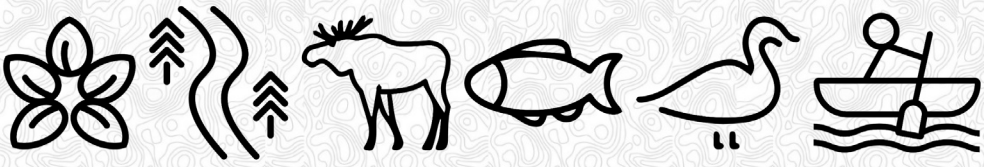
MARTEN FALLS FIRST NATION
ALL SEASON COMMUNITY ACCESS ROAD

FINAL

Vegetation Study Plan

May 2021



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Revision History

Rev #	Date	Revision Description
Draft	May 2020	Submitted “Study Plan – Vegetation DRAFT FOR DISCUSSION” to the Agency
Final	May 2021	Revised to address federal and provincial agency comments

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Acronyms

Agency, the ... Impact Assessment Agency of Canada
CAR ..... Community Access Road
EA ..... Environmental Assessment
ELC ..... Ecological Land Classification
GIS ..... Geographic Information System
IA ..... Impact Assessment
IS ..... Impact Statement
ISO ..... International Organization for Standardization
km ..... kilometre
LiDAR ..... Light Detection and Ranging
LSA ..... Local Study Area
m ..... metre
MECP ..... Ontario Ministry of the Environment, Conservation and Parks
MFFN ..... Marten Falls First Nation

MNRF ..... Ontario Ministry of Natural Resources and Forestry
PDA ..... Project Development Area
RSA ..... Regional Study Area
SAR ..... Species at Risk
SOCC ..... Species of Conservation Concern
TISG ..... Tailored Impact Statement Guidelines
ToR ..... Terms of Reference
VC ..... Valued Component

1. Introduction

The Proponent of the Community Access Road (CAR or the Project) is Marten Falls First Nation (MFFN), a remote First Nation community in northern Ontario located at the junction of the Albany and Ogoki rivers, approximately 430 kilometres (km) from Thunder Bay, Ontario. The MFFN community is proposing an all-season Community Access Road that will connect the MFFN community to Ontario's provincial highway network (Highway 643) to the south via the existing Painter Lake Road. MFFN, as the Proponent of the Project, has formed a MFFN CAR Project Team that includes MFFN CAR Community Member Advisors and MFFN CAR Project Consultants who act with input, guidance and direction from the MFFN Chief and Council.

This document outlines the Study Plan for Vegetation to support a coordinated Impact Assessment (IA) required for Project review by the Impact Assessment Agency of Canada (the Agency) under the federal *Impact Assessment Act* and Environmental Assessment (EA) required for Project review by the Ontario Ministry of the Environment, Conservation and Parks (MECP) under the Ontario *Environmental Assessment Act*.

1.1 Federal and Provincial Terminology

The study plans have been prepared using federal terminology, however, the respective provincial terminology has been provided in **Table 1-1** for reference. The terms can be used interchangeably.

Table 1-1: Equivalent Federal and Provincial Terms

Provincial Term	Federal Term
Criteria	Valued Component
Impact Management Measure	Mitigation Measure
Net Effects	Residual Effects
Record of Consultation	Record of Engagement

For the purposes of this study plan, Species at Risk (SAR) and Species of Conservation Concern (SOCC) are defined as the following:

- **SAR:**
  - Any species listed under Schedule 1 of the federal *Species at Risk Act*, S.C. 2002, c. 29 as Threatened, Endangered, or Extirpated; and / or,

- Any species listed under the provincial *Endangered Species Act, 2007*, S.O. 2007, c. 6 as Threatened, Endangered, or Extirpated.

- **SOCC:**
  - Any species listed under Schedule 1 of the federal *Species at Risk Act* as Special Concern;
  - Any species designated Threatened, Endangered, or Extirpated by the Committee on the Status of Endangered Wildlife in Canada (unless otherwise listed as SAR under the *Species at Risk Act* or the *Endangered Species Act*);
  - Any species listed under the *Endangered Species Act* as Special Concern (unless otherwise listed as SAR under *Species at Risk Act*); and / or
  - Any species with a subnational rank (SRank[1]) of S1 – S3[2] as designated by the Natural Heritage Information Centre (MNRF 2010)

The *Provincial Policy Statement, 2020* protects Significant Wildlife Habitat in Ontario. Significant Wildlife Habitat is defined in the *Natural Heritage Reference Manual* (MNRF, 2010) as the following:

- Habitats of seasonal concentrations of animals
  - areas where animals occur in relatively high densities for the species at specific periods in their life cycles and / or in particular seasons; and
  - seasonal concentration areas, which tend to be localized and relatively small in relation to the area of habitat used at other times of the year.
- Rare vegetation communities or specialized habitat for wildlife
  - rare vegetation communities include:
    - areas that contain a provincially rare vegetation community; and
    - areas that contain a vegetation community that is rare within the planning area.

1. *A Subnational rank or SRank is a conservation status of a species or plant community within Ontario considering factors such as abundance, distribution, population trends and threats.*
2. *S1 **Critically Imperiled** — Critically imperilled in Ontario. Species with S-ranks of S1 usually have 5 or fewer occurrences in the province or very few remaining individuals. Such species are often especially vulnerable to extirpation.*
   *S2 **Imperiled** — in Ontario. Such species usually have between 6-20 occurrences in the province or have many individuals in fewer occurrences. These species are often susceptible to extirpation.*
   *S3 **Vulnerable** — in Ontario. Such species usually have between 21-100 occurrences in the province. They may also have fewer occurrences but have a large number of individuals in some populations. These species may be susceptible to large-scale disturbances.*

  - specialized wildlife habitats include:
    - areas that support wildlife species that have highly specific habitat requirements;
    - areas with exceptionally high species diversity or community diversity; and
    - areas that provide habitat that greatly enhances species' survival.

- Habitat of SOCC
  - includes the habitat of species that are rare or substantially declining, or have a high percentage of their global population in Ontario;
  - includes Special Concern species identified under the *Endangered Species Act* on the SAR in Ontario (SARO) List, which were formally referred to as "vulnerable" in the Significant Wildlife Habitat Technical Guide;
  - species identified as nationally Endangered or Threatened by Committee on the Status of Endangered Wildlife in Canada, which are not protected in regulation under Ontario's *Endangered Species Act*; and
  - excludes habitats of Endangered and Threatened species covered under *Provincial Policy Statement* policy 2.1.3(a).
- Animal movement corridors
  - habitats that link two or more wildlife habitats that are critical to the maintenance of a population of a particular species or group of species; and
  - habitats with a key ecological function to enable wildlife to move, with minimum mortality, between areas of Significant Wildlife Habitat or core natural areas.

1.2 Project Study Plans

This Study Plan is one of a group of study plans created for the Project. **Table 1-2** includes the study plans for each environmental[3] discipline currently planned for the Project and the valued components (VCs) covered by the study plans where applicable.

3. *The use of the term environment in this document is inclusive of the components of the environment that are included in the Ontario Environmental Assessment Act definition, which includes a general description of the social, cultural, built and natural environments.*

Table 1-2: Project Study Plans and Valued Components

Environmental Discipline	Study Plan Name	Valued Component(s)
Aboriginal and Treaty Rights and Interests	■ Aboriginal and Treaty Rights and Interests Study Plan	■ Indigenous Current Use of Lands and Resources for Traditional Purposes ■ Cultural Continuity (ability to practice and transmit cultural traditions)
Atmospheric Environment	■ Atmospheric Environment Study Plan	■ Air Quality ■ Greenhouse Gas Emissions
Climate Change	■ Climate Adaptation and Resiliency Study Plan	■ Climate Change
Acoustic and Vibration Environment	■ Acoustic and Vibration Environment Study Plan	■ Noise ■ Vibration
Physiography, Geology, Terrain and Soils	■ Physiography, Terrain and Soils Study Plan	■ Physiography, Terrain and Soils
Surface Water	■ Surface Water Study Plan	■ Surface Water
Groundwater and Geochemistry	■ Groundwater and Geochemistry Study Plan	■ Groundwater
Vegetation	■ Vegetation Study Plan	■ Wetland and Riparian Ecosystems ■ Upland Ecosystems ■ Designated Areas (Areas of Natural and Scientific Interest, Environmentally Significant Areas, Significant Woodlands, Critical Landform / Vegetation Associations) ■ Traditional Use Plants and SAR Plant Populations (including species with special conservation status or rarity in the province)
	■ Peatlands Study Plan	■ Peatland Ecosystems (bogs and fens)
Wildlife	■ Wildlife Study Plan	■ Bats (including SAR-bats such as: Little Brown Myotis [*Myotis lucifugus*], Northern Myotis [*Myotis septentrionalis*] and Tricolored Bat [*Perimyotis subflavus*]) ■ Fur Bearers (proxy VC[4] American Marten [*Martes americana*], Beaver [*Castor canadensis]* and Wolverine [*Gulo gulo*]) ■ Amphibians and Reptiles ■ Pollinating Insects
	■ Ungulates (Moose and Caribou) Study Plan	■ Moose (*Alces alces*) ■ Caribou, boreal population (*Rangifer tarandus*)
	■ Bird Study Plan	■ Forest Birds (proxy VC of Red-eyed Vireo [*Vireo olivaceus*] for deciduous forest, Ovenbird [*Seirus aurocapilla*] for mixedwood forest, Dark-eyed Junco [*Junco hyemalis*] for coniferous forest and disturbed forest

[4] *A proxy VC is used when looking at the effects of one species that represents many others.*

Environmental Discipline	Study Plan Name	Valued Component(s)
		■ Raptors (proxy VC of Osprey [*Pandion haliaetus*] for diurnal raptors and Boreal Owl [*Aegolius funereus*] for nocturnal raptors ■ Shorebirds (proxy VC of Wilson's Snipe [*Gallingo delicata*]) ■ Waterfowl (proxy VC of Mallard [*Anas platyrhynchos*]) ■ Bog / Fen Birds and Other Wetland Birds (proxy VC of Palm Warbler [*Setophaga palmarum*] for bogs, Common Yellowthroat [*Geothlypis trichas*] for fens; and Northern Waterthrush [*Parkesia noveboracensis*] for swamps . ■ SAR birds: Canada Warbler (*Cardellina canadensis*), Chimney Swift (*Chaetura pelagica*), Common Nighthawk (*Chordeiles minor*), Eastern Whip-poor-will (*Antrostomus vociferous*), Eastern Wood-Pewee (*Contopus virens*), Evening Grosbeak (*Coccothraustes vespertinus*), Olive-sided Flycatcher (*Contopus cooperi*), Bald Eagle (*Haliaeetus leucocephalus)*, Peregrine Falcon (*Falco peregrinus*), Short-eared Owl (*Asio flammeus)*, Bank Swallow (*Riparia riparia*), Barn Swallow (*Hirundo rustica*), Black Tern (*Childonias niger*), Rusty Blackbird (*Euphagus carolinus*), Yellow Rail (*Coturnicops noveboracensis*)
Fish and Fish Habitat	■ Fish and Fish Habitat Study Plan	■ Lake Sturgeon (*Acipenser fulvescens*) ■ Walleye (*Sander vitreus*) ■ Brook Trout (*Salvelinus fontinalis*) ■ Northern Pike (*Esox lucius*) ■ Lake Whitefish (*Coregonus clupeaformis*) ■ Chain Pickerel (*Esox niger*) ■ Yellow Perch (*Perca flavescens*) ■ Cisco (*Coregonus artedii*) ■ Burbot (*Lota lota*) ■ Longnose Sucker (*Catostomus catostomus*) ■ White Sucker (*Catostomus commersonii*) ■ Forage / Prey Species (including species such as Lake Chub [*Couesius plumbeus*]) ■ Lower Trophic Organisms (e.g., benthic invertebrates)
Social	■ Social Study Plan	■ Housing and Accommodation ■ Community Service and Infrastructure ■ Transportation ■ Community Well-being ■ Populations and Demographics
Economy	■ Economic Study Plan	■ Regional Economy ■ Labour Force and Employment ■ Government Finances

Environmental Discipline	Study Plan Name	Valued Component(s)
Land and Resource Use	■ Land and Resource Use Study Plan	■ Land Use Compatibility ■ Parks and Protected Areas ■ Extractive Industry ■ Forestry Industry ■ Energy and Linear Infrastructure ■ Recreation and Tourism
Human Health and Community Safety	■ Human Health and Community Safety Study Plan	■ Public Safety ■ Public Health ■ Diet ■ Environmental Factors Influencing Health
Visual Aesthetics	■ Visual Aesthetics Study Plan	■ Visual Contrast / Character ■ Visibility ■ Visual Sensitivity
Archaeological and Cultural Heritage	■ Cultural Heritage Study Plan	■ Archaeological Sites and Resources ■ Built Heritage Resources and Cultural Heritage Landscapes

It should be noted that while there is not a consultation study plan, the Project has developed the *Consultation and Engagement Plan to Support the Environmental Assessment / Impact Statement* (AECOM 2020) (referred to as the Impact Statement [IS] / EA Consultation Plan).

2. Purpose and Objectives

The key objectives of conducting an IA / EA are to describe the existing environment, gather sufficient information to predict Project-related effects (positive and negative, direct and indirect) of the Project and alternatives on the environment, determine measures needed to avoid or minimize adverse Project effects, and enhance beneficial Project effects where feasible, and to undertake consultation and engagement throughout.

The purpose of this Study Plan is to explain:

- A baseline[5] study methodology that will result in a comprehensive description of the existing environment potentially impacted by the Project;
- How efficient and transparent data management and analysis will be undertaken;
- Effects assessment scoping inputs specific to Vegetation that will allow for potential effects of the Project on the existing environment to be appropriately assessed in the IS / EA Report; and
- How the Study Plan aligns with federal and provincial requirements and guidance, including the Agency's Tailored Impact Statement Guidelines (TISG), dated February 24, 2020 (the Agency 2020b), for this Project and applicable provincial agency comments on the Draft Terms of Reference (ToR)[6].

As required by the *Impact Assessment Act* and referenced in TISG Section 7.3, work plans will also be developed for disciplines as required. It is anticipated the work plans will include further details on how to action the study plans; for example, they would contain such information as location of sampling sites, scheduling, and sequencing.

For the purposes of establishing appropriate context, the Study Plan begins with background and relevant information on:

- Study-plan related discussions with the Agency, the MECP and applicable agencies to date (**Section 3**);
- The approach to Project consultation and engagement (**Section 4**);
- How Indigenous Knowledge will be collected and used in the IA / EA (**Section 5**); and
- The spatial and temporal boundaries that will be used for the IA / EA (**Section 6**).

5. *Baseline refers to the current conditions of the environment potentially impacted by the Project. Baseline conditions serve as a reference against which changes due to the Project are measured.*
6. *If necessary, the Study Plan will be updated to reflect the approved ToR if approval is obtained.*

2.1 Approach to Handling Confidential Information

2.1.1 Indigenous Knowledge

Permission from the Indigenous community will be sought before including Indigenous Knowledge in the IS / EA Report, regardless of the source of the Indigenous Knowledge. Sensitive and / or confidential information will be specifically collected through the Indigenous Knowledge Program to inform the IS / EA Report, and its use and publication will be governed by Indigenous community-specific Indigenous Knowledge Sharing Agreements. Sensitive and / or confidential information collected through Indigenous Knowledge Sharing Agreements will be protected from public or third-party disclosure and will be established between the Proponent and Indigenous communities participating in the Indigenous Knowledge Program prior to the sharing and use of any sensitive information. Instances where Indigenous Knowledge sharing has taken place during consultation activities (e.g., meetings) will be recorded in the Record of Consultation and Engagement, including where Indigenous Knowledge was incorporated into Project decisions and into the IS / EA Report (i.e., specifics will not be included in the Record of Consultation and Engagement given the potential sensitivity and / or confidentiality of the information shared).

2.1.2 Species at Risk

Sensitive information related to SAR, such as those provided by the MECP or by the MNRF, will be presented in materials in accordance with the Sensitive Data Licence Agreements applicable to this Project.

3. Study Plan Technical Discussions

To facilitate the development of satisfactory study plans and eventually a satisfactory IS / EA Report, MFFN previously submitted a draft version of this document which was reviewed and commented on by the Agency, the MECP and applicable agencies (**Table 3-1**). There have been no technical meetings to date to discuss the content of this this study plan.

Table 3-1: Study Plan Technical Review

Attendees / Responsible Party	Correspondence	Discussion Point (s)	Solution
The Agency	■ Comments received following submission and review of draft study plan	■ **10-July-2020:** Comments and clarification questions received, including editorial comments, additional information requirements regarding study plans, assessment and desktop analysis. Specifically requested for further details on the 2019 vegetation surveys and the planned future surveys, along with any vegetation control alternatives as part of the baseline studies.	■ Additional details and clarification provided within this Study Plan, and responses to these comments are attached in **Appendix B**.
MECP	■ Comments received following the MECP review of draft study plan	■ **23-July-2020:** Comments and clarification questions received, including editorial comments, additional information requirements regarding study plan, assessment and desktop analysis.	■ Additional details and clarification provided within this Study Plan, and responses to these comments are attached in **Appendix B**.

4. IS / EA Report Consultation and Engagement Process

4.1 Interested Persons and Government Agencies

The Proponent will provide Project notices and advise of opportunities for consultation and engagement with interested persons[7] which includes, at a minimum, members of the public outlined in the *Public Participation Plan for the Marten Falls Community Access Road Project Impact Assessment* (the Agency 2020) (referred to as the Public Participation Plan). This will include the opportunity to provide input on the existing environment, VCs, effects assessment methods, effects assessment results, and mitigation and follow-up program measures as applicable. A variety of activities will be offered so that members of the public are informed of the IS / EA Report as it progresses and are aware of the opportunities and means to provide their input. The study plans have recognized public and agency input received on the Project to date. Government agencies and interested persons will have the opportunity to comment on components of the study plans throughout the IS / EA Report consultation and engagement process. The Project's approach to handling confidential and sensitive information is outlined in **Section 2.1**.

4.2 Indigenous Communities

The Proponent will provide Project notices and opportunities for consultation and engagement with Indigenous communities identified in **Table 4-1**, which is inclusive of all Indigenous communities identified in the *Indigenous Partnership and Engagement Plan for the Marten Falls Community Access Road Project Impact Assessment* (the Agency 2020a) (referred to as the Indigenous Engagement and Partnership Plan).

Indigenous communities will be provided the opportunity to be involved at critical decision-making points throughout the IS / EA Report so that the Proponent can consider and incorporate, where appropriate Indigenous Knowledge and Indigenous land and resource use information into the Project as it pertains to the existing environment, VCs, effects assessment methods, effects assessment results, and mitigation and follow-up program measures. A variety of activities will be offered so that Indigenous communities are

7. *Interested persons, as defined in the IS / EA Consultation Plan, are individuals and groups (e.g., associations, non-governmental organizations, industry and academia) who could have an interest in the Project, including but not limited to communities in the region, those with commercial interests (e.g., forestry, trappers, outfitters, other mineral tenure holders in the area) and recreational users or those with recreational interest (e.g., campers, hunters and environmental groups).*

informed of the IS / EA Report as it progresses and are aware of the opportunities, means and timelines to provide their input. The study plans have recognized Indigenous community input received on the Project to date. Indigenous communities will have the opportunity to comment on components of the study plans throughout the IS / EA Report consultation and engagement process.

