early as 7,000 years before present. These early humans, known as the Shield Archaic Culture, tended to locate themselves near caribou river crossings. Previous archaeological research has also shown that ungulates and fish were exploited by Aboriginal peoples from circa 1000 A.D. to contact with Europeans (Knight Piésold Consulting, 2013a). Evidence also suggests that the region was intensively used during the historic fur trade. Previous research has indicated that the area is located within a region that was explored by the mid-to-late 18th century. Additionally, there is a history of mining in the region spanning from the early 20th century until the present (Knight Piésold Consulting, 2013a). Although information on the archaeology of the region is limited, the Project's LSA and RSA contains areas with archaeological potential.

Baseline information on built heritage resources and cultural heritage landscapes for the LSA and RSA is limited. The Project is located on mainly undeveloped Crown lands, including the traditional land of both Webequie First Nation and Marten Falls First Nation. Traditional activities of First Nation community members include hunting, fishing and gathering as well as cultural and spiritual activities. The Albany River was used by Europeans as early as 1657 as a route to the west from James Bay. Several trading posts were established such as Marten Falls House, Henley House, and Gloucester House, all of which are in proximity to the study area. Although considered archaeological sites without above ground manifestations, area surrounding these might be considered as cultural heritage landscapes. Other potential cultural heritage landscapes might include built heritage features such as hunting and trapping camps as well as particular natural features such as sections of rivers, ranges of hills, or muskegs (AECOM, 2020a).

7.5.2.2 Background Information and Data

In addition to the general background information and data sources applicable to all VCs and listed in **Section 7.0**, the following is a preliminary list of information and data sources that may be used to inform the baseline for the Cultural Heritage Resources VC:

- › Archaeological investigations previously completed in the broader region where the Project is located.
- › Ontario Archaeological Sites Database.

7.5.2.3 Proposed Baseline Studies

The description of existing conditions in the EAR/IS will be based on archaeological assessment reports and cultural landscape information collected through consultation with Indigenous communities. The description will include an overview of the stages of archaeological assessment that have been completed that will include methods used and results. The assessment studies will include a Stage 1 archaeological assessment to identify known archaeological sites in the study area and define areas of archaeological potential. It will include recommendations on further archaeological stages that may be required or that there are no further archaeological concerns.

Stage 1 Archaeological Assessment

A Cultural Heritage Baseline Study will include a Stage 1 Archaeological Assessment that will document existing archaeological sites and identify areas of archaeological potential. Previously identified built heritage resources and cultural heritage landscapes will be identified through a review of existing published data and consultation with Indigenous communities and other stakeholders and agencies. The findings from this assessment will be included in a Cultural Heritage Report detailing existing conditions and a preliminary impact assessment will be submitted to the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), in accordance with the *Ontario Heritage Act* and *Standards and Guidelines for Consultant Archaeologists* (Ministry of Tourism and Culture, 2011) and the Ontario Provincial Policy Statement, 2020 (Ministry of Municipal Affairs and Housing, 2020). A summary of the report will be included in the EAR/EIS report.

Stage 1 Archaeological Assessment will establish protocols to be implemented in the event that unexpected archaeological finds are encountered during construction of the Project. These would include:

- › Notifying MHSTCI if any archaeological resources are impacted by the EA work. All activities impacting archaeological resources must cease immediately, and a licenced archaeologist is required to carry out an archaeological assessment in accordance with the *Ontario Heritage Act* and the *Standards and Guidelines for Consultant Archaeologists*.
- › If human remains are encountered, all activities must cease immediately and the local police and the Registrar, Burials of the Ministry of Government and Consumer Services (416-326-8800) must be contacted. In situations where human remains are associated with archaeological resources, MHSTCI should also be notified to ensure that the site is not subject to unlicensed alterations, which would be a contravention of the *Ontario Heritage Act*.

The Cultural Heritage Baseline Study will describe the existing baseline cultural heritage conditions within the study area by identifying known or potential archaeological sites, areas with archaeological potential, built heritage resources and cultural heritage landscapes and will include a historical summary of the study area.