Table 4-1: Identified Neighbouring Indigenous Communities, including their Provincial Territorial Organizations and / or Tribal Council Affiliations

Tribal Council Affiliation	Indigenous Community or Organization
Matawa First Nations Management *(Nishnawbe Aski Nation)*	■ **Marten Falls First Nation** (Proponent and potentially affected Indigenous community) ■ Aroland First Nation ■ Constance Lake First Nation ■ Eabametoong First Nation ■ Ginoogaming First Nation ■ Neskantaga First Nation ■ Nibinamik First Nation ■ Webequie First Nation
Matawa First Nations Management and the Union of Ontario Indians / Nishnawbe Aski Nation	■ Long Lake #58 First Nation**
Mushkegowuk Council *(Nishnawbe Aski Nation)*	■ Attawapiskat First Nation ■ Fort Albany First Nation ■ Kashechewan First Nation
Shibogama First Nations Council *(Nishnawbe Aski Nation)*	■ Kasabonika Lake First Nation ■ Kingfisher Lake First Nation ■ Wapekeka First Nation ■ Wawakapewin First Nation ■ Wunnumin Lake First Nation
Independent First Nations Alliance *(Nishnawbe Aski Nation)*	■ Kitchenuhmaykoosib Inninuwug First Nation
Independent First Nations *(Nishnawbe Aski Nation)*	■ Mishkeegogamang First Nation ■ Weenusk First Nation
Nokiiwin Tribal Council	■ Animbiigoo Zaagi'igan Anishinaabek First Nation*
Métis Nation of Ontario	■ Métis Nation of Ontario; Region 2*
Independent Métis Nation	■ Red Sky Independent Métis Nation*

Notes: This table is inclusive of all Indigenous communities identified in the Indigenous Partnership and Engagement Plan for the Marten Falls Community Access Road Project Impact Assessment (the Agency 2020a)
** Indigenous communities or organizations identified by the MECP who should be consulted on the basis that they may be interested in the Community Access Road.*
*** The MECP indicated in a letter to MFFN that Long Lake #58 First Nation was moved from interest-based to rights-based.*

4.3 Consideration of Identity and Gender-Based Analysis Plus in Engagement

To fulfill requirements of the *Impact Assessment Act*, the Consultation and Engagement Program will consider a diverse range of perspectives from interested persons and interested Indigenous communities and their members identified in the Agency's Indigenous Engagement and Partnership Plan and the Public Participation Plan. This will include at a minimum providing ongoing opportunities for engagement to:

- **Neighbouring Indigenous communities, including relevant subpopulations:**
  - Women;
  - Youth; and
  - Elders.
- **Non-Indigenous communities including:**
  - Women;
  - Youth; and
  - Activity-based subgroups (e.g., recreationalists, snowmobilers, tourism establishment operators).

The Proponent will also consult and engage with other subpopulations identified by communities during consultation and engagement. The information from these activities and any additional identity groups identified by communities through consultation and engagement will be considered by applicable environmental disciplines for the purposes of data collection and considering disproportionate effects.

During consultation and engagement, these aforementioned groups will be consulted and engaged with on targeted input**.** Specialized knowledge will be gathered through other disciplines such as Social, Economic, Land and Resource Use and Aboriginal and Treaty Rights and Interests. The Socio-economic Data Collection Program is expected to include targeted interviews, focus groups, questionnaires and other niche tools to gather information from diverse populations to resolve gaps in socio-economic secondary data. These diverse populations include the aforementioned identity groups, which are also referenced in the IS / EA Consultation Plan, and those identified by communities during consultation and engagement. The importance of soliciting inputs and perspectives from diverse subgroups has also been factored into the Indigenous Knowledge Program and associated materials (**Section 5**).

When feedback is received from interested persons and Indigenous communities, issues, comments and questions will be tracked, which is consistent with the process described in the IS / EA Consultation Plan. Specific to Gender-Based Analysis Plus objectives, this will include efforts to engage with diverse populations. It is expected this will include activities specific to subgroups and tabulation of consultation and engagement participation with respect to identity factors. This will provide summary statistics to demonstrate the diversity achieved in consultation and engagement.

5. Consideration of Indigenous Knowledge in the IS / EA Report

The following provides a general description of how Indigenous Knowledge will be considered in the IA / EA process. The extent to which Indigenous Knowledge is considered by each specific VC will vary depending on the nature of the VC, the potential for Project effects on the VC and whether Indigenous knowledge that relates to a VC is provided / obtained. As such, not all aspects of the general approach described below may apply to all VCs / study plans.

There are two concurrent and complementary avenues for Indigenous communities and groups to be engaged with and provide input on the Project: the Indigenous Knowledge Program and the Consultation and Engagement Program. Both programs serve to support the collection of Indigenous perspectives, values, and input on the Project, including Aboriginal and Treaty Rights and how they may be impacted by the Project, to be integrated throughout the IA / EA process. However, the Indigenous Knowledge Program specifically aims to solicit and incorporate information that is considered sensitive and may have confidentiality requirements, including Indigenous Knowledge and information on Indigenous land and resource use. Indigenous Knowledge Sharing Agreements will be established between the Proponent and Indigenous communities participating in the Indigenous Knowledge Program prior to the sharing and use of any sensitive information.

All Indigenous communities and groups identified by the MECP and the Agency through the *Indigenous Engagement and Partnership Plan* (The Agency 2020) have the opportunity to participate in the Indigenous Knowledge Program. The Indigenous Knowledge Program provides interested Indigenous communities an opportunity to: share existing Indigenous Knowledge and information on Indigenous land and resource use and cultural values that may be relevant to the Project, and / or complete Project-specific studies to collect and share Indigenous Knowledge and information on Indigenous land and resource use and cultural values. The Indigenous Knowledge Program includes opportunities for Indigenous communities and groups to meet with the Proponent to discuss the program, ask questions, and share concerns and interests. In support of this, the Proponent has created an Indigenous Knowledge Program Guidance Document (the Guidance Document) that provides:

- An overview of the Indigenous Knowledge Program and information on how Indigenous Knowledge, Indigenous land and resource use, and cultural values and practices can be collected and / or shared;

- Information on how Indigenous Knowledge and information on Indigenous land and resource use and cultural values and practices may be used in the planning and design processes; and
- A suite of guidance materials that were developed based on the information requirements of both the federal and provincial assessment processes, including: question guides to support the collection of information on historical and current community context, Indigenous Knowledge that may be relevant to the various technical disciplines; information on Indigenous land and resource use, cultural values and practices and associated spatial data; and perspective on potential Project-related effects and associated mitigation and / or enhancement measures.

The Guidance Document will also support participating Indigenous communities in providing Project-specific information in a manner that facilitates meaningful incorporation into the IS / EA Report.

The IS / EA Consultation Plan outlines the process for obtaining information and feedback about the Project from Indigenous communities (i.e., the Consultation and Engagement Program). Indigenous communities identified by the MECP and the Agency have the opportunity to participate in the Consultation and Engagement Program through community-specific meetings, Public Information Centres, web conferences, and other formats. All Indigenous communities identified by the MECP and the Agency will be provided information related to the Project and invited to participate at various points throughout the IA / EA process.

There are also opportunities for technical teams to engage with Indigenous communities to solicit perspectives and information relevant to the Project, including information related to collection of existing information and the development of the IS / EA Report. The Proponent also invites feedback and inputs throughout the Project via the Project website and ongoing communications with the Proponent.

The Indigenous Knowledge and Consultation and Engagement programs are designed to be complementary and provide multiple opportunities for communities to offer feedback and information, including perspectives on Aboriginal and Treaty Rights and how these may be impacted by the proposed Project. Relevant information collected through both the Indigenous Knowledge and Consultation and Engagement programs, including potential effect pathways on Aboriginal and Treaty Rights and interests, will be shared with each of the relevant disciplines throughout the IA / EA to: guide and inform VCs; support characterization of the existing environment; identify the potential effects of the Project on VCs; help identify mitigation measures and potential monitoring programs; and ultimately guide Project planning. The nature of how the Indigenous Knowledge becomes integrated into the IS / EA Report will be dictated by the specific information provided by each Indigenous community and the parameters set out in the Indigenous Knowledge Sharing Agreements. A description of how Indigenous Knowledge was considered in the IA / EA and in each of the technical discipline areas will be included in the IS / EA Report.

It is also important to note that information collected through the various activities (e.g., field studies and programs, effects assessments) of each discipline area (e.g., wildlife, vegetation, cultural heritage) will be shared with the Indigenous Knowledge Program leads. This will support the establishment of the existing environment and the effects assessment for the Aboriginal and Treaty Rights and Interests environmental discipline, as well as the identification of potential mitigation measures and monitoring programs, given the interrelated nature of Indigenous peoples and other environmental disciplines.

The Proponent will strive to respectfully collaborate with Indigenous communities on how Indigenous Knowledge and information on Indigenous land and resource use and cultural values will become part of the IS / EA Report, and how potential effects to Aboriginal and Treaty Rights and interests will be assessed. It is expected that measures to support this may include but are not limited to: engaging Indigenous communities to solicit information on Indigenous Knowledge and Indigenous land and resource use and cultural values to inform baseline conditions, providing Indigenous communities with draft sections of the IS / EA Report to illustrate how Indigenous Knowledge and information on Indigenous land and resource use and cultural values has been integrated and to confirm it has been presented appropriately, and completing collaborative working sessions with Indigenous communities for the effects assessment on Aboriginal and Treaty Rights and Interests. Further information on how potential effects on Indigenous rights will be assessed is provided in the Aboriginal and Treaty Rights and Interests Study Plan.

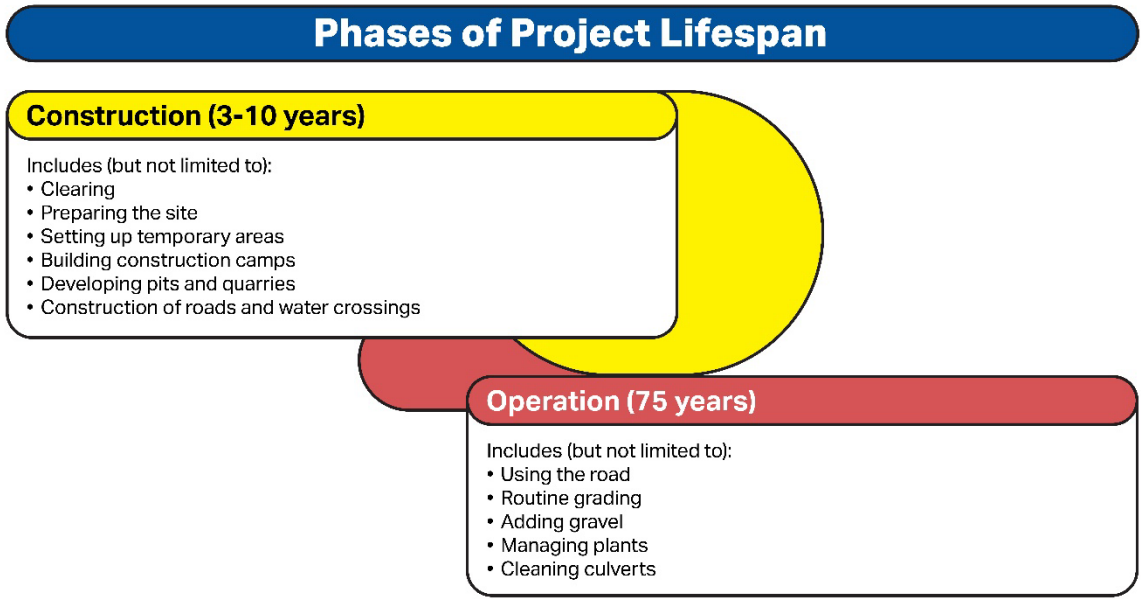
6. Assessment Boundaries

6.1 Temporal Boundaries: Project Phases

Project phases, which are temporal boundaries, are developed to establish the timeframes within which potential effects of the Project will be considered in the IS / EA Report. The Project is planned to occur in two phases, which are briefly described below and shown in **Figure 6-1**.

- **Construction Phase:**
  The time from start of construction, including site preparation activities, to the start of operations and maintenance of the CAR. Decommissioning of construction works is included in the construction phase. The construction phase is anticipated to take approximately 3 to 10 years to complete.
- **Operations and Maintenance Phase:**
  The operations and maintenance phase starts once construction activities are complete and lasts for the life of the Project. The operations and maintenance phase of the Project is considered to be 75 years based on the expected timeline for when major refurbishment of road components (e.g., bridges), is anticipated.

Figure 6-1: Project Schedule



There are currently no plans to decommission the CAR as there is no expected / known end date for its need. Therefore, future suspension, decommissioning and eventual abandonment of the CAR will not be considered in the IS / EA Report. It will be considered if and when a decommissioning or abandonment application is made for the road.

In determining the temporal boundaries, in particular the long operations and maintenance phase, consideration was given to the long-term effects on the well-being of present and future generations (Sustainability Principle #2[8]). The final temporal boundaries to be used in the IS / EA Report will be based on regulatory agency guidance, professional judgement and input received through the Project consultation process.

6.2 Spatial Boundaries: Study Areas

6.2.1 General Information

Study areas identify the geographic extents within which potential effects of the Project are likely to occur and will be considered in the IS / EA Report. The existing conditions and potential effects are documented for three study areas selected for the Project:

- **Project Development Area (PDA):** area of direct disturbance;
- **Local Study Area (LSA):** the area where most of the direct effects of the Project are likely to occur; and
- **Regional Study Area (RSA):** the area where indirect effects of the Project are likely to occur.

The PDA encompasses the 100 metre wide CAR right-of-way (ROW), temporary construction access roads, work areas, worker camps, and pits, quarries and associated access roads. The preliminary LSA currently being considered within the scope of the ongoing provincial regulatory review process generally includes the area within 2.5 km of the centreline of Alternative 1 and Alternative 4. The preliminary study area generally allows for the documentation of existing conditions and prediction of potential environmental effects for the Project. A 5 km wide study area also allows for route refinements during development of Project design (e.g., adjustment of the alignment to avoid sensitive features).

The specific location of Project components, including the roadway, quarries, pits and temporary infrastructure, are not yet known and will be included in the IS / EA Report. While most of the Project

8. *Sustainability Principles #2 is one of four sustainability principles included in Section 25 of the Project's TISG (the Agency 2020b) as further elaborated on* ***Section 9.7****.*

components are expected to be located within the preliminary 5 km wide study area, benefits (e.g., reduced environmental disturbance, avoidance of sensitive features, technical considerations, concerns received through consultation) for locating Project components on lands outside of the 5 km wide study area may become known during the IA / EA process. If the need to locate Project components outside the study area is determined to be required or of benefit to the Project, the study area would be adjusted.

The study area for each environmental discipline may vary from the above-described general study area based on the potential for the Project to directly or indirectly affect each environmental discipline; therefore, discipline-specific LSAs and RSAs have been defined for the Project. In defining the final LSAs and RSAs, each environmental discipline will consider:

- Location and other characteristics of the environmental discipline relative to the Project;
- The anticipated extent of the potential Project effects;
- Federal, provincial, regional, and local government administrative boundaries;
- Indigenous groups listed in **Table 4-1**;
- Community knowledge and Indigenous Knowledge;
- Current or traditional land and resource use by Indigenous communities;
- Exercise of Aboriginal and Treaty Rights of Indigenous peoples, including cultural and spiritual practices; and
- Physical, ecological, technical, social, health, economic and cultural considerations.

The study areas included in this document are preliminary, covering the extent to which readily available information suggests the Project may have noticeable effects on the environment. The size, nature and location of past, present and reasonably foreseeable projects will be taken into consideration in the development of the cumulative effects assessment study area(s). The appropriate study area(s) to assess cumulative effects are dependent on the VCs predicted to have direct residual adverse effects as a result of the Project, and therefore, cannot be defined until the IS / EA Report has sufficiently advanced.

As further detailed in **Section 4**, the Proponent will continue to provide opportunities for neighbouring Indigenous communities and interested persons to provide input and inform the effects assessment, including the LSAs and RSAs.

6.2.2 Vegetation Study Areas

The LSA and RSA boundaries for Vegetation are detailed in **Table 6-1** and shown on **Figure 6-2**.

Table 6-1: Vegetation Study Areas

Study Area	Geographic Extent	Rationale
Local Study Area	■ 3 km buffer on either side of the centreline of Alternative 1 and Alternative 4	■ Designed to address the area where direct effects of the Project are likely to occur beyond the Project footprint.
Regional Study Area	■ 11 km buffer on either side of the centreline of Alternative 1 and Alternative 4	■ Using a boundary of 11 km will allow for assessment of cumulative and indirect effects of the Project on the broader landscape, while remaining representative of the types of habitats found within the Project Area.

LSA boundaries for the Vegetation VCs were defined following the methods outlined in Section 7.4.1 of the TISG. Land cover within the PDA was calculated using the *Ontario Far North Land Cover* (MNRF 2014). Buffers were applied to the PDA in increments of 100 m, continuing up to 15 km, and the percentage of each of the major land cover types within each increment was calculated. The first buffer increment was calculated using the percent difference between the PDA and that buffer increment (100 m). The rate of change between successive buffers was calculated to determine the maximum calculated rate of change across all buffer increments. Once the maximum calculated rate of change for each land cover type was calculated, the LSA boundary was defined as the buffer width that was the maximum of:

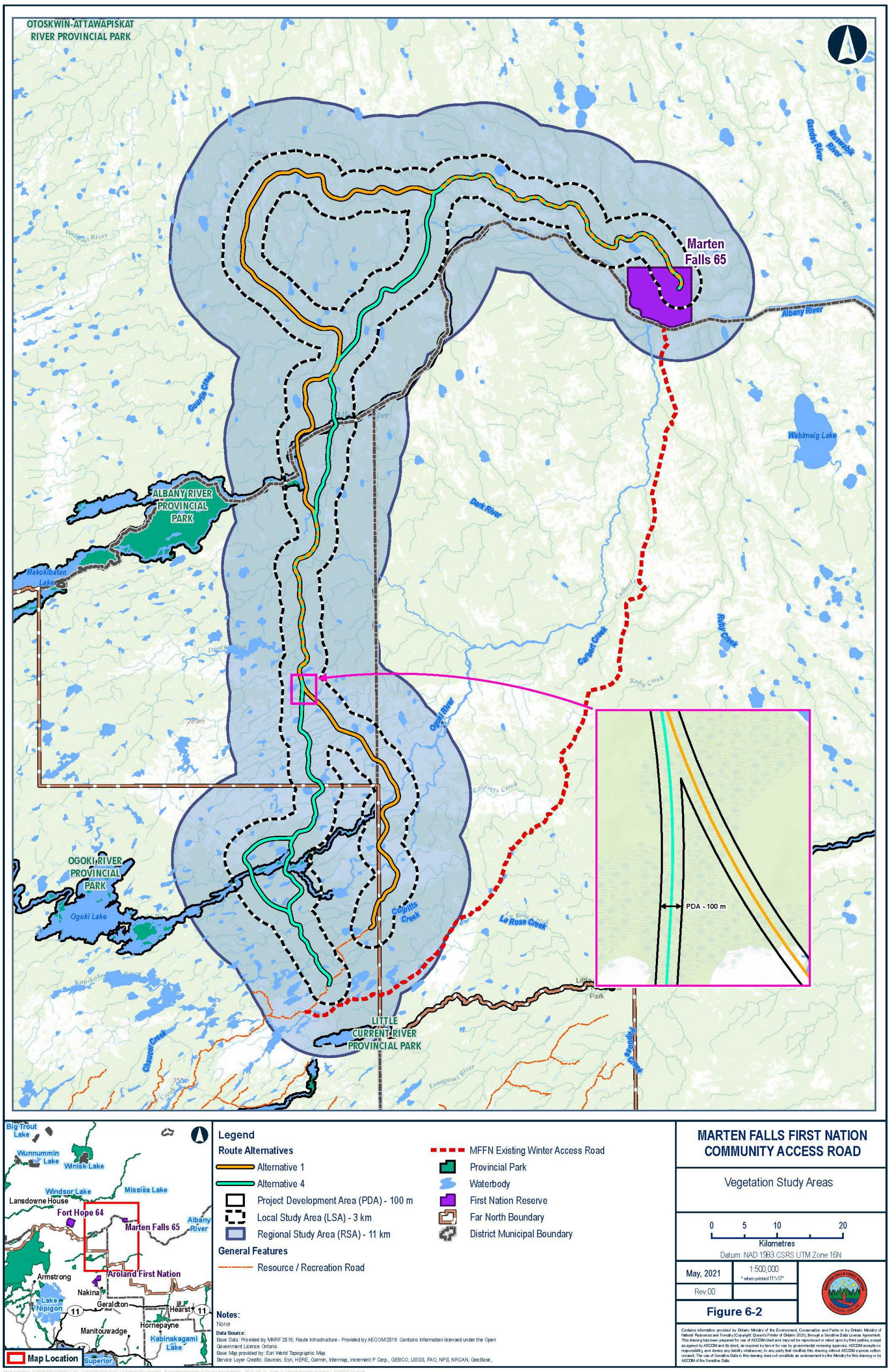
- 500 metres (m) from the PDA, or
- the buffer increment where:
  - All major land cover types have a rate of change in land cover composition of less than or equal to 5% of the maximum rate of change, and
  - The increment is beyond (i.e., further away from the PDA) where the maximum rate of change is found.

Based on this analysis, the LSA boundary was estimated to extend to 2.8 km from the limits of the PDA. The LSA has been conservatively rounded to 3 km either side of centreline (6 km total).

A similar approach was employed to define the boundary of the RSA, using the calculated percent cover within the LSA (3 km) as a starting point. Percentages of each land cover type were calculated in buffer increments of 100 m from the LSA, continuing up to 15 km, to determine the rate of change between increments and identify the maximum rate of change for each land cover type between the LSA and 15 km boundary. Based on this analysis, the RSA was estimated to extend to 7.7 km from the limits of the LSA and 10.7 km from the limits of the PDA (i.e., 11 km from either side of the centreline).

This approach is intended to lead to a LSA that represents land covers found within the PDA and an RSA that represents the land cover within both the PDA and LSA (especially rarer habitats), represent the rapid land cover change that occurs along the edges of these features, and represent a portion of the broader landscape matrix.

Figure 6-2: Vegetation Local and Regional Study Areas



7. Baseline Study Design

7.1 Desktop Assessment

A desktop review of existing information sources will be completed to identify information gaps that will need to be addressed through further study. A preliminary list of applicable information sources has been included in **Appendix A** and reflects federal and provincial guidance received to date. This Study Plan focuses on the additional studies that are anticipated to be required to gather information beyond what is currently available through existing information sources, including those as described in Section 7.2 'Sources of baseline information' in the Agency's TISG for this Project.

The Project is proposed within the Hudson Bay Lowlands Ecozone and the Ontario Shield Ecozone. The Hudson Bay Lowlands Ecozone is Ontario's most northern Ecozone and encompasses approximately 25% of the province (Crins et al., 2009). It is estimated that approximately 90% of the Ecozone's landscape is saturated peatland plains (Crins et al., 2009). The Ontario Shield Ecozone is characterized by mixed, deciduous, and coniferous forests. Forests are dominated by widespread mixedwood species, with a greater diversity of hardwood species further south (Crins et al. 2009).

Within the Hudson Bay Lowlands Ecozone, the Project lies within the Lower Kenogami River Ecodistrict (2E4) in the James Bay Ecoregion (2E). Ecoregion 2E is dominated by fens (22% treed and 7% open) and bogs (21% treed and 17% open) (Crins et al. 2009). Coniferous forest covers approximately 12% while sparse forest covers 7% (Crins et al. 2009). Open water covers approximately 5% of the Ecoregion (Crins et al., 2009). Forested areas are generally composed of stunted black spruce and tamarack (Crins et al. 2009). More developed stands of coniferous and mixedwood boreal species are found on well-drained ridges along streams and rivers and in valleys (Crins et al., 2009).

Within the Ontario Shield Ecozone, the Project can be found within the Kasabonika Lake (2W2) and Wunnumin Lake (2W3) Ecodistricts in the Big Trout Lake Ecoregion (2W). Approximately 21% of Ecoregion 2W is covered by sparse forest (Crins et al., 2009). Coniferous forests cover approximately 19% of the area while mixed forests cover 8% (Crins et al. 2009). Small pockets of deciduous forest grow in river valleys (Crins et al. 2009). Wetlands cover more than 30% of the Ecoregion, consisting of 12% water and 9% treed bog (Crins et al. 2009). Burns cover approximately 8% of the Ecoregion, which is the highest percentage in the province (Crins et al. 2009). Forested areas are typically dominated by black spruce, with Jack pine and white pine (*Pinus strobus*) also present at upland sites (Crins et al. 2009). Warmer sites along the shores of lakes and large rivers harbour stands of white spruce (*Picea glauca*), black spruce, balsam fir, and poplar

(*Populus* sp.) (Crins et al., 2009). Fens and bogs are dominated by mosses (*Bryophyta* sp.*)*, ericaceous shrubs (*Ericaceae* sp.*)*, and graminoid species (*Poales* sp.*)* (Crins et al. 2009).

Designated areas may include features such as: Area of Natural and Scientific Interests, Environmentally Significant Areas, Critical Landform / Vegetation Associations. These features may be identified at a federal or provincial level and will be documented through the desktop assessment methods.

The desktop assessment is ongoing, and the results will be presented at a later date.

7.2 Recent Field Investigations

For the Vegetation VCs, baseline data for one year of study was collected in the form of desktop and field studies for vegetation. The field studies carried out in 2019 were conducted in advance of finalization of this Study Plan, however the data collected through these surveys remain relevant and will be used to assess the potential impacts of the Project on the Vegetation VCs.

Vegetation community surveys were completed at a total of 80 sites, between June 13 and 17, 2019 in conjunction with wildlife survey locations (refer to the Wildlife Study Plan and the Bird Study Plan), which were selected to:

1. Provide broad coverage of the study area (which at the time was considered to be 5 km buffer around the centreline);
2. Include a diversity of plant communities (including peatland / wetlands); and,
3. Target communities that have the potential to support the growth of rare plant species and / or traditional use plant species.

Vegetation surveys in 2019 were conducted within the Ogoki River Provincial Park as well as the Albany River Provincial Park following previous MNRF recommendations on the Project (MNRF 2017). A Research Authorization to conduct surveys within provincial parks was obtained from the MECP for this study.

Vegetation surveys were conducted during the growing season and in each station the vegetation data that were collected included plant community type, dominant species, and a brief plant inventory. Information on invasive or rare species was also noted. Field notes, incidental wildlife observation, and representative photographs were documented and used to provide an overall characterization of the plant communities. Sensitive or significant natural features, such as significant wildlife habitats were also noted to provide a description of the ecological function of the communities.

The most common tree species observed in 2019 include Jack pine (*Pinus banksiana*), balsam fir (*Abies balsamea*), paper birch (*Betula papyrifera*), trembling aspen (*Populus tremuloides*), black spruce (*Picea mariana*), speckled alder (*Alnus incana*), tamarack (*Larix laricina*), American mountain ash (*Sorbus americana*), and willow (*Salix* spp.). The most common shrub and herbaceous species observed include red-osier dogwood (*Cornus sericea*), wild sarsaparilla (*Aralia nudicaulis*), prickly tree clubmoss (*Dendrolycopodium dendroideum*), common clubmoss (*Lycopodium clavatum*), low-sweet blueberry (*Vaccinium angustifolium*), bunchberry (*Cornus canadensis*), bush honeysuckle (*Diervilla lonicera*), caribou lichen (*Cladina rangiferina*), and twinflower (*Linnaea borealis*).

Detailed results of the field program in 2019 will be provided at a later date.

7.3 Future Field Investigations

This study plan is proposing further vegetation surveys beyond those surveys conducted in 2019 (**Section 7.2**). Dramatic changes in vegetation that would affect the baseline vegetation community description for the purpose of informing the IA / EA, are not anticipated to occur except where these changes might potentially occur through forest fires or forestry operations. Data regarding these vegetation influences are generally well documented through desktop resources and will be considered in the IA / EA as required. It is anticipated that the 2019 surveys combined with the desktop information gathered and future field investigations proposed below will be sufficient to identify baseline conditions among years, within and among seasons, and within a 24 hour cycle to take into account variation in temporal patterns throughout the PDA, LSA and RSA.

The sections that follow describe the methodology to be used for future field investigations.

7.3.1 Field Survey Site Selection

The following sections describe the process for selecting sites for field surveys in both the PDA and the LSA.

The field study design for the LSA has generally follow the *Standard for Terrestrial Ecosystem Mapping in British Columbia* (Ecosystems Working Group 1998). Although these guidelines originate in British Columbia, a similar guideline to provide consistency across Projects has not been developed for Ontario and therefore is considered to be an acceptable approach.

To confirm the number of sample sites that would be representative of the entire LSA and to support future modelling, a simulation-based analysis was conducted to identify areas that should be visited in the field with respect to landcover and Ecological Land Classification (ELC) Ecosite distributions in the LSA. Sites were randomly selected for Far North Land Coverage polygons from:

1. 'upland' (Disturbance Treed, Sparse Treed / Shrub, Coniferous Trees, Deciduous Treed, and Mixed Treed Coverages);
2. 'wetland' (Coniferous or Thicket Swamp, Treed or Open Fen, Treed or Open Bog, Freshwater marsh Coverages); and
3. 'riparian' (any Coverage 30 m from waterbody) groups separately.

To compare the distribution from the sub-sample to the overall ELC counts, two tests will be run: the Kruskal-Wallis non-parametric comparisons test and a Poisson regression. The minimum sample size will be representative of the entire LSA but will also support adequate spatial coverage (as assessed through distributions of latitude and longitude between sub-sample and all polygons across the LSA).

Although every effort will be made to adhere to this sampling intensity, the Project is located in a remote part of Canada with limited access. Access to vast portions of the proposed CAR will only be available by air, therefore survey locations will be limited to within 1 km of where a helicopter is capable of landing (e.g., cut helicopter landing pads, open grassy riparian areas). Considering that not all randomly selected points will be accessible, a number of oversample sites will be selected. The intent will be to provide the best chance of obtaining a robust sample but also visiting each potential ecosite.

The bird survey program will require some ELC data collection. As such, a number of sample points will be selected to overlap with the bird program considering survey site selection for the birds will be conducted through a similar stratified random sampling technique. Additional information on the bird survey program can be found in the Birds Study Plan.

Vegetation field surveys will be most intensive within the PDA, with somewhat less effort within the LSA. Ground investigations will occur at 25% of the selected field investigation locations with the remaining 75% being conducted through Visual Checks (**Section 7.3.2**), either through helicopter aerial surveys or breeding bird survey locations photographs. Site selection during Work Plan development will finalize the number of field survey locations. We are currently assuming 60% of the field survey locations will occur within the PDA and the remaining 40% within the LSA. Site selection during Work Plan development will finalize the number and distribution of sites within the PDA and LSA and which field survey method will be selected each site.

7.3.1.1 Regional Study Area

Baseline information for the RSA will need to be robust enough to support an assessment of indirect effects on vegetation. Considering the level of existing information on vegetation communities within the RSA (Far North Land Cover and Forest Resource Inventory [FRI] mapping), field investigations for vegetation will not be conducted within the broader RSA. Effects on vegetation within the RSA are not expected to be wide ranging and therefore effects can adequately be assessed using the existing and desktop derived information.

7.3.2 Field Methodology

Two types of field verification surveys will be conducted which are described in more detail in **Section 7.3.2.1.2**:

1. **Ground Inspections** will consist of a point sample[9] taken from a representative location within a desktop delineated and classified vegetation community polygon
2. **Visual Checks** will consist of an aerial assessment from helicopter or an assessment of representative photographs taken during other field programs (e.g., bird survey) of an individual pre-typed vegetation community to assess whether the pre-type was accurate or to adjust to a more suitable classification. Visual checks may also be completed on the ground, where possible (e.g., while walking from one ground plot to another).

The vegetation program will be completed in conjunction with the soils and terrain field program. This will allow for the consistent collection of field data and to establish correlations between soil / terrain and vegetation communities in the field. Field survey locations will be determined based on critical ecological parameters, including soil moisture and soil nutrient regime which are two key drivers of vegetation communities.

The Ground Inspection plots, and some Visual Check plots, will be established along transects extending out from pre-cut helicopter landing pads. Field plot locations will be identified during the initial terrain and vegetation community mapping exercise and will consider both access (i.e., proximity to existing helipad locations) and the need to survey all vegetation community types present within the LSA. Methods for delineating vegetation communities to be investigated are described in **Sections 7.3.2.1.1** and **7.3.2.2.1**.

9. A point sample refers to sampling a geographical area by selecting points on a map or through an aerial photograph.

Upland Vegetation Communities

For the purposes of this Study Plan, vegetation communities will be split into upland ecosystems and wetland / riparian communities. Upland communities include open, shrub, and treed communities containing mainly facultative upland and / or obligate upland plant species (i.e., non-wetland communities). Within upland ecosystems, the water table is rarely above the substrate surface and vernal pooling[10] is minimal.

7.3.2.1.1 Pre-Typing

Prior to field verification, upland vegetation communities will be pre-typed and delineated by GIS analysts and vegetation specialists through a desktop exercise for both the PDA and LSA. The delineation of individual vegetation communities will be completed using background information such as: Far North Land Cover Mapping (MNRF 2014), FRI mapping – Ogoki Forest (MNRF 2020) and surficial geology and terrain information, as well as highly detailed light detection and ranging (LiDAR) data that has been procured for the PDA and LSA. The individual vegetation communities will be delineated and classified to ecosite level following the Ecosites of Ontario methods (Banton et al. 2009). The criteria that will be used to delineate and classify the various vegetation communities include but may not be limited to:

- Tree species composition (tone, texture, colour, size, shape);
- Canopy characteristics (tone, texture, colour);
- Topography and terrain (Digital Elevation Model); and
- Soils (surficial geology information).

The RSA will not be delineated through ELC but will be left to the scale of the Far North Land Cover mapping; no additional desktop delineation or classification will occur.

The current level of both anthropogenic and natural disturbance associated with vegetation will be assessed to determine the level of habitat fragmentation, historical and current fire disturbance, and any proximate activities that have resulted in changes to fires regimes in order to predict changes in forest fire risk as a result of the Project.

10. Vernal pooling refers to small and shallow seasonal pools which are filled in the spring by snow melt and rain and often dry up during summer months.

7.3.2.1.2 Field Surveys

Field verification will be completed to confirm pre-typed vegetation communities and to collect data to inform the IA / EA. During the appropriate season (i.e., leaf on season which typically occurs from June through September), vegetation field verification will be conducted within the PDA and LSA at a representative subset of locations to further refine the pre-typed vegetation communities (refer to **Section 7.3.2.1.1** for details). Standard ELC forms (digital or paper) will be used to record observed characteristics in a consistent manner.

Ground Inspection

Ground Inspections will include a point sample from a representative location within a pre-selected vegetation community polygon (polygons defined in **Section 7.3.1**). At each point location, and while travelling through the polygon to reach a representative point, a botanical inventory of plant, fungi, lichen and moss will be recorded to the greatest extent possible. Particular attention will be paid to documenting locations and abundance of federal and provincial SAR, traditional use plants and rare plants. As part of the ELC method, the following data will be gathered:

- Photographs;
- Dominant plant form and canopy height;
- Soil texture, moisture regime, and degree of decomposition using a soil pit or auger;
- Stand description (dominant species, height and % cover);
- Abundance of standing snags and deadfall;
- Estimate of community age; and,
- Basal area calculation.

The rarer habitats found within the study area, such as the eskers and other geological features will be documented and key habitat information for species important to baseline land use and resources for traditional purposes will be collected. Should a SAR, SOCC or rare vegetation community be identified, their locations (Universal Transverse Mercator [UTM] coordinates) and boundary delineation, abundance (% cover) and habitat conditions (microclimate characteristics such as: shape and slope) will be recorded.

Vegetation community boundaries delineated using desktop GIS methods will be adjusted following the Ground Inspections, where necessary.

Ground Inspections will occur at a subset of pre-typed vegetation communities as noted in **Section 7.3.2.1.1**

Visual Checks

Visual Checks will be conducted through two separate methods.

1. **A fly-over of the pre-typed vegetation communities.**
   Aerial helicopter surveys of vegetation communities will occur to collect photos, and dominant species (those that can be identified from air), estimate of community age and stand composition, and an estimate of soil moisture regime where possible. Significant landforms including eskers will be documented from the air.
2. **Photograph interpretation from photos collected during breeding bird investigations.**
   Each breeding bird site visited between June 10 and August 30 will be photographically documented with 13 photos. At each cardinal direction: 1 photo at shoulder height with arm and camera extended parallel to ground, 1 photo with arm at 45-degrees (from body position) pointing down, and 1 photo with arm extended at 135-degrees (from body position) pointing up, and 1 photo with arm extended straight up (i.e., vertically). The photos will be interpreted to confirm the pre-typed vegetation community, estimate community age and stand composition, and estimate soil moisture regime.

Visual Checks will occur at a subset of pre-typed vegetation communities as noted in **Section 7.3.2.1.1**

7.3.2.2 Wetland and Riparian Communities

Wetland and riparian communities include open, shrub, and treed communities consisting of mainly facultative wetland plant species. Within wetland ecosystems, the water table is seasonally or permanently at, near or above the substrate surface. Peatlands will be examined independently as discussed in the Peatlands Study Plan.

Wetlands are an integral part of the landscape often providing multiple functions throughout complex ecosystems that are felt at a much larger scale. The main objective of the *Federal Policy on Wetland Conservation* (Environment Canada 1991) is to “promote conservation of Canada's wetlands to sustain their ecological and socio-economic functions, now and in the future” and strives for “no net loss” of wetland function on Crown land (Environment Canada 1991, Lynch-Stewart 1992, Lynch-Stewart et al. 1996).

7.3.2.2.1 Pre-typing

Wetlands

Wetlands within the PDA and LSA will be delineated using ArcGIS software, through a detailed desktop review of a combination of aerial photo interpretation, LiDAR data, terrain mapping and other existing

information. Each delineated wetland will be categorized using the wetland class (bog, fen, marsh, swamp, or shallow water) and ecosite classification definitions outlined in the *Canadian Wetland Classification System* (CWCS) (National Wetland Working Group 1997) and *Ecosites of Ontario* (Banton et al. 2009). Wetlands will be identified using available provincial datasets and key indicators, including geomorphology, surficial hydrology and vegetation.

Riparian

Riparian areas within the PDA and LSA will be digitized using ArcGIS, through a detailed desktop review of a combination of aerial photo interpretation, LiDAR data, terrain mapping, and other existing information. Each delineated riparian vegetation community will be categorized based on stand structure (e.g., initial succession, shrub, pole sapling, mature forest). Riparian habitat will be identified based on provincial datasets of waterbody and watercourse features, and key indicators, including geomorphology, surficial hydrology and vegetation. Riparian habitat assessed will include the vegetation assemblage that falls within 30 m of a watercourse or waterbody (e.g., stream or lake) edge (MNRF 2010, Environment Canada 2013).

7.3.2.2.2 Field Surveys

Wetlands

The *Wetland Ecological Functions Assessment: An Overview of Approaches* (Hanson et al. 2008) provides a summary of potential methods that can be used to assess wetland function, indicates the type of data that should be collected, and provides a list of functions that can be expected for each of the different wetland classes (Hanson et al. 2008). These wetland function assessments help to inform the IS / EA Report by providing baseline conditions of the relative functions that the wetland provides to the landscape. The quantitative analysis of wetland function will provide a better understanding of the potential effects to wetlands as a result of the proposed CAR and will be detailed in the IS / EA Report.

Field verification will be completed to confirm pre-typed wetland communities and to collect data to inform the wetland functions assessment and for the IS / EA Report. During the appropriate season (i.e., leaf-on season, which is typically June through September), Ground Inspections will be conducted within the PDA and LSA at a representative subset of locations to further refine the pre-typed wetland communities (refer to **Section 7.3.2.2.1** for details). Standard forms (digital or paper) will be used to record observed characteristics in a consistent manner.

This data collection protocol is adapted from the *Wisconsin Rapid Assessment Methodology* (Wisconsin Department of Natural Resources 2001), *Ontario Wetland Evaluation System* (MNRF 2014a), and the

Wetland Ecological Functions Assessment: An Overview of Approaches (Hanson et al. 2008) which are complementary of recommended approaches from Environment and Climate Change Canada.