The Cultural Heritage Baseline report will identify and describe potential project-specific impacts to the known and potential archaeological, built heritage resources and cultural heritage landscapes that have been identified. To assess potential effects to archaeological resources, the archaeological assessment will involve consultation with Indigenous communities, review of existing published data sources and information obtained from other stakeholders and agencies

The Cultural Heritage Baseline report will recommend measures to avoid or mitigate potential negative impacts to known or potential built heritage resources and cultural heritage landscapes. The proposed mitigation measures are to inform the next steps of project planning and design.

Should results of the Stage 1 archaeological assessment confirm archaeological potential within the corridor of the preferred alternative route, the next stage of archaeological assessment will be completed as early as possible before detailed Project design is completed. Recommendations advanced to Stage 2 archaeological assessment will be selected based on, but not limited to, the following considerations:

- › Desktop mapping to identify areas of archaeological potential;
- › Proximity to historic water sources or other areas identified as having archaeological potential based on the results of the Stage 1 archaeological assessment;
- › Professional judgment by a licensed archaeologist;
- › Available IK;
- › Consultation with the MHSTCI.

The results of the Stage 2 archaeological assessment will inform the need for further archaeological investigations where the effects to identified archaeological resources cannot be avoided through detail design. The Stage 2 report will include recommendations for management of archaeological resources that can be avoided and for a process for dealing with incidental finds.

Archaeological assessment(s) will be conducted by a licensed archaeologist and will meet the requirements of the Ontario Heritage Act and the Standards and Guidelines for Consultant Archaeologists (MTCS, 2011).

Built Heritage Resources and Cultural Heritage Landscapes

In addition to archaeological resources, which focus on specific localities and material remains of past occupation, there are also Cultural Landscapes that are of strong cultural heritage value. A Cultural Landscape is geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including Indigenous communities. The landscape may include features such as structures, spaces, archaeological sites or natural elements that are valued together for their interrelationship, meaning or association (Government of Ontario, 2014). The Cultural Landscapes within the study area will be identified and characterized following the process set out in the MHSTCI document 'Heritage Resources in the Land use Planning Process, Info Sheet #2: Cultural Heritage Landscapes' (Ministry of Culture, 2005). Since the Landscapes to be addressed are largely Associative (i.e., they do not consist of formal built structures or "neighbourhoods"), the key information sources will be IK and discussions with knowledgeable community members.

7.5.3 Potential Project-related Effects

The following potential effects on the Cultural Heritage Resources VC may be anticipated:

- › Disturbance, damage, or loss of, registered archaeological sites, burial sites and sacred sites.
- › Disturbance, damage, or loss of, known burial sites and sacred sites.
- › Disturbance, damage, or loss of, built heritage resources.
- › Disruption of cultural heritage landscapes by introduction of physical, visual, audible or atmospheric elements that are not in keeping with the character and setting of cultural heritage resources.

7.6 Human Health

The EAR/IS will include the assessment of the human health environment. For the purposes of this assessment, human health is defined as the components of the environment that may be affected by the Project that have the potential to interact with human health. These components include air quality, noise, country foods, surface and groundwater. The preliminary VCs for this assessment are summarized in **Table 7.6-1**.

Table 7.6-1: Preliminary VCs for Human Health

Preliminary Valued Component
Human Health

7.6.1 Preliminary Indicators

Table 7.6-2 identifies preliminary indicators and includes the definition and rationale for their inclusion in the Human Health VC effects assessment.

Table 7.6-2: Preliminary Indicators for the Human Health VC

Preliminary Indicators	Definition and Rationale for Inclusion in the VC Assessment
Air quality	The Project may alter air quality which could have an effect on human health.
Noise	The Project may alter noise levels which could have an effect on human health.
Country foods	The Project may alter contaminant levels in harvested country food items (e.g., fish, game mammals and birds, berries, other terrestrial and aquatic vegetation).
Surface water and groundwater quality	The Project may alter surface water and groundwater quality which could have an effect on human health.
Soil quality	The Project may alter soil quality which could have an effect on human health.

7.6.2 Baseline Characterization

7.6.2.1 Preliminary Baseline Description

In addressing potential health issues, the EA/IA will examine human health by assessing potential changes in surface water and groundwater quality, air quality, and noise likely to result from Project activities. These changes can act as pathways to potential effects on human health. These criteria will be drawn upon to inform the human health assessment in the EAR/IS.