The following information will be collected at each Ground Inspection sites, to the extent possible:

General Information

- Wetland location coordinates.
- At each point location, and while travelling through the polygon to reach a representative point a botanical inventory of plant, fungi, lichen and moss will be collected to the extent possible. Particular attention will be paid to documenting locations for federal and provincial SAR and rare plants.
- Representative photographs.
- Wetlands will be classified according to the CWCS and ELC ecosites based on vegetation, hydrology, and soils.

Habitat Function Information

- Dominant vegetation type, community composition, and presence of invasive or species of special interest (Indigenous importance or SOCC or SAR) species will be recorded.
- Habitat suitability (emergent vegetation for waterfowl nesting, standing water for amphibian breeding, vegetation suitable for ungulate grazing) will be documented.
- Wildlife observations and evidence of wildlife activity will be documented. The majority of this will be captured as part of the Wildlife Study Plan.

Hydrological Function Information

- Geomorphology of the wetland (e.g. depressional, riverine, lake fringe, extensive peatland).
- Presence of surface water, flow patterns, connectivity, inputs, outputs, water depth, and evidence of ground water influence will be noted.
- Existing hydrology alterations (e.g. ditching, beaver activity).
- Biogeochemical function information.
- Soil moisture regime will be recorded.
- Substrate composition (mineral or organic) will be documented.
- Substrate decomposition rates will be described using the von Post scale (Ekono 1981).

Visual Checks will be primarily used to confirm and refine the wetland class or ecosite that was pre-typed, and identify dominant vegetation type, where possible.

Each wetland visited during Ground Inspections will be assigned a function ranking / score (i.e. high, moderate, low) based on its relative contribution of various wetland functions (i.e. habitat, hydrology, biogeochemical) to the surrounding ecological systems. The following will be considered when determining a ranking:

- Width, composition, and integrity of riparian habitat;
- Surrounding land use types and existing disturbances;
- Hydrological connectivity (flow, isolated wetland vs. wetland complex);
- Hydraulic conductivity (water permanence);
- Vegetation density and open water components;
- Biodiversity, presence of sensitive species or species of cultural importance and habitat suitability; and,
- Water storage and decomposition rates.

This methodology will provide a qualitative and quantitative measure of wetlands within the PDA and LSA and anticipated to include sufficient information to describe baseline conditions of wetland abundance and function.

Riparian

Similar to wetlands, field verification will be completed to confirm pre-typed riparian communities and to collect data to inform the riparian functions assessment and the effects assessment for the IA / EA Report. During the appropriate season (June through September), field verification will be conducted within the PDA and LSA at a representative subset of locations to further refine the pre-typed riparian communities (Refer to **Section 7.3.2.2.1)**. Standard forms (digital or paper) will be used to record observed characteristics in a consistent manner.

The goal of these field verifications is to obtain site-specific information for representative riparian areas and riparian vegetation ecological function information within the PDA and LSA. In addition, the field verifications will refine the results of the desktop review and riparian pre-type, where warranted. This data collection protocol is adapted from *Riparian Assessment and Prescription Procedures* (Ministry of Environment, Lands and Parks 1999).

The following information will be collected at each Ground Inspection site, to the extent possible:

- Overstory vegetation characteristics (tree species, densities and heights, % cover);
- Understorey vegetation characteristics (shrub, herb, and moss species, % cover and height);

- Soil properties (horizon depths, textures, degree of decomposition % coarse fragments);
- Indicators of disturbance;
- Site gradient and aspect; and
- Stream gradient and width.

The Visual Checks from helicopter surveys or field photo interpretation will be limited to confirming and refining the pre-typed vegetation type, documenting overstory vegetation characteristics and indicators of disturbance.

Each riparian site visited during the Ground Inspections will be assigned a function ranking / score (e.g. high, moderate, low) based on its relative level of functioning to the surrounding ecological systems. The following will be considered when determining a ranking:

- Large Woody Debris / Coarse Woody Debris;
- Stream Shading;
- Small Organic Debris;
- Surface Sediment Filtering;
- Channel Stability;
- Bank stability; and
- Disturbance indicators

This method will provide a qualitative and quantitative measure of riparian communities within the PDA and anticipated to include sufficient information to describe baseline conditions of wetland abundance and function.

7.4 Traditional Use Plants and SAR Plant Populations

Local indigenous communities will be engaged to develop an understanding of Traditional Use Plants and plants of importance to the various communities. This information combined with the botanical inventory collected during vegetation surveys will be used to describe the use of local vegetation for medicinal or cultural purposes or as a source of traditional (country) foods as well as baseline abundance information. The TISG notes that the following species may have particular cultural importance: black spruce, white spruce, Jack pine, tamarack, balsam poplar (*Populus balsamifera*), eastern white cedar (*Thuja occidentalis*), dwarf birch (*Betula nana*), red willow (*Salix laevigata*), trembling aspen, cottongrass (*Eriophorum angustifolium*), black crowberry (*Empetrum nigrum*), blueberry (*Vaccinium* spp.), raspberry

(*Rubus* spp.), northern Labrador tea (*Ledum palustre)*, bearberry (*Arctostaphylos* spp.), gooseberry (*Ribes spp*.), dogwood (*Cornus* spp.), small cranberry (*Vaccinium oxycoccos*), wild rice (*Zizania palustris*), sweetflag (*Acorus* spp.) sweetgrass (*Anthoxanthum nitens*), waterlilies (*Nymphaea* sp.), mosses, sphagnum moss (*Sphagnum* spp.) and caribou lichen. This information may not represent every species important to indigenous tradition and knowledge.

Engagement with local Indigenous communities may identify additional plant species to those listed above, as well as any other plant species of concern for consumption or those of Indigenous cultural importance.

Rare plants including SAR and SOCC will be documented throughout the vegetation surveys; their locations, population and habitat conditions will be recorded. The SAR Public Registry will be consulted for information on the list of SAR and available recovery documents. The information gathered from background existing data and field surveys will be combined to describe the distribution and abundance of rare plants and communities in relation to the PDA and LSA. All SAR information gathered through ground surveys will be provided to MNRF's Natural Heritage Information Centre, and in addition, any information on species listed as Threatened or Endangered under the *Endangered Species Act* will be provided to the MECP Species at Risk Branch.

7.5 Invasive Plant Species

The background review will identify, delineate and classify potential invasive, noxious, persistent and non-native plants species that may be present within the study areas. Using the information collected on the baseline condition of any observed non-native species, invasive species, and / or introduced species of concern, alternate vegetation control approaches for the construction and operations stage of the Project will be developed in consultation with Indigenous communities and incorporated into the IA / EA.

8. Data Management and Analysis

Data management including quality assurance / quality control (QA / QC) will be employed to minimize potential for data entry and analysis errors, prepare data sets for analysis and limit sensitive data distribution in accordance to established agreements.

8.1 Field Surveys

To maintain consistency and for quality assurance / quality control of the data collected, standardized datasheets (either digital or paper) paired with mapping software will be used in the field. Field studies will follow technical protocols that will outline specific work instructions and will be / have been developed to follow provincially and federally acceptable methods. Completeness and accuracy of field data will be verified daily during field verification and field photos and coordinate information will be backed up daily.

8.2 GIS

Where baseline data are available in GIS format, this information will be provided to the Agency as electronic geospatial data file(s) compliant with the International Organization for Standardization (ISO) 19115 standard. This would support the Government of Canada's commitment to Open Science and Data and would facilitate the sharing of information with the public through the Canadian Impact Assessment Registry Internet Site and the Government's Open Science and Data Platform. The Agency intends to make the geospatial data files available to the public under the terms of the Open Government License – Canada as applicable with exclusion of sensitive SAR and Indigenous Knowledge.

Complete data sets from all survey sites will be provided. They will be in the form of complete and quality assured relational databases, with precisely georeferenced site information, precise observation / visit information and with observations and measurements in un-summarized form. Databases and GIS files will be accompanied by detailed metadata that meets ISO 19115 standards. Documentation and digital files will be provided for all results of analyses that allow for a clear understanding of the methods and a replication of the results. All geographic data, along with accompanying metadata, pertaining to SAR will be provided to Natural Heritage Information Centre and the MECP Species at Risk Branch.

8.3 Vegetation Community (Upland, Wetland and Riparian) Extrapolation

During the initial desktop pre-typing of vegetation communities as outlined in **Section 7.3.2,** a remote sensing technique will be completed using image classification analysis through a tool such as ArcGIS Spatial Analyst Extension. LiDAR and other existing information will be reviewed by vegetation specialists to classify each type of vegetation community. These defined features will then be used to create training samples which will be evaluated by the tool to apply the classification to the remainder of the PDA and LSA. Modelling will also include covariates such as estimated biomass, elevation, and light detection and ranging-derived canopy information. As additional field investigation data is obtained, we can further strengthen and refine models to support extrapolation to the overall PDA and LSA. A machine learning approach will likely be taken to extrapolate ELC using the covariates as identified above.

After model training / testing, maps of the various variable will be used to extrapolate likely areas where each vegetation community may exist across the PDA and LSA.

The wetland and riparian function rankings obtained during the ground-based field surveys will be extrapolated for the remaining wetlands identified within the PDA and LSA during the desktop review in the same manner as the extrapolation and modelling of the vegetation community data noted above. Mapped wetlands and covariate data will be reviewed by biostatisticians and wetland specialists to identify and classify wetland communities. These defined features will then be used to create training samples which will be evaluated by a tool to apply classifications to the remainder of the wetlands within the PDA and LSA. Abundance information of wetlands and vegetation communities will also be inferred through the use of this tool.

Modelling methods are still in development but will be clearly documented within the IS / EA Report to include assumptions, calculations of margins of error and other relevant statistical information.

Data files, mapped wetlands and vegetation classification features as well as SAR critical habitat and residences will be provided depicting their presence and relative predicted abundance within the study areas.

9. Effects Assessment

The following sections provide discipline-specific input and considerations as they pertain to the methodology for effects assessment. The Project is in the early stage of the IS / EA Report preparation and it is expected that the effects assessment methodology will be refined iteratively based on regulatory agency guidance, professional judgment and input received through the Project consultation and engagement process.

9.1 Project-Environment Interactions

The Project activities that may result in changes to the environment are described within the identified temporal and spatial boundaries. This includes identification of both direct and indirect changes by comparing the existing setting to the conditions anticipated to occur as a result of the Project. For each environmental discipline, the likely Project-environment interactions will be identified based on professional judgment, activities listed in TISG Section 3.2 as well as projects of similar magnitude and / or location.

A preliminary analysis of Project-environment interactions for Vegetation is provided in **Table 9-1** and will be confirmed during the IA / EA process to identify the Project-environment interactions that are likely to have a potential effect, and to identify measures to avoid or minimize potential negative effects and enhance benefits.

Table 9-1: Project – Environment Interactions

Project Phases	Project Activities	Vegetation
Construction Phase	*Mobilization of Equipment and Supplies*	**x**
	Temporary Construction Staging Areas[1]	**x**
	Temporary Access Roads and Trails[1]	**x**
	Temporary Construction Camps[1]	**x**
	ROW Clearing and Grubbing	**x**
	Brush and Timber Disposal	**x**
	Pits and Quarries[1]	**x**
	Drilling / Blasting / Aggregate Production	**x**
	Road Construction (stripping, subgrade excavation, embankment fill placement, grading, ditching)	**x**
	Bridge and Culvert Installation (approach embankments, foundations, substructures, superstructures, traffic protection, erosion controls)	**x**
	Construction Site Restoration	**x**

Project Phases	Project Activities	Vegetation
Construction Phase: Decommissioning	*Pits and Quarries*	**x**
	Temporary Camps, Roads / Trails and Staging Areas	**x**
Operations Phase	*Road Usage*	**x**
	Maintenance[2]	**x**

Notes: 1. Includes construction and use of
2. Includes General Maintenance (e.g., grading, erosion control, quarrying, pits), Seasonal Maintenance (e.g. snow clearing, bridge and culvert maintenance), and Special Maintenance (e.g. slope failures, road settlement / break-up.).

9.2 Valued Components and Indicators

The indicators and rationale for selection and measurement of potential effects, to be used to assess and evaluate the alternative routes in the IS / EA Report are provided in **Table 9-2**. The table includes both quantitative and qualitative indicators. The final list of indicators to be used in the IS / EA Report will be based on regulatory agency guidance, professional judgement and input received through the Project consultation and engagement process.

The VCs for Vegetation have been determined through consideration of the following factors listed in the TISG[11]:

- VC presence in the Project study areas;
- the extent to which the VC is linked to the interests or exercise of Aboriginal and Treaty Rights of Indigenous peoples, and whether an Indigenous group has requested the VC;
- the extent to which the effects (real or perceived) of the Project and related activities have the potential to interact with the VC;
- the extent to which the VC may be under cumulative stress from other past, existing or future undertakings in combination with other human activities and natural processes;
- the extent to which the VC is linked to federal, provincial, territorial or municipal government priorities (e.g., legislation, programs, policies);
- the possibility that adverse or positive effects on the VC would be of particular concern to Indigenous groups, the public, or federal, provincial, territorial, municipal or Indigenous governments; and
- whether the potential effects of the Project on the VC can be measured and / or monitored or would be better ascertained through the analysis of a proxy VC.

11. The TISG (the Agency 2020b) also states that information from ongoing and completed regional assessments in the proposed area of the Project should be used to inform VCs for the Project. In February 2020 a regional assessment of the Ring of Fire region commenced; however, it is not sufficiently advanced at this time to inform the Project VCs. The VCs will be consulted and engaged on early in the IA/ EA process and finalized taking into consideration the input received. Therefore, only information relevant to the Project that arises from the regional assessment of the Ring of Fire within an appropriate timeline will inform the VCs for the Project.

Inputs received to date from Indigenous communities, agencies and interested persons through the Consultation and Engagement Program, including inputs received on the Draft ToR, have also been used to inform the selection of the VCs and indicators for Vegetation.

Table 9-2: Vegetation Indicators

Valued Component	Indicators	Rationale for Selection
Wetland and Riparian Ecosystems	■ Availability (abundance spatially and temporally) ■ Distribution ■ Function and Composition	■ Cultural, economic, and/or social implications associated with this VC, where applicable. ■ Provides ecosystems support (habitat for flora, fauna, hydrological functions, air & water purification, carbon & nitrogen storage) ■ Habitat for Traditional Use and SAR plants ■ Indicator of wetland health
Upland Ecosystems	■ Availability (abundance spatially and temporally) ■ Distribution ■ Function and Composition	■ Cultural, economic, and/or social implications associated with this VC, where applicable. ■ Provides ecosystems support (habitat for flora, fauna, hydrological functions, air & water purification, carbon & nitrogen storage) ■ Habitat for SAR plants
Designated Areas *(Area of Natural and Scientific Interests, Environmentally Significant Areas, Significant Woodlands, Critical Landform / Vegetation Associations)*	■ Availability (abundance spatially and temporally) ■ Distribution ■ Function and Composition	■ Cultural, economic, and/or social implications associated with this VC, where applicable ■ Indicator of ecosystem health
Traditional Use Plants and SAR Plant Populations *(Including species with special conservation status or rarity in the province)*	■ Species presence ■ Persistence of population ■ Accessibility to traditional use of plants	■ Species at Risk (provincial or federal) ■ Cultural, economic, and/or social implications associated with this VC, where applicable ■ Indicator of ecosystem health

9.3 Potential Effects

A direct effect occurs through the direct interaction of an activity with an environmental discipline. The Project-environment interactions currently anticipated, based upon preliminary analysis, to result in direct effects to the Vegetation discipline have been identified in **Table 9-1**. The potential direct effects resulting from the Project-environment interactions will be confirmed during the IA / EA process and will be based on input received through the Indigenous Knowledge Program and Consultation and Engagement Program, regulatory agency guidance, and professional judgement.

An indirect effect occurs when a change to one environmental discipline resulting from a Project activity causes a change to another environmental discipline (i.e., changes in vegetation could indirectly affect wildlife). **Table 9-3** provides a preliminary identification of how changes to Vegetation may result in indirect effects to other environmental disciplines.

9.4 Methods for Predicting Future Conditions

With respect to quantitative models and predictions, the IS / EA Report will detail the model assumptions, parameters, the quality of the data and the degree of certainty of the predictions obtained.

Assessments of biodiversity metrics, relative abundance and distribution of vegetation communities of ecological, economic or social importance will be included in the prediction of future conditions. Percentage of land cover types and changes to land cover can provide critical information on broad-scale ecosystem changes. In addition, the extent of wetland cover and amount of wetland loss are also strong indicators of change in biodiversity (Ontario Biodiversity Council 2020). To predict future conditions for the Vegetation VCs, an assessment of the level of pre-existing disturbance versus new disturbance will be assessed. Burned areas, and forestry cut blocks will be included as existing disturbance. The baseline data gathered in terms of area of vegetation communities and abundance, minus existing disturbed areas will be compared to the area and abundance of vegetation communities that will be lost or affected by the Project within the PDA, LSA, and RSA.

Landscape fragmentation affects both plants and animals by depriving them of habitat. Fragmentation also causes indirect effects which together can result in declines of species populations and richness as well as changes to community composition. Therefore, an assessment of fragmentation prior to Project development and predicted effects post-development will be included within the IS / EA Report. This will include an effective mesh size[12] assessment similar to that completed by Jaeger 2000.

12. *"Effective mesh size" is a term introduced by Jaeger, 2000 to describe the effects of fragmentation "[…] based on the ability of two animals – placed in different areas somewhere in a region – to find each other within the landscape." The effective mesh size "[…] denotes the size of the areas when the region under investigation is divided into S areas (each of the same size […]) with the same degree of landscape division".*

Table 9-3: Potential Discipline Interactions

Discipline and Associated Valued Components	Aboriginal Treaty Rights and Interests	Atmospheric Environment	Climate Change	Acoustic Environment	Physiology, Terrain and Soils	Surface Water	Groundwater	Vegetation	Wildlife	Fish and Fish Habitat	Social	Economy	Land and Resource Use	Human Health and Community Safety	Visual Aesthetics	Archaeological and Cultural Heritage
Vegetation ■ Wetland and Riparian Ecosystems ■ Upland Ecosystems ■ Designated Areas ■ Traditional Use Plants and SAR Plant Populations	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X

Notes: X = Potential pathway for indirect effect as a result of the Project.
- = No pathway for indirect effect is anticipated as a result of the Project.

Wetland and riparian predicted effects will rely heavily on data gathered by surface and groundwater assessments that will be conducted and provided under separate study plans. The data gathered under these study plans will be used to assess wetland capacities to perform hydrological and water quality functions. Data will be collected to describe hydrological or drainage changes as a result of the Project that may alter moisture regimes and affect vegetation and wetland function. Wetland assessments will also consider whether wetlands within the study areas are within an area where wetland loss or degradation has reached critical levels, or are considered ecologically, socially or economically important to the region.

The IS / EA Report will describe the anticipated activities during the construction and operations phase and will consider the resilience of relevant species populations, communities and associated habitats to the effects of the Project. Ecological process will be evaluated for potential susceptibility which will include consideration for: patterns and connectivity of habitat patches; continuation of key natural disturbance regimes; structural complexity; hydrogeological patterns; nutrient cycling; abiotic -biotic and biotic interactions; population dynamics, genetic diversity, Indigenous knowledge relevant for the conservation and sustainable use of relevant species populations, communities and associated habitats including geological features.

9.5 Mitigation and Enhancement Measures

Once potential effects have been identified, the effects assessment will explore technically and economically feasible mitigation measures to avoid or minimize the identified negative effects and enhancement measures to increase positive effects beyond those that are already inherent to the design. These measures will consist of industry-standard practices, federal and provincial standard specifications, regulator-mandated measures, best management practices, Indigenous and community recommendations and recommendations from industry and environmental professionals based on expertise, scientific publications, experience and judgement.

It is important that mitigation and enhancement measures are achievable, measurable and verifiable and monitored for compliance and effectiveness during all temporal phases as part of the Project follow-up monitoring plan. Required environmental monitoring will verify the potential environmental effects predicted in the IS / EA Report, evaluate the effectiveness of mitigation and enhancement measures, and identify the process the Proponent will follow if mitigation and enhancement measures are not effective.

9.5.1 TISG Section 20 Requirements

The TISG Section 20 requirements for Vegetation are listed below. The applicability of these requirements will be evaluated during the IA / EA and will be adapted to the needs of the site, environment and Project activities.

- Include measures to address sensory disturbance and the resulting functional loss of habitat.
- Include measures to prevent the road from being a conduit for the spread of invasive species such as European Common Reed (*Phragmites australis*).
- Provide best technically and economically feasible mitigation approaches to habitat mitigation that follow the hierarchy:
  - Avoid potential impact.
  - Minimize potential impact.
- Provide biodiversity offsets to address any residual adverse environmental effects that cannot be avoided or sufficiently minimized; and provide justification for moving from one mitigation alternative to the next.
- Provide offsetting or compensation plans to address all residual effects to SAR, and their critical habitat, migratory birds, fish and fish habitat and / or wetland functions (if applicable) for review during IA / EA process; the plans should:
  - Describe the baseline condition of the SAR, critical habitat, migratory birds and wetland functions potentially impacted by the Project;
  - Apply the mitigation hierarchy;
  - Identify and describe residual effects;
  - Identify a compensation ratio with rationale, including how any policies or guidance provided by federal authorities, provincial authorities and Indigenous groups have been considered;
  - Identify the location and timing of implementation of compensation projects (where feasible);
  - Identify and describe the success criteria;
  - Identify and detail non-habitat measures;
  - Describe how the proposed measures align with published provincial and federal recovery, management, or action plans and strategies for SAR;
  - Identify the parties responsible for implementation, including monitoring and review;

- Identify indicator species for setting compensation objectives. Identification should be based on baseline data, Bird Conservation Strategies, and other information where available (note: SAR should not be used as indicator species; compensation efforts need to be directed specifically to these species);
- Describe the functions gained at the compensation site(s);
- Provide evidence that functions can be replaced by the proposed offset activities;
- Describe the process of selecting proposed compensation site(s) and associated baseline condition(s); and
- Provide a description of the monitoring schedule and activities to be completed to monitor the success of compensation activities.

9.6 Residual Effects

Residual effects are the effects remaining after the application of mitigation measures. The IS / EA Report will describe in detail the potential adverse and positive residual effects in relation to each temporal phase of the Project (i.e., construction, operation). Residual effects will be described using criteria to quantify or qualify adverse and positive effects, taking into account any important contextual factors. The residual effects will therefore be described in terms of the direction, magnitude, geographic extent, duration, frequency, likelihood, and whether effects are reversible or irreversible[13]. Ecological and socio-economic context may also be relevant when describing a residual effect. Context relates to the existing setting, its level of disturbance and resilience to adverse effects. Context can also relate to timing as it applies to assessing the worst-case scenario (e.g., effect during migratory or calving season for wildlife). Where appropriate, information regarding residual effects will be disaggregated by sex, gender, age and other community relevant identifying factors to identify disproportionate residual effects for diverse subgroups.

9.6.1 Magnitude

For magnitude, environmental discipline-specific definitions are required and are proposed below in **Table 9-4**.

13. TISG Section 13.1 (the Agency 2020b) identifies additional effects characteristics for certain disciplines (e.g., wetlands, birds, terrestrial wildlife, SAR). These additional effects characteristics are described in the respective discipline-specific study plans.

Table 9-4: Vegetation Magnitude Definition

Magnitude Level	Definition	Rationale
Negligible	■ Small scope of effect and slight severity of effect to Vegetation VCs.	■ Vegetation species and / or communities will be affected across 1% to 10% of their occurrence or population within the study area and are likely to be only slightly degraded or reduced in population by 1% to 10% within ten years or three generations (one generation being approximately 3 years).
Low	■ Restricted scope of effect and moderate severity of effect to Vegetation VCs.	■ Vegetation species and / or communities will be affected across 11% to 30% of their occurrence or population within the study area and will likely be moderately degraded or reduced in population by 11% to 30% within ten years or three generations.
Medium	■ Large scope of effect and serious severity of effect to Vegetation VCs.	■ Vegetation species and / or communities will be affected across 31% to 70% of their occurrence or population within the study area and will likely be seriously degraded or reduced in population by 31% to 70% within ten years or three generations.
High	■ Large to pervasive scope and high to extreme severity of effect to Vegetation VCs.	■ Vegetation species and / or communities will be affected across all or most (71% to 100%) of their occurrence or population within the study area and will likely be destroyed or eliminated or reduced in population by 71% to 100% within ten years or three generations.

9.7 Consideration of Sustainability Principles

The following provides a generic description of how sustainability principles will be considered in the effects assessment. The extent to which sustainability principles apply to a specific VC will vary depending on the nature of the VC and the potential for Project effects on the VC.

The effects assessment approach for the Project has included the consideration of the sustainability principles outlined in the Project TISG and the Agency's guidance on sustainability. The sustainability principles that have been considered include:

1. Consider the interconnectedness and interdependence of human-ecological systems;
2. Consider the well-being of present and future generations;
3. Consider positive effects and reduce adverse effects of the Project; and
4. Apply the precautionary principle by considering uncertainty and risk of irreversible harm.

The interconnectedness and interdependence of human-ecological systems will be considered through the assessment of potential indirect effects of each alternative. An indirect effect occurs when a change to one environmental discipline resulting from a Project activity causes a change to another environmental

discipline (e.g., changes in vegetation could indirectly affect wildlife). A preliminary assessment of indirect effects has been included in **Section 9.3**.

The well-being of present and future generations will be considered in the effects assessment through the application of the long-term operations phase temporal boundary of 75 years (**Section 6.1**) and through the effects characteristics description of duration and reversibility for each residual effect predicted.

The consideration of positive effects and reducing adverse effects of the Project is fundamental to the effects assessment methodology through the identification of mitigation measures to reduce potential adverse effects and the identification of the preferred alternative through the evaluation of advantages (i.e., positive effects) and disadvantages (i.e., adverse effects).

The effects assessment will apply the precautionary principle by clearly describing and documenting all uncertainties and assumptions underpinning the analysis and identifying information sources. The effects assessment will consider risk of irreversible harm through the effects characteristics description of reversibility for each residual effect predicted and will describe any uncertainty associated with the assessment of residual effects.

The scope of the sustainability assessment will be defined by issues of importance identified by Indigenous communities and interested persons through consultation and engagement activities, while also ensuring to be inclusive of the diversity of views expressed. The selection of VCs that will be the focus of the sustainability assessment will be aligned with the issues of importance identified by Indigenous communities and interested persons, as well as residual effects identified through the effects assessment process. The sustainability assessment will describe how the planning and design of the Project, in all phases including follow-up monitoring, considered the sustainability principles.

9.8 Consideration of Identity and Gender-Based Analysis Plus in Effects Assessment

The Proponent recognizes that communities and sub-populations within those communities may be impacted differently by the Project with respect to VCs and indicators. As such, the Project aims to collect baseline information for the purpose of assessing differential effects and establishing relevant mitigation measures, as further elaborated on in **Section 4.2**. Gender-Based Analysis Plus will not be limited to community feedback, when offered or discussed in secondary texts, additional sub-population information as is applicable to the relevant assessment will be incorporated.

9.9 Follow-up Programs

A follow-up program verifies the accuracy of the effects assessment and evaluates the effectiveness of mitigation measures. Identification of follow-up programs for the Project are not described in this Study Plan as the information needed to determine environmental monitoring requirements is dependent on the outcome of the effects assessment and consultation with Indigenous communities, agencies and interested persons. For instance, offsets required as part of *Endangered Species Act* or *Species at Risk Act* permitting will incorporate a follow up program, however an effects assessment and consultation will need to take place prior to formalization of a program. Therefore, the Proponent will include information on follow-up programs that address the requirements outlined in Section 26 of the TISG, in the IS / EA Report and will identify the compliance and effects monitoring activities to be undertaken during all phases of the Project, as required.

The need for and content of a monitoring plan(s) specific to wetlands and vegetation will consider the requirements in Section 26 of the TISG. Any recommended monitoring plans will be presented in the IS / EA Report.

10. Assumptions

Any assumption used in the effects assessment, for example the assumed average daily traffic on the CAR, will be clearly identified and a rationale provided in the IS / EA Report.

11. Concordance with Federal and Provincial Guidance

This section provides the best information currently available on how federal and provincial requirements identified for the Project to date will be addressed. The final concordance with federal and provincial requirements will be included in the IS / EA Report, and will be based on regulatory agency guidance, professional judgement and input received through the Project consultation and engagement process.

Table 11-1: Study Plan Federal Concordance – Conformance with Requirements

ID #	Federal TISG Reference	Requirement / Comment / Concern	Response	Study Plan Reference
1	TISG Section 1.1 page 4	■ The Guidelines correspond to factors to be considered in the IA. These factors are listed in subsection 22(1) of The Agency and prescribe that the IA of a designated project must take into account: – any change to the designated project that may be caused by the environment;	■ The potential effects of the Project on Vegetation and the potential effects of the environment on the Project will be assessed in accordance with applicable standards and guidance.	■ Section 9
2	TISG Section 2.3, pages 6-7	■ The description should focus on aspects of the Project and its setting that are important in order to understand the potential environmental, health, social and economic effects and impacts of the Project. The following information must be included and, where appropriate, located on map(s): – geographic coordinates (i.e., longitude/latitude using international standard representation in degrees, minutes, seconds) for the beginning and end points of the proposed road; – current land and/or aquatic uses within the Study Areas; – distance of the project components to any federal lands and the location of any federal lands within the Study Areas; – all waterbodies and their location on a map; – navigable waterways; – the environmental significance and value of the geographical setting in which the Project will take place and the Study Areas; – environmentally sensitive areas, such as national, provincial, territorial and regional parks, [United Nations Educational, Scientific and Cultural Organization] UNESCO World Heritage Sites, geological heritage sites, ecological reserves, ecologically and biologically sensitive areas, wetlands, and habitats of federally or provincially listed species at risk and other sensitive areas; – Dedicated Protected Areas3 and any other areas of ecological and social significance identified by the community during the community-based land use planning processes with the Province of Ontario (e.g., Enhanced Management Areas; see Section 6.1 for requirements related to confidentiality); – lands subject to conservation agreements; – current mineral development proposals, and areas of early and advanced mineral exploration in the Study Areas; – current areas of aggregate extraction; – description and locations of all potable drinking water sources (i.e., municipal or private), including spring water sources; – description of local communities and Indigenous groups that is culturally relevant and gender sensitive; – if the information is not confidential, provide a description and location of Indigenous traditional territories and/or consultation areas, Treaty and/or Title lands, Indian Reserve lands, Indigenous harvesting regions (with permission of Indigenous groups), Métis settlements; and – culturally important features of the landscape.	■ The information related to landscape features, sensitive or protected areas and select others listed in the TISG will be illustrated on detailed maps and / or described within the IS / EA Report, where appropriate. This information will be gathered through the desktop analysis, consultation and community engagement and field studies as described in the Study Plan.	■ Section 7 ■ Section 8
3	TISG Section 3.1, page 11	■ The Impact Statement must describe all project components including but not limited to: – borrow pits, gravel or aggregate pits and quarries (footprint, geographic location, ownership, and development plans including pit phases and lifespan), including their location in relation to upland habitats and the presence of rare, limited and/or significant habitat (e.g., federal, provincial, or Indigenous protected and conserved areas, ANSIs (Areas of Natural and Scientific Interest), Ramsar sites, critical habitat identified under the Species at Risk Act, etc.;	■ The information related to landscape features, sensitive or protected areas and other items listed in the TISG will be illustrated on detailed maps and / or described within the IS / EA Report, where appropriate. This information will be gathered through the desktop analysis, consultation and community engagement and field studies as described in the Study Plan.	■ Section 6.2
4	TISG Section 5.1, page 22	■ Any proposed mitigation measures are to be clearly linked, to the extent possible, to valued components in the Impact Statement as well as to specific project components or activities, as well as comments raised during engagement activities	■ Once potential effects have been identified, the effects assessment will explore technically and economically feasible mitigation measures to avoid or minimize the identified negative effects and enhancement measures to increase positive effects.	■ Section 9.5

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5	TISG Section 7.1, page 29	■ In describing the biophysical environment, the Impact Statement must take an ecosystem approach that considers how the Project may affect the structure and functioning of biotic and abiotic components with the ecosystem using scientific, community and Indigenous knowledge regarding ecosystem health and integrity, as applicable. The Impact Statement must provide a description of the indicators and measures used to determine ecosystem health and integrity, identified during early planning and reflected in the TISG. The presence of habitat (e.g., federal, provincial, or Indigenous protected areas, ANSIs, RAMSAR sites, critical habitat identified under the SARA, etc.), such as but not limited to spawning shoals, aquatic vegetation or overwintering pools, potentially effected by the Project should be included in the description of the biophysical baseline conditions.	■ We will take an ecosystem approach that considers how the Project may affect structure and functioning of biotic and abiotic ecosystem components. This includes areas of indigenous cultural importance, descriptions of ecosystem health and integrity, the presence of protected areas and critical habitat for SAR species.	■ Section 9
6	TISG Section 7.1, page 30	■ The Impact Statement must establish appropriate Study Area boundaries to describe the baseline conditions. The Study Area boundaries need to encompass the spatial boundaries of the Project, including any associated project components or activities, and the anticipated boundaries of the Project effects, including all potentially impacted local communities, municipalities and Indigenous groups. Considerations in assigning appropriate Study Areas or boundaries would include, but not be limited to: – areas potentially effected by changes to water quality and quantity or changes in flow in the watershed and hydrologically connected waters; – areas potentially effected by airborne emissions or odours; – areas determined by dispersion and deposition modelling; – areas within the range of vision, light and sound and the locations and characteristics of the most sensitive receptors; – species habitat areas, usage timing and migratory patterns; – emergency planning and emergency response zones; – the geographic extent of local and regional services; – any impacted local communities, including municipalities; – all potentially impacted Indigenous groups; – areas of known Indigenous land, cultural, spiritual and resource use; and – existing effected infrastructure.	■ The study areas are defined and described in the Study Plan.	■ Section 6
7	TISG Section 7.1, page 30	■ The Impact Statement must consider the resilience of relevant species populations, communities and associated habitats to the effects of the Project. Ecological processes should be evaluated for potential susceptibility to adverse effects from the Project. Considerations include patterns and connectivity of habitat patches; continuation of key natural disturbance regimes; structural complexity; hydrogeological or oceanographic patterns; nutrient cycling; abiotic-biotic and biotic interactions; population dynamics, genetic diversity, Indigenous knowledge relevant for the conservation and sustainable use of relevant species populations, communities and associated habitats.	■ The IA / EA will consider the resilience of relevant populations, communities and associated habitat to the effects of the Project. Ecological processes will be evaluated for potential susceptibility to adverse effects from the Project such as considerations for: patterns and connectivity of habitat patches, continuation of key natural disturbance regimes.	■ Section 8 ■ Section 9
8	TISG Section 7.1, page 30	■ If the baseline data have been extrapolated or otherwise manipulated to depict environmental, health, social and/or economic conditions within the Study Area, modelling methods must be described and must include assumptions, calculations of margins of error and other relevant statistical information. Models that are developed should be validated using field data from the appropriate local and regional Study Areas. Ensure baseline data is representative of project site conditions. If surrogate data from reference sites are used rather than site-specific surveys, the proponent should demonstrate that the data are representative of project site conditions.	■ We will include details on modeling methods and discuss confidence in using desktop and / or field studies when describing baseline conditions.	■ Section 7 ■ Section 8
9	TISG Section 7.1, page 31	■ Where baseline data are available in geographic information system (GIS) format, this information is to be provided to the Agency as electronic geospatial data file(s) compliant with the ISO 19115 standard. This would support the Government of Canada's commitment to Open Science and Data and would facilitate the sharing of information with the public through the Canadian Impact Assessment Registry Internet Site and the Government's Open Science and Data Platform. The Agency intends to make the geospatial data files available to the public under the terms of the Open Government License – Canada.	■ Data provided will meet ISO 19115 standards.	■ Section 8

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10	TISG Section 7.2, pages 31-33	■ Information sources and data collection methods used for describing the baseline environmental, health, social and economic setting may consist of the following sources of information. For specific sources of baseline information, see Appendix 1. – Federal government (e.g., Environment and Climate Change Canada, Health Canada, Indigenous Services Canada, Statistics Canada, Women and Gender Equality Canada); – Ontario provincial government (e.g., Ministry of Environment, Conservation, and Parks, Ministry of Natural Resources and Forestry; – Bird Conservation Region plans; – academic institutions; – field studies, including site-specific survey methods; – database searches, including: – federal, provincial, territorial, municipal and local data banks; – Breeding Bird Atlas - Ontario (2001-2005)22 – monitoring program databases protected areas, watershed or coastal management plans; – natural resource management plans; – species recovery and restoration plans; – field measurements to gather data on ambient or background levels for air, water, soil and sediment quality, light levels or acoustic environment (soundscape); – land cover data, including: ▪ terrestrial ecosystem mapping products; ▪ forest cover maps; ▪ remote sensing resources; ▪ important habitats and features to include: ▪ water bodies, wetlands, watercourses; ▪ riparian habitat; ▪ river banks or other eroded habitats; ▪ artificial water sources; ▪ forest, tree patches, solitary trees (especially old decaying trees); ▪ forest edges and tree rows; ▪ ridges, including eskers; ▪ caves and mines; ▪ cliffs, rock outcrops, exposed bedrock, talus, and other karst topography; ▪ buildings, bridges, and other anthropogenic features, including linear features; ▪ sources of artificial lighting attracting insects; ▪ critical habitat; and ▪ and any other habitat features known to be important in the area. – Published literature, such as peer reviewed journals, reports by think tanks, non-government organizations and government reports; – EA documentation, including monitoring reports, from prior projects in the area and similar projects outside the area; – regional studies, project assessments and strategic assessments; – renewable harvest data; – Indigenous knowledge, including oral histories and knowledge gathered by spending time on the land with knowledge holders; – community based monitoring and studies conducted by Indigenous communities; – expert, community, public and Indigenous engagement and consultation activities, including workshops, meetings, open houses, surveys; – qualitative information gathered from interviews, focus groups or observation; – census data; – baseline human health risk assessments; – community and regional economic profiles; – community well-being studies; and – statistical surveys, as applicable.	■ Data sources are being reviewed for their appropriateness and will be included in study plans where applicable. Information on specific data sources and their relevance to the Project will be included in the IS / EA Report.	■ Section 7 ■ Appendix A