7.6.2.2 Background Information and Data

There are currently no background information and data relevant to the Human Health VC. Anticipated baseline data sources that will be evaluated include, but may not be limited to:

- › MFCAR, WSR, and NRL baseline conditions reports;
- › MFCAR, WSR, and NRL surface water and/or groundwater reports;
- › MFCAR, WSR, and NRL air quality reports;
- › Human and ecological risk conducted for the Integrated Transportation System for Cliffs Ferroalloys (Golder, 2013k);
- › Mercury Studies among the Cree of Eeyou Istchee (Schoen et al., 2005); and
- › Any reports that document soil chemistry and/or country food item chemistry data, as well as study area community country food item consumption rates and frequencies.

7.6.2.3 Proposed Baseline Studies

Desktop Analysis

A desktop analysis of existing information sources will be completed to compile existing data and identify information gaps that will need to be addressed through further study including potentially primary data collection activities.

Primary and Secondary Data Collection

Primary data collection activities are anticipated to include efforts to solicit information on activity patterns and particularly country food harvesting and consumption patterns through the IK Program and consultation and engagement activities.

If the problem formulation step of the Human Health Risk Assessment (which is the initial component of the overall Human Health assessment) identifies that an assessment of country food consumption is required, a country foods tissue sampling program will be developed to generate primary data on potential Project-related contaminant levels in country foods. This program will involve working with Indigenous communities to collect appropriate tissue samples from commonly harvested country food items.

7.6.3 Potential Project-related Effects

The following potential effects on the Human Health VC may be anticipated:

- › Changes in air quality, noise levels and water quality may affect human health.
- › Changes to contaminant levels in harvested country food items may affect human health.

8 Climate Change Assessment

The EAR/IS will include a climate change assessment that will incorporate three main considerations as per the guide *Considering Climate Change in Environmental Assessment in Ontario* (MOECC, 2017):

- › The impacts of the Project on climate change (i.e., GHG emissions related to construction, commissioning, operation and maintenance);
- › The impacts of climate change on the Project (i.e., Climate Change Resilience Assessment on the access road corridor and supporting infrastructure); and
- › Identifying and minimizing negative climate change impacts during implementation of the Project (i.e., options for climate impact risk reduction for the access road corridor and supporting infrastructure).

The climate change assessment will respond to MECP's expectation that the proponent takes into account:

- › The Project's expected production of greenhouse gas emissions and impacts on carbon sinks (i.e., climate change mitigation); and
- › Vulnerability and resilience of the Project and adjacent ecosystems to changing climatic conditions (i.e., climate change adaptation).

8.1 Impacts of the Project on Climate Change

The Project is expected to produce greenhouse gases that contribute to trending changes in climatological parameters. These emissions will primarily be exhausted from construction equipment and vehicles during the construction phase; and emissions from vehicles travelling on the road and vehicles and equipment engaged in maintenance activities during the operations phase.

The Project will also create changes to the landscape (e.g., permanent removal of peatland and forested areas), potentially resulting in reductions in the ability of these terrestrial carbon sinks to capture and store carbon, which, in turn, may contribute to climate change.

In addition, the Project in combination with climate changes, may increase the risk and vulnerability of immediately adjacent and downstream ecosystems to the effects of climate change (e.g., erosion in watercourse channels as a result of increased impervious surfaces combined with higher water levels in flood seasons; lower contributions to downstream riparian flows/water levels due to barrier effects).

The assessment of effects of the Project on climate change will quantify and qualify the Project's contribution to climate change due to GHG emissions and changes to the landscape that may affect the removal or storage of carbon dioxide (e.g., carbon sinks). Ecosystem sensitivities to climate change will be assessed by each applicable VC, using climate change data analytics (e.g. projected ranges in temperature, precipitation) developed for the climate change assessment. Similarly, applicable VC assessments will contribute information regarding Project-related effects to climate change. The following VC assessments will inform the climate change assessment:

- › Greenhouse Gas Emissions (**Section 7.2.2**)
- › Groundwater (**Section 7.2.4**)
- › Surface Water (**Section 7.2.5**)
- › Geology, Terrain and Soils (**Section 7.2.6**)
- › Plants and Vegetation Communities (**Section 7.3.4**)

These VC assessments will consider Project mitigation measures to reduce potential GHG emissions and to avoid or minimize the alteration of landscapes that may impact carbon dioxide removal or storage.