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11	TISG Section 7.2, page 32	■ The Impact Statement must provide detailed descriptions of specific data sources, data collection, sampling, survey and research protocols and methods followed for each baseline environmental, health, social and economic condition that is described, in order to corroborate the validity and accuracy of the baseline information collected.	■ Descriptions of specific data sources, data collection, sampling, survey and research protocols and methods followed for each baseline environmental condition will be provided in the IA / EA and are summarized in this Study Plan.	■ Section 7 ■ Appendix A
12	TISG Section 7.2, page 33	■ If using existing data sources, the Impact Statement must provide justification to show that the data sources are relevant in spatial and temporal coverage to the Project. Some data sources may have good coverage in Southern Ontario or existing road networks but be unsuitable as a baseline for these northern areas where there are not roads.	■ Data sources are being reviewed for their appropriateness and will be included in study plans where applicable. Information on specific data sources and their relevance to the Project will be included in the IS / EA Report.	■ Section 7 ■ Appendix A
13	TISG Section 7.2, page 33	■ Consult the Species at Risk Public Registry for information on the list of species at risk and available recovery documents and reference the documents and dates consulted. Ensure the most up to date documents are used and species statuses are up to date	■ The information requested will be provided in the IS / EA Report.	■ Section 9
14	TISG Section 7.2, page 33	■ Baseline data must be collected in a manner that enables reliable analysis, extrapolations and predictions. Resulting data should be suitable for analyses to estimate pre-project baseline conditions, derive predictions of impacts, and evaluate and compare post-project conditions and at scales of within and across the Project, Local and Regional Assessment areas. Modelling methods, error estimates and assumptions should be reported (as per section 7.1). Modelling and simulations should be used early in the planning phase to estimate the necessary sampling intensity and to quantitatively evaluate the effectiveness of design options. Ethical guidelines and relevant cultural protocols governing research, data collection and confidentiality must be adhered to.	■ Descriptions of specific data sources, data collection, sampling, survey and research protocols and methods followed for each baseline environmental condition will be provided in the IS / EA Report and are summarized in this Study Plan.	■ Section 7
15	TISG Section 7.2, page 33	■ With regard to field studies, survey work must be planned to include multiple sampling locations and multiple visits to each location to support all required assessment analyses. Existing data should be considered as a limited augmentation of this new data. See the “Establishing Baseline Conditions” (sections 8.5, 8.9, 8.10, 8.11) in this TISG for recommendations on survey design and methodology. Surveys and analyses should be conducted by qualified experts.	■ Descriptions of specific data sources, data collection, sampling, survey and research protocols and methods followed for each baseline environmental condition will be provided in the IS / EA Report and are summarized in this Study Plan.	■ Section 7
16	TISG Section 7.3, page 34	■ The list of valued components must be informed, validated and finalized through engagement with the public, Indigenous groups, lifecycle regulators, jurisdictions, federal authorities, and other interested parties. The Impact Statement must describe valued components, processes, and interactions that are identified to be of concern or that the Agency considers likely to be impacted by the Project and are included in the Guidelines.	■ A summary of the Consultation & Engagement Plan to Support the Environmental Assessment / Impact Statement (AECOM 2020) has been provided in **Section 4** of the Study Plan; further details can be found in the Appendix B of the ToR. Specific consultation and engagement activities and schedules are currently in development and will be shared with the MECP and the Agency once available.	■ Section 4
17	TISG Section 7.3, pages 34-35	■ In selecting a valued component to be included, the following factors should be considered: – valued component presence in the Study Area; – the extent to which the valued component is linked to the interests or exercise of Aboriginal and Treaty rights of Indigenous peoples, and whether an Indigenous group has requested the valued component; – the extent to which the effects (real or perceived) of the Project and related activities have the potential to interact with the valued component; – the extent to which the valued component may be under cumulative stress from other past, existing or future undertakings in combination with other human activities and natural processes; – the extent to which the valued component is linked to federal, provincial, territorial or municipal government priorities (e.g., legislation, programs, policies); – the extent to which the valued component is being addressed through any ongoing or completed regional assessment processes; – the possibility that adverse or positive effects on the valued component would be of particular concern to Indigenous groups, the public, or federal, provincial, territorial, municipal or Indigenous governments; and – whether the potential effects of the Project on the valued component can be measured and/or monitored or would be better ascertained through the analysis of a proxy valued component.	■ The IS / EA Report will include detailed descriptions of the VCs and the rationale for their inclusion to describe their importance and the predicted residual effects (adverse and positive) as a result of the Project.	■ Section 9
18	TISG Section 7.3, page 35	■ The valued components must be described in sufficient detail to allow the reviewer to understand their importance and to assess the potential adverse and positive environmental, health, social and economic effects and impacts arising from the Project activities.	■ The IS / EA Report will include detailed descriptions of the VCs and the rationale for their inclusion to describe their importance and the predicted residual effects (adverse and positive) as a result of the Project.	■ Section 9

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19	TISG Section 7.3, page 35	■ For each of the valued components that will be assessed in the Impact Statement, the proponent must create a Study Plan and a Work Plan to be validated by the Agency. Upon receipt of a Study Plan, the Agency may request that the proponent present and discuss the Study Plan at technical meetings, which will be scheduled during the impact statement phase.	■ The Study Plan meets this requirement. A summary of the Technical discussions with agencies have been summarized in **Section 3** of the Study Plan.	■ Section 3
20	TISG Section 7.4.1, pages 35-36	■ The Impact Statement must describe the spatial boundaries, including project, local and regional Study Areas, for each valued component included in assessing the potential adverse and positive environmental, health, social and economic effects of the Project and provide a rationale for each boundary. Spatial boundaries are defined taking into account the appropriate scale and spatial extent of potential effects and impacts of the Project; community knowledge and Indigenous knowledge; current or traditional land and resource use by Indigenous groups; exercise of Aboriginal and Treaty rights of Indigenous peoples, including cultural and spiritual practices; and physical, ecological, technical, social, health, economic and cultural considerations. The size, nature and location of past, present and foreseeable future projects and activities are factors that should be included in the definition of spatial boundaries. It should be noted that in some cases, spatial boundaries might extend to areas outside of Canada. These transboundary spatial boundaries should be identified where transboundary effects are expected.	■ The study areas are defined and described in the Study Plan.	■ Section 6
21	TISG Section 7.4.1, page 36	■ For valued components establish three Study Area spatial boundaries to assess impacts to each valued component: 1) Project Study Area: defined as the project footprint for each alternative route; " 2) Local Study Area: defined for each valued component – see below; 3) Regional Study Area: defined for each valued component – see below ■ Provide a rationale for boundaries of the project Study Area, local Study Area, and regional Study Area for each valued component and indicate how the above objectives were met in establishing the boundaries.	■ The study areas are defined and described in the Study Plan.	■ Section 6
22	TISG Section 7.4.1, page 36	■ For biophysical valued components, spatial boundaries should be defined using an ecosystem-centered approach for the project Study Area, local Study Area, and regional Study Area, as wetlands and eskers are features that are likely to be most effected. Ecoregion boundaries or their derivatives should not be used since the Project occurs on, near and across ecoregion boundaries. See Technical Guidance for Assessing Cumulative Environmental Effects under the *Canadian Environmental Assessment Act, 2012* for more guidance on determining spatial boundaries. Delineate spatial boundaries (i.e., regional Study Area, local study area, and project Study Area) to meet the following objectives: a. range of land cover types should be representative of the defined spatial extent; b. the spatial pattern of the land cover types should be well distributed across the defined spatial extent (e.g., revise if one or more land cover types is concentrated in one sub-area and uncommon in other parts of the area); and c. low to moderate rate of change in the prevalence of one or more land cover types with increasing distance from the (i.e., to use land cover patterns to constrain the distances within which comparisons should be made).	■ The study areas are defined and described in the Study Plan.	■ Section 6
23	TISG Section 7.4.1, page 37	■ For Habitat valued components: The spatial extent of the habitat and the habitat functions should influence the determination of an appropriate local Study Area and regional Study Area, considering objectives a-c above. The local Study Area should be at a minimum: project Study Area plus a 500-metre buffer. For habitat valued components potentially affected by the Project, a land cover analysis should be conducted to determine if a 500-metre buffer appropriately reflects ecological boundaries.	■ The study areas are defined and described in the Study Plan.	■ Section 6
24	TISG Section 7.4.1, page 37	■ For Species valued components: The local Study Area should correspond to the project Study Area plus a buffer defined with objectives a-c above. Use simulation modeling to help define a buffer that captures objectives a-c for each species or species group.	■ The study areas are defined and described in the Study Plan.	■ Section 6
2	TISG Section 7.4.2, page 37	■ For valued components related to wetlands, eskers, birds, wildlife, and Species at Risk, define temporal boundaries in a manner that enables detection of all species that use the project Study Area, local Study Area, and regional Study Area throughout the year and between years, and to estimate their temporal pattern of use (e.g., breeding, or migrants stopping on northward and/or southward migration). Baseline data collection for all biophysical valued components is to be provided for a minimum of two years, unless specified otherwise. Temporal boundaries spanning more than one year will enable accounting for variation due to irregular events (e.g., masting events, storms on migration, late snowfalls).	■ Data (desktop and field-based) will be collected to represent temporal sources of variation. Data collected will be representative of the temporal perspective of multi-years of study by using baseline data from previous years / seasons and desktop studies to supplement proposed field studies.	■ Section 7.1 ■ Section 7.2 ■ Section 7.3
25	TISG Section 7.4.2, page 37	■ The temporal boundaries of the impact assessment span all phases of the Project determined to be within the impact assessment. If potential effects are predicted after project decommissioning or abandonment, this should be taken into consideration in defining specific boundaries. In order to assess a project's contribution to sustainability, consideration should be given to the long-term effects on the well-being of present and future generations. When defining temporal boundaries, the proponent should consider how elements of environmental, health, social and economic well-being that local communities, including municipalities, and Indigenous groups identify as being valuable could change over time.	■ The temporal boundaries that will be considered in the IS / EA Report are defined and described in the Study Plan.	■ Section 6.1

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26	TISG Section 8.5, page 42	■ identify and describe wetland capacities to perform hydrological and water quality functions, – provide for wildlife and wildlife habitat or other ecological functions;	■ Impacts associated with the degradation of ecosystem components (including Vegetation) due to hydrological or drainage changes will be described in the IS / EA Report.	■ Section 9.4 ■ Surface Water Study Plan
27	TISG Section 8.5, page 42	■ identify and map all wetlands on federal lands, and all wetlands potentially directly or indirectly effected by the Project and within the scope of federal permits, authorizations, or other approvals;	■ The information requested will be provided in the IS / EA Report, if applicable.	■ Section 8.3
28	TISG Section 8.5, page 42	■ The Impact Statement must determine whether these wetlands are within a geographic area of Canada where wetland loss or degradation has reached critical levels, or considered ecologically or socially or economically important to a region;	■ The IA / EA will consider whether wetlands within the Project study areas are within a geographic region where wetland loss or degradation has reached critical levels, or are considered ecologically, socially or economically important to the region.	■ Section 9.4
29	TISG Section 8.5, page 42	■ The Impact Statement must provide pre-project characterization of the shoreline, banks, current and future flood risk areas, wetland catchment boundaries;	■ Further information on hydrological characterization of the project areas is provided in the Surface Water Study Plan.	■ Surface Water Study Plan
30	TISG Section 8.5, page 42	■ The Impact Statement must quantify, delineate and describe wetlands (fens, marshes, peat lands, bogs) within the local Study Area potentially directly, indirectly and / or cumulatively effected by the Project in the context of: – wetland class, ecological community type and conservation status; – biodiversity with respect to both flora and fauna; – abundance at local, regional and provincial scales; – distribution; and – current level of disturbance.	■ This information will be provided in the IS / EA Report.	■ Section 7.3
31	TISG Section 8.5, page 43	■ Collect data from representative wetlands in a manner that enables reliable extrapolations in space (i.e., at minimum to Project, local and regional Study Areas) and in time (i.e., across years): – design surveys so that they represent the spatial and temporal targets of modeling and extrapolations, and to produce scientifically defensible predictions of impacts and estimates of mitigation effectiveness. Survey designs should be sensitive enough to detect and quantify the impacts at the spatial and temporal scales identified above (i.e., project Study Area, local Study Area, and regional Study Area), any departures from predictions, and the effectiveness of mitigations. Justify the selection of modeling techniques based on current and recent scientific literature; – survey protocol planning for representative wetlands should include modeling and simulations to estimate sampling requirements, and analysis to evaluate resulting design options; and – sample size must be planned to support evaluation of the project Study Area within the context of the local Study Area and regional Study Area. Appropriate design of surveys will need to consider multiple survey locations in order to represent the wetland heterogeneity of the regional Study Area, and to yield multiple survey locations per wetland type, without requiring aggregation of habitat classes post-hoc.	■ Descriptions of specific data sources, data collection, sampling, survey and research protocols and methods followed for each baseline environmental condition will be provided in the IA / EA and are summarized in this Study Plan.	■ Section 7.3 ■ Section 8.3
32	TISG Section 8.5, page 43	■ The Impact statement must provide a wetland functions assessment in accordance with the guiding principles of Wetland Ecological Functions Assessment: An Overview of Approaches or any subsequent approved guidelines by which to determine the most appropriate functions assessment methodology to use: – complete this assessment prior to the start of Project construction for a representative selection of wetlands that the Project would directly affect and for a representative selection of wetland(s) that are hydrologically connected. In conducting this assessment, the Proponent should show that wetlands are considered in the context of: i. the larger watersheds of which they are a part; ii. adjacent land use with a focus on hydrological and other functions; iii. landscape and / or watershed considering topography, soil types and hydrological linkages; and iv. the global significance of peatlands across the regional Study Area.	■ The wetland functional assessment is summarized in this Study Plan.	■ Section 7.3
33	TISG Section 8.5, page 44	■ identify a regional Study Area of sufficient size to capture effects to wetlands within the larger drainage area and include wetlands located outside of the local Study Area that may be effected by hydrological changes as a result of cumulative effects.	■ The study areas are defined and described in the Study Plan.	■ Section 6
34	TISG Section 8.5, page 44	■ Submit complete data sets from any survey sites, including GIS files. Databases and GIS files should be accompanied by detailed metadata that meets ISO 19115 standard. Contact provincial and/or local government authorities to determine if other wetland conservation policies, regulations or wetland compensation guidelines apply (refer to The Wetland Network); and	■ Data provided will meet ISO 19115 standards.	■ Section 8.2

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35	TISG Section 8.5, pages 43-44	■ This assessment should be quantitative and include the collection of site-specific baseline information on wetland functions, including: – Surveys to assess for the presence, abundance, density, and distribution of migratory birds and federally listed species at risk, provincially listed species at risk, and species assessed by COSEWIC as at-risk in relation to potentially effected wetlands and associated riparian areas. Surveys should meet appropriate standards (see sections 8.9, 8.10, and 8.11), be species or bird group specific as appropriate, and be conducted during the appropriate times of the year as specified in section 8.9-8.11 of this document. Surveys for species at risk should assess species individually where possible (typically, an indicator approach is not appropriate for species at risk). Surveys should not be limited to species or groups of species that are wetland-obligate, but rather should include any species known to use wetland habitats as part of its lifecycle. Data should be sufficiently robust to identify which wetland classes are important to which species (and for how many). – The spatial location and a description of the biological characteristics of each potentially effected wetland and the ecological services and functions (hydrology, biochemical cycling, habitat, and climate) they provide. The functions assessment should be as specific as possible to the biological characteristics of the wetland and to the ecological services and functions it provides. – A supporting rationale and detailed description of the methods used in completing the wetland functions assessment, including sampling design.	■ Descriptions of specific data sources, data collection, sampling, survey and research protocols and methods followed for each baseline environmental condition will be provided in the IA / EA and are summarized in this Study Plan.	■ Section 7.3 ■ Section 8.3
36	TISG Section 8.7, page 46	■ The Impact Statement must:- within the local Study Area of the Project, provide a description of: – the biodiversity, relative abundance and distribution of vegetation species and communities of ecological, economic or human importance (e.g., traditional use, forestry, tame pasture, native prairie, wetland or old growth); – the conservation status (i.e., listed under the SARA or assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) to be 'at risk', including species of concern) applicable to any particular species or communities; – the species critical habitat as described in final or draft recovery strategies or action plans; – the current level of both anthropogenic and natural (fire, flood, drought, etc.) disturbance associated with vegetation, including a description of: ▪ level of habitat fragmentation;o historical and current fire disturbance;o any proximate activities that have resulted in changes to fire regimes (e.g., fire suppression, flooding, insect infestations, etc.); ▪ Consult Ontario's Provincial Satellite Derived Disturbance Mapping digital resource31; and ▪ Consult Ontario's Far North Land Cover layer.	■ The information requested will be provided in the IS / EA Report, if applicable.	■ Section 7
37	TISG Section 8.7, page 47	■ Identify the biodiversity metrics, biotic and abiotic indicators that are used to characterize the baseline vegetation biodiversity and discuss the rationale for their selection;	■ The information requested will be provided in the IS / EA Report and is summarized in this Study Plan.	■ Section 9.4
38	TISG Section 8.7, page 47	■ The Impact Statement must: – summarize information available from the Far North Biodiversity Project;	■ Information on specific data sources and their relevance to the Project will be included in the IA / EA Report.	■ Section 7 ■ Appendix A
39	TISG Section 8.7, page 47	■ The Impact Statement must: – provide data files of mapped features depicting vegetation presence within the Study Area;	■ The information requested will be provided in the IS / EA Report.	■ Section 8.3
40	TISG Section 8.7, page 47	■ The Impact Statement must: – describe the use of local vegetation for medicinal or cultural purposes or as a source of country foods (traditional foods). The following species have known cultural importance to Indigenous communities: black spruce, white spruce, tamarack, balsam poplar, cedar, dwarf birch, red willow, trembling aspen, cottongrass, moss, black crowberry, blueberries, raspberries, reindeer moss, sphagnum moss, northern Labrador tea, caribou lichen, bearberry, dogwood, small cranberry, sage, sweetgrass, and lily pads; and any other plant species of concern for consumption or where use has any Indigenous cultural importance; and	■ The presence of vegetation species of economic, traditional, cultural and / or heritage importance, and Project-related effects on those vegetation species, will be described in the IS / EA Report. Additional information can be found in the Aboriginal Treaty Rights and Interests Study Plan, Human Health and Community Safety Study Plan, and Land and Resource Use Study Plan.	■ Section 4.2 ■ Section 5 ■ Aboriginal Treaty Rights and Interests Study Plan ■ Human Health and Community Safety VC Study Plan ■ Land and Resource Use Study Plan

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41	TISG Section 8.7, page 47	■ The Impact Statement must: – describe any other plant species of concern for consumption or where use has any Indigenous cultural importance; and	■ Presence of and Project-related impacts of vegetation species of economic, traditional, cultural and / or heritage importance will be described in the IS / EA Report. Additional information can be found in the Aboriginal Treaty Rights and Interests Study Plan, Human Health and Community Safety Study Plan, and Land and Resource Use Study Plan.	■ Section 4.2 ■ Section 5 ■ Aboriginal Treaty Rights and Interests Study Plan ■ Human Health and Community Safety VC Study Plan ■ Land and Resource Use Study Plan
42	TISG Section 8.7, page 47	■ The Impact Statement must: – describe any considered vegetation control alternative (including manual vegetation control methods).	■ Feasible vegetation control approaches for the construction and operations stage of the Project will be described in the IS / EA Report.	■ Section 7.5
43	TISG Section 8.9, page 53	■ The Impact Statement must:¡ design suggestions for Project Study Area and Local Study Area scales. The following should be considered as inputs to design planning and evaluation: – Geomatics and habitat typing:o each site visited at any time between the dates of June 10 and August 30 should be photographically documented with 13 photos. At each cardinal direction (N, E, S, W): 1 photo at shoulder height with arm and camera extended parallel to ground, 1 photo with arm at 45-degrees (from body position) pointing down, and 1 photo with arm extended at 135-degrees (from body position) pointing up. And finally, one photo with arm extended straight up (i.e., vertically). Photos should be interpreted by qualified individuals as precisely as possible according to one or each of the classification schemes: Ontario Ministry of Natural Resources and Forestry's Boreal Ecosites, Wetland Ecosystem Classification for Northern Ontario (W-type), Forest Ecosystem Classification for Northern Ontario (V-type), and [Natural Resources Canada] NRCan's Canadian National Vegetation Classification (vegetation association);use the Ontario Ministry of Natural Resources and Forestry's Far North Land cover (version 1.4 or later, as available) and augmentation with fire history, digital elevation models, surficial geology and other data sources	■ The Study Plan meets this requirement.	■ Section 7.3
44	TISG Section 8.9, page 54	– use the Ontario Ministry of Natural Resources and Forestry's Far North Land cover (version 1.4 or later, as available) and augmentation with fire history, digital elevation models, surficial geology and other data sources	■ Data sources are being reviewed for their appropriateness and will be included in Study Plans where applicable. Information on specific data sources and their relevance to the Project will be included in the IS / EA Report.	■ Section. 7.3
45	TISG Section 8.9, page 57	■ The Impact Statement must provide written description and maps of ecozones, ecoregions, and ecodistricts as per Ontario or Canada's Ecological Landscape Classification;	■ The information requested will be provided in the IS / EA Report.	■ Section 8.3
46	TISG Section 8.11, page 60	■ The Impact Statement must [identify] key habitat associated with species at risk should be considered valued components, including eskers and similar geologic features, wetlands and peatlands;	■ The information requested will be provided in the IS / EA Report.	■ Section 9.2
47	TISG Section 8.11, page 60	■ Collect species at risk data to represent the following temporal sources of variation: – among years; ■ within and among seasons (e.g., spring dispersal, breeding, late summer/fall migration and swarming, hibernation); and within the 24 hour daily cycle.	■ Data (desktop and field-based) will be collected to represent temporal sources of variation. Data collected will be representative of the temporal perspective of multi-years of study by using baseline data from previous years / seasons and desktop studies to supplement proposed field studies.	■ Section 7.1 ■ Section 7.2 ■ Section 7.3
48	TISG Section 8.11, page 61	■ Contain complete data sets from all survey sites. These should be in the form of complete and quality assured relational databases, with precisely georeferenced site information, precise observation/visit information and with observations and measurements in un-summarized form. Databases and GIS files should be accompanied by detailed metadata that meets ISO 19115 standards;	■ Data provided will meet ISO 19115 standards.	■ Section 8

ID #	Federal TISG Reference	Requirement / Comment / Concern	Response	Study Plan Reference
49	TISG Section 8.11, page 61	■ Account for the fact that rare species will require more survey effort to detect, which should be reflected in survey design by increasing the number and duration of surveys: – collect field data over at least two years. The goal of collecting data over multiple years is to improve the understanding of natural variability in populations. Two years of sampling is being suggested as a minimum. As the number of sampling years increases so does the understanding of natural variability; – Sample size must be planned to support a robust evaluation of the project Study Area within the context of the local Study Area and regional Study Area; – Design of surveys will need to consider multiple number of survey locations in order to represent the habitat heterogeneity of the regional Study Area, and to plan the number of survey locations per land cover or habitat class so that aggregation of habitat classes post-hoc is not required; – In terms of sampling effort per unit area, field survey effort should be most intensive within the project Study Area. The level of effort per unit area may be similar or somewhat less within the remainder of the local Study Area but should be scaled to the likelihood that project effects will impact species at risk within that zone. Efforts outside the project Study Area should be carefully designed to ensure that estimates comparing and across the project Study Area, local Study Area and regional Study Area are unbiased and precise; – A habitat-stratified random sampling approach should be used. Sample sites should be selected with a randomization procedure such as a GIS grid overlay; and – Where Critical Habitat has not been defined or has been partially identified, a Schedule of Studies may have been created to identify gaps in information for these species. The Schedule of Studies information should be referred to when implementing or assessing survey protocols, in order to provide necessary information for these species.	■ Descriptions of specific data sources, data collection, sampling, survey and research protocols and methods followed for each baseline environmental condition (including SAR or rare species) will be provided in the IA / EA and are summarized in this Study Plan.	■ Section 7
50	TISG Section 8.11, page 61	■ Ensure that, at minimum, the combined information from existing data and field surveys must be able to describe the distribution and abundance of species at risk in relation to the Study Areas;	■ The information requested will be provided in the IS / EA Report.	■ Section 7
51	TISG Section 8.11, page 61	■ provide documentation and digital files for all results of analyses that allow for a clear understanding of the methods and a replication of the results (raw scripts or workflows are preferred in place of descriptive documentation);	■ The results of analyses will be adequately documented in the IS / EA Report to allow for a clear understanding of the methods. Digital files (e.g. raw script; workflows) will be provided on request to regulatory agencies to facilitate replication of the results analyses as needed.	■ Section 8
52	TISG Section 8.11, page 65	■ Identify and map all species at risk, critical habitat, and residences on federal land within the project Study Area and local Study Area (provincial and/or local government authorities should be contacted to determine any additional data sources and survey methodologies)	■ The information requested will be provided in the IS / EA Report.	■ Section 7 ■ Section 8
53	TISG Section 8.11, page 65	■ The project Study Area and local Study Area, as defined above for each valued component, constitutes the appropriate scale.	■ The study areas are defined and described in the Study Plan.	■ Section 6
54	TISG Section 8.11, page 65	■ The Impact Statement must provide a list of all provincially listed protected species at risk and species assessed by the COSEWIC that have the status of extirpated, endangered, threatened or of special concern and that may be directly or indirectly effected by the Project. Use existing data and literature as well as surveys to provide current field data that reflects the natural inter-annual and seasonal variability;	■ The information requested will be provided in the IS / EA Report.	■ Section 7 ■ Section 8
55	TISG Section 13, pages 80-83	■ This section of the TISG describes the methodology for the effects assessment, including definitions of scope, severity, and irreversibility.	■ This information will be included in the IS / EA Report and is summarized in the Study Plan.	■ Section 9
56	TISG Section 14.3, page 88	■ The Impact Statement must: – describe any hydrological or drainage changes that may alter moisture regimes and how that may affect vegetation and wetland function; – describe any contaminants of concern (e.g., arsenic, chromium, mercury) potentially associated with the Project (including from spills or accidental discharges) that may affect soil, sediment, wetlands, and surface and ground water (including substances used during summer and winter maintenance activities);	■ The Project will be designed to minimize or avoid changes in water flow and / or drainage - further information is available in the Surface Water Study Plan. Impacts associated with the degradation of ecosystem components (including Vegetation) due to hydrological or drainage changes will be described in the IS / EA Report.	■ Section 9.4 ■ Surface Water Study Plan

ID #	Federal TISG Reference	Requirement / Comment / Concern	Response	Study Plan Reference
57	TISG Section 14.3, page 88	■ The Impact statement must describe direct, incidental and cumulative predicted positive and/or adverse effects to riparian, wetland (including separate description relevant to peatlands) and terrestrial biodiversity metrics, effects of fragmentation, changes to regional biodiversity that could be caused by all project activities, including but not limited to effects to wetland ecological functions, including effects that may alter the wetland's capacity to perform hydrological, biogeochemical cycling, habitat, and climate functions.	■ The IA / EA will assess direct, incidental and cumulative predicted positive and/or adverse effects that could be caused by all Project activities that may alter wetland capacity to perform hydrological and water quality functions.	■ Section 9.4
58	TISG Section 14.3, page 89	■ Describe any changes in risk to forest fires that may result from the Project;	■ The Study Plan describes how the change in risk to forest fires will be determined	■ Section 7.3
59	TISG Section 14.3, page 89	■ Describe the methodology used to identify effects;	■ Methodology related to effects assessment has been provided in the Study Plan.	■ Section 9
60	TISG Section 14.3, page 89	■ The Impact Statement must: – describe any changes to plant species of cultural importance	■ Impacts associated with vegetation species of social economic, traditional, cultural and / or heritage importance will be described in the IS / EA Report.	■ Section 7.4
61	TISG Section 14.3, page 89	■ The Impact Statement must: – describe the vegetation standards and controls to be implemented while constructing and operating the Project. Describe any integrated vegetation management programs, including: ▪ the criteria and circumstances for applying chemical, biological or mechanical control methods; ▪ potential effects on country foods, animal browse, surface waters, wetlands and soil and proposed mitigation measures to herbicide application; ▪ the methods to be used to prevent spread of non-native, invasive species such as Phragmites australis (European Common Reed); and ▪ the selection of plant species to be kept and planted to promote naturally low growing plant communities.	■ Possible vegetation control approaches for the construction and operations stage of the Project will be described in the IS / EA Report.	■ Section 7.5
62	TISG Section 14.3, page 89	■ The Impact Statement must: – describe any revegetation procedures to be implemented as part of the Project, including: ▪ revegetation techniques and the locations where they would be implemented; ▪ seed mixes to be used, application rates and location of application; ▪ fertilizers to be used, application rates and locations, and criteria for determining ▪ these specifications; and ▪ contingency planting and seeding plans that include a description of species to be replanted, the locations for replanting and criteria for determining these specifications.	■ The IS / EA Report may include an environmental monitoring program for reclamation plantings and include requirements for monitoring and follow up programs.	■ Section 9.4
63	TISG Section 14.3, page 89	■ The Impact Statement must: – Describe any positive changes (e.g., from offsets that result in re-vegetation, new wetlands etc.).	■ The IS / EA Report will assess the potential negative, neutral and positive residual effects of the Project.	■ Section 9
64	TISG Section 15.2, page 93	■ The Impact Statement must: – describe the effects caused by the new habitat types created in the project area by clearing vegetation. The new habitats created may attract migratory birds, which were not present before (such as the Eastern Whip-poor-will or the Common Nighthawk). Describe how these SAR may be impacted by the project.	■ How wildlife species will be impacted by the Project will be addressed in the Wildlife Study Plan.	■ Wildlife Study Plan; Birds Study Plan
65	TISG Section 15.3, page 94	■ The Impact Statement must: – describe changes to vegetation species important to Indigenous peoples; and	■ Impacts associated with vegetation species of economic, traditional, cultural and / or heritage importance will be described in the IS / EA Report. Additional information can be found in the Aboriginal Treaty Rights and Interests Study Plan, Human Health and Community Safety Study Plan, and Land and Resource Use Study Plan.	■ Section 9.2 ■ Table 9-2 and Table 9-3 ■ Aboriginal Treaty Rights and Interests Study Plan ■ Human Health and Community Safety Study Plan ■ Land and Resource Use Study Plan

ID #	Federal TISG Reference	Requirement / Comment / Concern	Response	Study Plan Reference
66	TISG Section 15.4, page 100	– provide an account of how the project and mitigation measures are consistent with the recovery strategy, action plan, or management plan for the species.	■ Mitigation measures will be informed by best management practices, applicable resource management and / or recovery plan, Indigenous input, and industry standards.	■ Section 9.5
67	TISG Section 15.4, page 95	■ The Impact Statement must: – describe the potential direct, incidental and cumulative adverse effects of the project on species at risk listed under Schedule 1 of the Species at Risk Act and, where applicable, its critical habitat (including its extent, availability and presence of biophysical attributes); – analyses predicted effects for each species at risk. To fully understand the effects and/or benefits of one alternative versus another, all relevant metrics and evaluators for species at risk should be considered; – include separate analyses for each project activity, component, and phase; – consider potential effects to species at risk from bioaccumulation and biomagnification of contaminants of dust and other pollutants resulting from the project; and conduct post-construction surveys to verify predicted effects. – conduct post-construction surveys to verify predicted effects.	■ Effects to SAR will consider potential direct, incidental and cumulative adverse effects of the Project on SAR and, where applicable, its critical habitat. A thorough list of impact management measures including offsetting and compensation as necessary that will be employed by the Project will be included in the IS / EA Report.	■ Section 9
68	TISG Section 15.4, page 99	■ clearly identify the locations of federal lands/non-federal lands within the Study Area and differentiate between these land tenures in the presentation of information regarding all species at risk. For example, total habitat disturbance for boreal caribou should be presented at the range scale, but it should also be presented in a way that clearly indicates habitat disturbance specifically within federal lands;	■ The information requested will be provided in the IS / EA Report.	■ No reference
69	TISG Section 15.4, page 99	■ identify provincial, territorial or federal permits or authorizations that may be required in relation to the species at risk;	■ The information requested will be provided in the IS / EA Report.	■ No reference
70	TISG Section 15.4, page 99	■ describe the potential adverse effects of the Project on species protected by provincial statutes and assessed by the COSEWIC as extirpated, endangered, threatened or of special concern (flora and fauna) and their habitat that are not currently listed under the Species at Risk Act;	■ The information requested will be provided in the IS / EA Report.	■ Section 7 ■ Section 8
71	TISG Section 15.4, page 99	■ describe all feasible measures that will be taken to avoid or lessen the impact of the Project on the species and its critical habitat;	■ Mitigation measures will be informed by best management practices, applicable resource management and / or recovery plan, Indigenous input, and industry standards.	■ Section 9.5
72	TISG Section 15.4, page 99	■ describe all reasonable alternatives to the Project that would avoid the potential effects on species and their habitat, with particular attention to critical habitat, and important habitats such as upland habitat which is used as movement corridors by caribou, breeding areas for birds, and which contains roosting habitat for bats;	■ The reasonable alternatives that were or are considered to the Project will be described, rationalized and evaluated by several criteria, which may include potential effects on SAR.	■ No reference
73	TISG Section 15.4, page 99	■ Describe the area, biophysical attributes and location of habitat including critical habitat affected (e.g., destroyed, permanently altered, disrupted); describe all feasible measures that would be taken to eliminate the effects of the work or activity on species and their habitats, including critical habitat; and	■ The IS / EA Report will describe the biophysical attributes and locations of habitat and outline measures that will be used to avoid or limit effects on habitat.	■ Section 7 ■ Section 8 ■ Section 9
74	TISG Section 15.4, page 99	■ demonstrate that avoidance and minimization measures will be applied for species at risk. Recovery Strategies will provide information such as Population and Distribution Objectives, and Strategic Direction for recovery.	■ Mitigation measures will be informed by best management practices, applicable resource management and / or Recovery Strategy, Indigenous input, and industry standards.	■ Section 9.5
75	TISG Section 15.4, page 99	■ provide survey results and detailed mapping of each species at risk and their habitat, including important habitat features, for all federal lands;	■ The information requested will be provided in the IS / EA Report, if applicable.	■ No reference
76	TISG Section 15.4, page 99	■ describe the effects of construction pits and quarries on or near esker deposits on species at risk;	■ The information requested will be provided in the IS / EA Report, if applicable.	■ Section 6.2
77	TISG Section 16.1, Page 103	■ With respect to biophysical determinants of health, the Impact Statement must provide an assessment of adverse and positive effects on human health in current and future availability (including contamination/quality) of country foods (i.e., food that is trapped, fished, hunted, harvested or grown for subsistence, cultural or medicinal purposes)	■ Vegetation contamination studies have not been completed, nor are they proposed. Details regarding potential bioaccumulation of contaminants and consumption by Indigenous groups will be discussed in the Human Health and Community Safety Study Plan.	■ Human Health and Community Safety Study Plan

ID #	Federal TISG Reference	Requirement / Comment / Concern	Response	Study Plan Reference
78	TISG Section 17.6, page 110	■ The Impact Statement must assess potential impacts to surrounding communities, including local Indigenous communities. The spatial and temporal boundaries for the assessment should be determined with the input from the community based on pre-contact in consideration of aspects that are relevant to the community's understanding of their culture. The Impact Statement must assess changes to: – culturally significant plants or wildlife.	■ Impacts associated with vegetation species of economic, traditional, cultural and / or heritage importance will be described in the IS / EA Report. Additional information can be found in the Aboriginal Treaty Rights and Interests Study Plan, Human Health and Community Safety Study Plan, and Land and Resource Use Study Plan.	■ Section 9.2 ■ Table 9-2 ■ Table 9-3 ■ Aboriginal Treaty Rights and Interests Study Plan ■ Human Health and Community Safety Study Plan ■ Land and Resource Use Study Plan
79	TISG Section 20, page 119-128	■ Section 20 of the TISG describes the requirements around mitigation and enhancement measures that must be considered in the Impact Statement.	■ Mitigation measures will be informed by best management practices, applicable resource management and / or Recovery Strategy, Indigenous input, and industry standards.	■ Section 9.5
80	TISG Section 21, pages 129-130	■ Section 21 of the TISG describes the requirements and guidance associated with determining residual effects.	■ Residual effects will be assessed in the IA / EA Report.	■ Section 9
81	TISG Section 26, Page 141	■ Section 26 of the TISG includes a description of the considerations for developing a follow-up program for environmental, health, social or economic effects, as applicable.	■ The IS / EA Report will include descriptions of follow up programs, as required by VC.	■ Section 9
82	TISG Section 26.2, page 143	■ The Impact Statement must describe the environmental, health, social and economic monitoring to be established, as part of the follow-up program. Specifically, the Impact Statement must present an outline of the preliminary environmental, health, social and economic monitoring program, including, but not limited to the:- in relation to wetlands: – if reclamation plantings are created, monitor the plantings biannually (i.e., late spring and fall) during consecutive years, and undertake supplementary planting, as necessary, until the vegetation cover becomes established and continues to grow without further intervention; and – monitor post-construction effects to wetland functions. A program to monitor wetland functions should be designed in such a way as to ensure that the type and amount of each wetland function would be considered individually in determining recovery success and that each wetland function would be recovered to at least the same type and amount of function as assessed during baseline.	■ Mitigation measures created specifically for peatlands will be developed in collaboration with federal authorities and described in the IS / EA Report. Offset and compensation plans related to Peatlands will be similarly developed, as required.	■ Section 9.5.1 ■ Peatlands Study Plan
83	TISG Section 26.2, page 144	■ The Impact Statement must describe the anticipated activities during the construction phase of the Project, including: – Vegetation clearing earth excavation and other roadbed preparation activities, earth grading and granular placement for road construction	■ The anticipated activities during the construction phase of the Project are outlined in **Table 9-1** of this Study Plan.	■ Table 9-1

Table 11-2: Study Plan Provincial Concordance – Conformance with Requirements

ID#	Provincial Draft ToR Comment Reference	Requirement / Comment / Concern	Response	Study Plan Reference
1	■ Completeness Review Memorandum compiled from MECP emails and August 2019 meetings with MECP and ENDM	■ Study areas are missing and lack clarity – maps show Study Area for 4 routes even though only 2 (or 1?) routes are proposed to be assessed; no indication of local and regional Study Areas for each environmental component (e.g. ground water, surface water, caribou, etc.).	■ The study areas are defined and described in the Study Plan.	■ Section 6
2	■ Completeness Review Memorandum compiled from MECP emails and August 2019 meetings with MECP and ENDM	■ In the identification of alternative methods, the Environmental Assessment should document consideration of methods including an assessment of potential impacts to species at risk and their respective habitats and identify methods that can avoid or minimize potential impacts to individuals of the species and all categories or protected habitat to the extent possible.	■ Potential effects to SAR and their habitats will be included in the IS / EA Report.	■ Section 9
3	■ Completeness Review Memorandum compiled from MECP emails and August 2019 meetings with MECP and ENDM	■ For each potential impact to species at risk or their habitat, measures will have to be identified to first avoid any adverse effects and in cases where there are no practical or feasible alternatives, identify measures that minimize or mitigate the adverse effects. Such measures may be general, site-specific, or activity-specific in nature. For caribou, the province has developed Best Management Practices (BMPs) for some sectors to provide guidance to avoid, minimize or mitigate adverse effects to the species and their habitat. Where possible, it is always preferential to avoid, given that if any adverse impacts exist, the associated activities would require authorization under the ESA.	■ The IS / EA Report will identify suitable impact management measures to avoid, eliminate or minimize potential effects of the Project, including potential effects on SAR.	■ Section 9
4	■ Completeness Review Memorandum compiled from MECP emails and August 2019 meetings with MECP and ENDM	■ MECP recommends that the EA contain commitments to monitoring to verify the expected effects of the proposed undertaking on species at risk and their habitat and to determine if additional impact mitigation measures or adjustments to any measures are required. Monitoring methodology for these species and their habitat should be included in the monitoring plan developed as part of the EA. If impact management measures are proposed, monitoring of the effectiveness of these measures should be included in the monitoring plan. The monitoring plan should include steps the proponent will take if impact management measures are not effective (e.g. application of additional impact management measures, changing how and where the activity will be performed, etc.).	■ The IS / EA Report will include a monitoring framework to verify the prediction of effects and the effectiveness of the impact management measures implemented, including those related to SAR and their habitat.	■ Section 9
5	■ Completeness Review Memorandum compiled from MECP emails and August 2019 meetings with MECP and ENDM	■ In addition to land use policy, any resource management direction for the Study Area including forest management plans and fisheries management plans/objectives should be reviewed and considered	■ Applicable resource management plans will be reviewed and considered in the IA / EA.	■ Appendix A
6	■ Completeness Review Memorandum compiled from MECP emails and August 2019 meetings with MECP and ENDM	■ Project documentation will need to consider the direction within the Ogoki [Forest Management Plan] FMP regarding forestry activities, wildlife objectives and access, and address how the proposed project may impact those activities and objectives. There is also the need to consider the impacts to Kenogami Forest with respect to existing roads and the associated use management and responsibility.	■ The effects assessment and identification of mitigation measures will be informed by best management practices, applicable resource management and / or Recovery Strategy, Indigenous input, and industry standards.	■ Section 9
7	■ Completeness Review Memorandum compiled from MECP emails and August 2019 meetings with MECP and ENDM	■ There are likely a number of species that are considered provincially rare which occur within and adjacent to the proposed road corridor. The MNRF encourages using the best conservation measures available to protect these species.	■ Potential effects to SAR and their habitats will be included in the IS / EA Report.	■ Section 9
8	■ Completeness Review Memorandum compiled from MECP emails and August 2019 meetings with MECP and ENDM	■ The project proposal and other documentation will need to identify these natural heritage features and fully consider potential impacts to and mitigation for the respective features.	■ The IS / EA Report will recommend impact management measures to avoid, eliminate or minimize potential effects of the Project to natural heritage features.	■ Section 9
9	■ Completeness Review Memorandum compiled from MECP emails and August 2019 meetings with MECP and ENDM	■ Project planning should consider the potential introduction and establishment of invasive species via construction and use of the road, impacts that could result, and measures that will be taken to avoid or minimize their spread and resultant negative environmental effects.	■ Mitigation measures to limit the spread and / or introduction of invasive species will be considered in the IS / EA Report.	■ Section 9.5
10	■ Completeness Review Memorandum compiled from MECP emails and August 2019 meetings with MECP and ENDM	■ 2.1 Peatlands/wetlands – Peatlands/wetland in Ontario's Far North are important on local through to global scales. The alternatives analysis should consider not only the length of road corridor that will cross through peatlands for each of the alternatives considered, but also consider how impacts to peatland/wetland function may be minimized. This should include, for example, identification and consideration of concentrated areas of peat that function as carbon sinks; impacts to biological functions of wetlands in providing wildlife habitat; effects of the project on client change and vice versa; etc.	■ The IS / EA Report will assess potential impacts of the Project on wetland function, ecologically and hydrologically. Peatland impacts associated with climate change are described in the Peatlands Study Plan.	■ Section 9 ■ Peatlands Study Plan