8.2 Impact of Climate Change on the Project

The EA/IA's climate change assessment will consider how the effects of climate change, including shifts in the ranges of key meteorological variables and changes in extreme weather events (e.g., flooding, extreme temperatures, wind, wildfires) may impact the Project (road corridor and supporting infrastructure) and assess the Project's vulnerability and resilience to climate change. The climate change assessment will identify options for reducing identified climate risks to acceptable levels, providing information that will support decisions on how the Project will be designed, built, and operated to withstand future projected climate conditions, and include considerations for adaptive management. The climate change resilience assessment will align with principles and approaches described in ISO 31000 (Guide to Risk Management) and ISO 14091 (Adaptation to Climate Change – Guidelines on vulnerability, impacts and risk assessment).

8.3 Identification and Mitigation of Climate Change Impacts

The climate change assessment will describe proposed Project features to mitigate the emissions responsible for driving climate change (e.g., the use of different technologies, energy efficiency, waste reduction measures, building materials, site revegetation). Proposed mitigation may be identified from, but not be limited to, the following sources:

- › IK/ILRU obtained through consultation with Indigenous communities;
- › Regulatory guidance;
- › Best industry practices;
- › Scientific literature;
- › Municipal emergency management plans; and
- › Regional government plans and master plans.

9 Commitments

The EAR/IS will include a description of the commitments made during the development of the EA/IA.

In accordance with Section 5.2.8 of the ToR Code of Practice (MOE, 2014a), the EAR/IS will include a comprehensive list of commitments made by the proponent during the course of EA/IA, and how they will be addressed. These commitments may relate to the Project construction, operations and maintenance, mitigation measures, consultation/engagement with other Indigenous communities and compliance monitoring.

The proponent is committed to environmental protection, responsible environmental management and overall stewardship of the land, consistent with their cultural/spiritual beliefs and their respect for and connection to the land and water. The Project will be carried out in full compliance with federal/provincial laws and best management practices and environmental procedures for road construction and operations. In relation to Indigenous rights and interests, the Project will adhere to all commitments and monitoring developed during consultation and engagement with Indigenous Communities. The EA/IA will inform the Project design, construction and operations to allow for efficient use of resources, prevent pollution and reduce environmental effects to the greatest extent reasonably achievable.

Appendix E contains the commitments made during the ToR stage of the Project.

10 Monitoring

The Project will be carried out in full compliance with federal/provincial laws and best management practices and environmental procedures for road construction and operation. The proponent will prepare a monitoring framework which will initially be developed during the EA/IA. The EAR/IS will include a description of the monitoring programs that have been recommended during the development of the EA/IA. In relation to Indigenous rights and interests, the Project will adhere to all commitments and monitoring developed during consultation and engagement with Indigenous communities. The monitoring framework will detail monitoring activities during the construction and operation phases of the Project, related to Aboriginal and Treaty Rights and Interests, the Physical Environment, the Biological Environment (including Species at Risk), the Socio-economic Environment and Cultural Heritage Resources. The framework for monitoring will be identified for each Project phase (construction and operations, including decommissioning of temporary construction support works) and will be based on the follow-up strategies identified for the Project (**Section 6.8**). The Project will be operated for an indeterminate period (i.e., as a permanent facility) and therefore, decommissioning/retirement of the Project is not anticipated. As such, a decommissioning monitoring program will not be included in the EA/IA, although monitoring associated with decommissioning of temporary supporting infrastructure will be conducted as part of the construction and operation monitoring programs. The EAR/IS include a conceptual monitoring plan to encompass two types of monitoring, as follows:

- › Compliance monitoring; and
- › Effects monitoring.

Compliance monitoring is the assessment and evaluation of whether an undertaking has been constructed, implemented and/or operated in accordance with commitments made during the EA/IA, and any conditions of the EA/IA approval and other approvals required to implement the Project. Monitoring programs will be designed to monitor specific mitigation measures required by approvals needed for the Project (such as Species at Risk *ESA* authorizations). A register of commitments will be developed during the EA/IA and included in the EAR/IS. These commitments will form the basis for the development of the monitoring and follow-up programs. Consistent with EAR/IS commitments, it is expected that the proponent will continue external notification and engagement/consultation with Indigenous communities, government ministries and agencies and stakeholders after completion of the EAR/IS. The proponent will also develop a monitoring strategy that sets out how and when all commitments made in the EAR/IS will be fulfilled and how they will report to the MECP regarding compliance.

The compliance monitoring program will be further described in the EAR/IS, including the preparation of supporting plans, such as an Environmental Management Plan and discipline-specific management plans, to meet the commitments identified during the EA/IA. The duration of the monitoring and follow-up programs will vary and will depend on the conditions of EA/IA approval and other applicable permits and approvals granted by regulatory bodies.

Effects monitoring involves activities designed to verify the predictions of the effects assessment (e.g., water quality and effects on fish communities), and to verify the effectiveness of mitigation measure(s). The effects monitoring program will initially be developed during the latter stages of the EA/IA. Both physical and risk-based monitoring of the effects and associated mitigation will be employed, where appropriate.

Construction and operational monitoring will identify actual effects, assess the effectiveness of the mitigation/restoration/enhancement measures to minimize (or in the case of potential benefits optimize these effects), and evaluate the need for any additional action to meet environmental commitments and obligations and confirm that mitigation/restoration/enhancement measures are effective.

11 Flexibility to Accommodate New Circumstances

The Project, as described in this ToR, is based upon a conceptual level of design information, and does not represent the final design, location and scope of the proposed undertaking. The preferred corridor and routing for the Project has not yet been determined. Changes to the Project design may be made to accommodate Indigenous community, government ministry and agency, public or stakeholder concerns, such as protection/avoidance of cultural or spiritually significant sites, sensitive traditional land use areas (e.g., hunting, gathering, trapping) and environmental features of importance that include, among others: Environmentally Sensitive Areas, waterbodies, wetlands, rare vegetation communities or SWH. Changes may also be made due to engineering considerations as the Project is further developed. The proponent will document how design decisions were made in the context of the issues raised by its community members, other Indigenous communities, provincial/federal ministries and agencies, the public and stakeholders. Changes may also be made based on ongoing engineering design, the results of baseline characterization and of the effects assessment. These factors could result in the alteration of technically and economically feasible alternative methods of carrying out the Project, including the alignment of the road corridor identified during the ToR phase, before the proposed or final undertaking (i.e., the Project) is confirmed and presented in the EAR/IS.

Therefore, the proposed Project presented in this ToR by MFFN and WFN should be viewed as a preliminary description, which is subject to change as the Project evolves during the EA/IA.

In accordance with subsection 6.1(1) of the EA Act, the proponent recognizes that the EA/IA must be conducted in accordance with the approved ToR. Notwithstanding, the proponent is aware that unforeseen circumstances may arise that could prevent the commitments in the ToR from being met. As such, flexibility has been incorporated into this ToR, where appropriate, to accommodate new circumstances or issues/concerns that may arise as the EA/IA progresses and the design advances for the Project. In this regard, it is understood that certain aspects of the ToR may be adjusted without the need to re-start the provincial EA process. For this reason, the ToR has not committed to the precise route or alignment for the road within the alternative corridors.

For the purposes of preparing this Proposed ToR, flexibility is defined to include a variation or modification to the ToR itself, such as changes in approach to engagement with Indigenous communities, project description, VC/indicator selection, study area refinements, baseline characterization, and effects assessment. For example, through engagement with Indigenous communities and participating regulatory bodies during the EA, it may be necessary, advisable or beneficial to change the local or regional study area boundaries for collection of additional IK/ILRU or scientific data. Therefore, to provide flexibility, the ToR has not established detailed existing conditions or a full suite of potential environmental effects, as these will be determined during the EA/IA and presented in the EAR/IS.

Any proposed minor modifications to the ToR will be discussed with MECP prior to proceeding with the change.

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