ID#	Provincial Draft ToR Comment Reference	Requirement / Comment / Concern	Response	Study Plan Reference
11	■ Email from Agni Papageorgiou & Sasha McLeod, Special Project Officer Environmental Assessment Services Section, Ministry of the Environment, Conservation and Parks with comments of the Draft ToR	■ #17 Section 8 Page 54Consultation on Assessment Methodology – MFFN acknowledges that the proposed methodology will be open to input during the draft ToR review, but also says a more detailed method will be presented in the EA. Page 47 indicates the effects assessment criteria will be developed during the EA. While it is appropriate to defer some detailed work planning to the EA phase, the ToR should include commitments for how technical reviewers, and other interested persons, will be consulted during the development of specific evaluation methodologies or technical Work Plans. It is strongly recommended that those opportunities for review occur prior to the completion of studies (e.g. prior to the submission of a draft or final EA document).It is not clear whether MFFN plans to consult on the more detailed methodology and criteria during the EA phase or if the ToR phase is the main opportunity to provide input.Please indicate how consultation on the ToR has informed the preliminary criteria and indicators. Please clarify when MFFN will consult and provide opportunity for input on the detailed assessment method, including criteria and indicators (and Work Plans as MECP has proposed), with agencies, communities and stakeholders during the EA phase in order to finalize the methodologies before EA studies get advanced.	■ The Study Plan meets this requirement. As identified in **Section 4.2** of the Study Plan, the Proponent will provide opportunities for consultation and engagement with Indigenous communities identified in **Table 4-1**, which is inclusive of all Indigenous communities identified in the *Indigenous Partnership and Engagement Plan for the Marten Falls Community Access Road Project Impact Assessment* (the Agency 2020a). Further information on how Indigenous Knowledge will be considered in the IS / EA Report has been included in **Section 5** of the Study Plan. **Section 5** of the Study Plan provides further details on the two concurrent and complementary avenues for Indigenous communities and groups to be engaged with and provide input on the Project: The Indigenous Knowledge Program; and the Consultation and Engagement Program.	■ Section 4 ■ Section 5
12	■ Email from Agni Papageorgiou & Sasha McLeod, Special Project Officer Environmental Assessment Services Section, Ministry of the Environment, Conservation and Parks with comments of the Draft ToR	■ #21 Section 10.2.4 Page 73 – Technical Work Plans - Page 73 states that MECP has indicated it will not be commenting on Work Plans associated with field work until the ToR is finalized. This statement does not reflect MECP's guidance to the project team. MECP's guidance, which is documented on page 69 of the RoC, is that the ToR is the mechanism to seek technical review of Work Plans and that discipline- specific Work Plans should be included with the ToR. As well, discussions that MECP has had with the project team to date are considered pre-consultation, since it is the ToR that sets out what work is to be done during the EA phase. – Please revise the statement on page 73 to state: "MFFN provided MECP and MNRF Work Plans associated with field Work Planned during 2019 for review, however MECP advised this is considered-consultation and that discipline-specific Work Plans should be appended to the ToR to allow full technical review. "As the draft ToR did not include detailed discipline-specific Work Plans, the other option the ministry strongly recommends is to include commitments to develop workplans at the outset of the EA phase, including opportunities for technical review.	■ The Study Plan meets this requirement.	■ No Reference
13	■ Email from Kevin Green, Species at Risk Recovery Biologist; Michelle Karam, Management Biologist; Nikki Boucher, A/Species at Risk Specialist - Species at Risk Branch – Permissions & Compliance, Ministry of the Environment, Conservation and Parks with comments of the Draft ToR	■ Additional information should be provided, in table format, for each SAR that have the potential to occurin the area of the Project, including, but not limited to: Scientific names, Common names, Species Status under SARA (Federal), Species Status under ESA (Provincial), Conservation Ranking (i.e., N-Rank, S- Rank), Information Source(s) used to identify potential occurrence within the area of the Project Indication of whether a field survey(s) has been conducted already to identify species presence and, if so, whether or not it was observed. General list of habitat requirements§ Indication of whether the required habitat exists within the Study Area (i.e., as per comment 5, should include Project Footprint, Local Study Area and Regional Study Area)Update the draft ToR to include additional information for each SAR that have the potential to occur in thearea of the Project.	■ The information requested was included in the ToR and will be included in the IS / EA Report.	■ No Reference
14	■ Kevin Green, SAR Recovery Biologist; Michelle Karam, Management Biologist; Nikki Boucher, A/Species at Risk Specialist - Species at Risk Branch – Permissions & Compliance, Email from the Ministry of the Environment, Conservation and Parks with comments of the Draft ToR, received on 24-Jan-2020	■ #2 Recommendation to prevent delays should ESA authorization be required. ■ It is strongly recommended that the project be planned, and the EA prepared, with the requirements of the *Endangered Species Act, 2007* (ESA) in mind. This can potentially facilitate the authorization process under the ESA, where authorization is required. In order to inform any future ESA authorization requirements, reasonable route/project alternatives should be assessed for impacts to all SAR and their respective habitats, and at least one avoidance alternative should be included. Please refer to the MECP "Avoidance Alternatives Form" for activities that may require an overall benefit permit under clause 17(2)(c) of the Endangered Species Act" and accompanying guide for reference. (http://www.forms.ssb.gov.on.ca/mbs/ssb/forms/s sbforms.nsf/MinistryResults?Openform&SRT=T&MAX=5&ENV=WWE&STR=1&TAB=PROFILE&MIN=018&BRN=21&PRG=31)	■ The requirements of the *Endangered Species Act, 2007* (ESA) process were considered in the development of this Study Plan.	■ No Reference

ID#	Provincial Draft ToR Comment Reference	Requirement / Comment / Concern	Response	Study Plan Reference
15	■ Kevin Green, Species at Risk Recovery Biologist; Michelle Karam, Management Biologist; Nikki Boucher, A/Species at Risk Specialist - Species at Risk Branch – Permissions & Compliance, Email from the Ministry of the Environment, Conservation and Parks with comments of the Draft ToR, received on 24-Jan-2020	■ #18 Table 7-4 / s. 7.2 / pg. 47 and s.7.2.9 / pg. 52 – Preliminary consideration of potential effects to SAR needs to be included, above and beyond those applicable to vegetation (s.7.2.6), wildlife (s.7.27) and fish and fish habitat (s.7.2.8). Both Table 7-4 and s.7.2.9 are lacking any information specific to SAR (e.g., increased mortality risk to caribou resulting from predator efficiencies related to additional linear features, increase in predator/prey populations, etc.). – This should include a preliminary list of potential effects, in a table format, including, but not limited to, the following: • Project Component or Activity ▪ Field surveys, staking, layout ▪ Vegetation clearing and grubbing ▪ Construction of supportive infrastructure (e.g. storage and laydown yards, temporary access roads, construction camps, aggregate extraction areas) ▪ Construction of the road ▪ Aggregate extraction and production ▪ Emissions, discharge and waste ▪ Operations and maintenance • Potential Effects • Mitigation Measures – Update the draft ToR to include additional information for preliminary potential effects of the Project components specific to SAR.	■ Potential effects of the Project on SAR and mitigation measures specific to individual species or cohorts where applicable (beyond those that generally apply), will be identified in the IS / EA Report.	■ Section 9
16	■ Madhi Ramadoss, Ph.D., Regional Pesticides Specialist, Northern Region, Email from the Ministry of the Environment, Conservation and Parks with comments of the Draft ToR, received on 24-Jan-2020	■ #1 Pesticides: – As requested, I reviewed draft terms of reference for the proposed Marten Falls Community Access Road Project. Proposed 190-230 km all season road construction shall clear forest vegetation mainly in Ogoki Forest and Kenogami Sustainable Forest Management units (Page 21 and Page 50). The vegetation expects to be cleared are black spruce, jack pine, white spruce, and poplar species (Page 23). The proponent expect to get cutting permit from MNRF (Page 91). The D-TOR proposal did not mention use of Pesticides; it is my understanding the vegetation is expected to be cleared by manual cutting, or mechanical means.To clear vegetation in the managed forest lands in Ogoki and Kenogami Forests, the proponent is encouraged to approach MNRF-District office and Ogoki and Kenogami forest management units to include in their annual work schedule as per Crown Forest Sustainability Act 1994 (Forest Management Planning Process). This approval facilitates the use pesticides if needed to clear conifer trees for road construction.	■ The identification of mitigation measures will be informed by best management practices, applicable resource management and / or Recovery Strategy, Indigenous input, and industry standards.	■ Section 9
17	■ Nikki Boucher, A/Species at Risk Specialist, Permissions and Compliance, Species at Risk Branch, Email from the Ministry of the Environment, Conservation and Parks with comments of the Draft ToR, received on 24-Jan-2020	■ We have carried out our review with a view to both the EA and future regulatory authorizations in order to provide you with information that will help enable an efficient approach to project planning and preparation of applications for any necessary Endangered Species Act (ESA) authorizations. Specifically, attention should be paid to the following requirements that form the basis of many of our ESA authorizations: – Minimize adverse effects – you must take reasonable steps to minimize the adverse effects of your activity on the SAR and their habitat that are likely to be affected by your activity. – Ways to minimize adverse effects of your activity on SAR & their habitat may include modifying the: • location of the activity • geographic scale of the potential effects • activity design (e.g. engineering and technological) • timing of the activity • duration and frequency of the effects • approaches and timing for any site restoration or rehabilitation (such as doing progressive rehabilitation while other parts of the activity are still happening) • general operational protocols	■ The IS / EA Report will identify suitable impact management measures to avoid, eliminate or minimize potential effects of the Project, including potential effects on SAR.	■ Section 9

ID#	Provincial Draft ToR Comment Reference	Requirement / Comment / Concern	Response	Study Plan Reference
		– Consider reasonable alternatives – you will need to show the Ministry of the Environment, Conservation and Parks that you have considered reasonable alternatives to your activity. – Alternative approaches to your activity include: • Changing the location of the activity • Using alternative methods, equipment or technical designs • Changing the timing of the activity to avoid times when the species is there or is most sensitive to disturbance • Changing the geographic scale, duration and/or frequency of the potential adverse effects • Adding or changing approaches and timing of site restoration or rehabilitation after the activity is done – When considering reasonable alternatives to your activity, you must: • Consider at least one alternative that would completely avoid any adverse effects on SAR • Identify alternatives that you considered but did not think were reasonable because of biological, technical, social or economic limitations • Explain why the approach you have chosen is the best alternative – In addition, should an Overall Benefit Permit be required for the project, as determined through MECP's review and assessment of all the project details, the following requirement would also need to be considered: • Achieve overall benefit – providing an overall benefit to a species means undertaking actions that contribute to improving the circumstances for the species. It must include more than steps to minimize adverse effects on the species or habitats. – Achieving an overall benefit to a species may involve providing the species with a range of benefits, such as: • increasing the number of individuals of the species living in the wild and capable of reproducing • increasing the distribution of the species within its natural range • increasing the viability or resilience of existing populations of the species • slowing or reversing population declines by addressing key threats to the species' survival • increasing the quality or amount of habitat for the species – Activities such as filling information gaps, education and outreach may contribute to an overall benefit plan for a SAR. However, alone they are unlikely to meet the overall benefit requirement. – Recovery strategies and government response statements, where available provide information that can be used to form plans to achieve an overall benefit for SAR.		
18	■ Dave Barker, Resources Management Supervisor, Nipigon District, Letter received from MNRF on the Draft Terms of Reference, received on 06-Feb-2020	■ Sec. 7.1.4.6 pg. – Ontario's current ELC System at the EcoSite level has limited application in the area of the Hudson Bay Lowlands.• For consideration in the development of the EA.	■ The ELC system will be applied as the majority of the study areas fall outside of the Hudson Bay Lowlands Ecozone.	■ Section 7.3
19	■ Dave Barker, Resources Management Supervisor, Nipigon District, Letter received from MNRF on the Draft Terms of Reference, received on 06-Feb-2020	■ Consider including a map identifying the project and Study Area in relation to the Ecozones and Ecoregions it traverses. This would be helpful at EA phase. A map of where this project falls in relation to Ecozones and Ecoregions could provide all interested parties with a better spatial understanding of the landcover and ecological characteristics associated with the project alternatives. ■ A map showing routing alternatives and including Ontario Shield, Hudson Bay Lowlands Ecozones and Big Trout Lake James Bay Ecoregions could be included somewhere in this section (MNRF may be approached for this data if not already obtained by the project team).	■ The information requested was included in the ToR and will be included in the IS / EA Report.	■ Section 8
20	■ Dave Barker, Resources Management Supervisor, Nipigon District, Letter received from MNRF on the Draft Terms of Reference, received on 06-Feb-2020	■ The EA should also describe the vegetation at the EcoDistrict scale. The project is proposed within 2w2 (Kasabonika Lake Ecodistrict), 2w3 (Wunnummin Lake Ecodistrict) and 2e4 (Lower Kenogami River Ecodistrict).Include description in the EA.	■ The information requested was included in the ToR and will be included in the IS / EA Report.	■ Section 7.1

ID#	Provincial Draft ToR Comment Reference	Requirement / Comment / Concern	Response	Study Plan Reference
22	■ Dave Barker, Resources Management Supervisor, Nipigon District, Letter received from MNRF on the Draft Terms of Reference, received on 06-Feb-2020	■ Draft Criteria and Indicators for Alternatives Evaluation Appendix A – Available resources to help inform the draft criteria and indicators include research publications and expert knowledge on topics such as stressor-effects pathways, cumulative effects, and associated environmental components and indicators. Contacting researchers such as Rob Mackereth (MNRF) who has published research on these topics and related subjects is encouraged. - Rempel, R.S., et. al. 2016. Support for development of a long term environmental monitoring strategy for the Ring of Fire area. Ontario Ministry of Natural Resources and Forestry, Science and Research Branch, Peterborough, ON. Science and Research Information Report IR-08. 34 p. + append. Catalogue-natural-resource-scientific-and-technical-publicationsWhile no specifics are provided in this submission, MNRF welcomes a discussion with MECP and ENDM to explore what (if any) role this project could play in advancing baseline information and long-term environmental monitoring for the Ring of Fire in partnership with First Nations communities.	■ Data sources are being reviewed for their appropriateness and will be included in study plans where applicable. Information on specific data sources and their relevance to the Project will be included in the IS / EA Report.	■ Appendix A
23	■ Dave Barker, Resources Management Supervisor, Nipigon District, Letter received from MNRF on the Draft Terms of Reference, received on 06-Feb-2020	■ Sec. 7.1.4.9 Pg. 31 – It is recommended a more thorough review is conducted of species that have the potential to be impacted by the proposed undertaking that are listed as Special Concern on the SARA list of Ontario as well as species that are currently only listed under the SARA. For consideration in the EA.	■ The information requested will be included in the IS / EA Report.	■ Section 7.4
24	■ Dave Barker, Resources Management Supervisor, Nipigon District, Letter received from MNRF on the Draft Terms of Reference, received on 06-Feb-2020	■ Sec. 7.1.4.4 pg 26 – The proponent indicates, “The wetlands within the area of the Project are not designated as provincially significant. Considering the remote landscape of the Project and abundance of wetland features, it is likely that the wetlands within the area of the Project have not been evaluated”. – This statement is somewhat misleading because the evaluation system does not apply to the extensive wetlands in the Lowlands. This statement needs to be clarified by recognizing the Ontario wetland evaluation system cannot be used to evaluate the extensive wetlands in the Lowlands portion of the project area (as stated on pg 27 in the Ontario Wetland Evaluation System – Northern Manual 2014 - https://www.ontario.ca/page/wetlands-evaluation). – Instead, the wetlands in the Far North are often described in terms of cultural and provincial-global importance for a range of ecosystem services and ecological functions including carbon storage as described in references such as Riley, J. 2011. Wetlands of the Hudson Bay Lowland: An Ontario Overview. link and Far North Science Advisory Panel (2010). Science for a Changing Far North. link)	■ A wetland function assessment will be conducted as an alternative to an Ontario Wetland Evaluation System (OWES) evaluation as part of the IA / EA.	■ Section 7.3
26	■ Letter received from Dave Barker, Resources Management Supervisor, Nipigon District, MNRF on the Draft Terms of Reference	■ Sec. 14 - References 85+ Additional resources from: – Catalogue of natural resource scientific and technical publications. Search a list of the scientific and technical publications issued since 2004 see Catalogue-natural-resource-scientific-and-technical-publications – To request a publication issued by the MNRF, or if you have a question related to MNRF scientific and technical publications, please contact us by email with the title of the publication. For journal articles, please contact the journal publisher directly. – For MNRF climate change publications see MNRF_Climate_Change_Publications – Information about Ontario’s species of conservation concern, plant communities, wildlife concentration areas and natural areas see https://www.ontario.ca/page/get-natural-heritage-information – Ontario Geohub https://geohub.lio.gov.on.ca/ provides spatial data and mapping applications such as OFAT (Ontario Flow Assessment Tool) that is used to better understand water flow in Ontario.. https://www.ontario.ca/page/watershed-flow-assessment-tool ■ Some selected publications that may be of interest: – Wester, M.C. et al. 2018. The Ecosystems of Ontario, Part 2: Ecodistricts. Ontario Ministry of Natural Resources and Forestry, Science and Research Branch, Peterborough, ON. Science and Research Technical Report TR-26. 474 p. + appendices Catalogue-natural-resource-scientific-and-technical-publications – Ontario Ministry of Natural Resources and Forestry. 2019. Far North Information Knowledge Management Plan Progress Report 2008-2018. Ontario Ministry of Natural Resources and Forestry, Far North Branch, Peterborough, ON. 80p. contact: farnorthfeedback@ontario.ca	■ Data sources are being reviewed for their appropriateness and will be included in study plans where applicable. Information on specific data sources and their relevance to the Project will be included in the IS / EA Report.	■ Appendix A

ID#	Provincial Draft ToR Comment Reference	Requirement / Comment / Concern	Response	Study Plan Reference
		– Riley, J. 2011. Wetlands of the Hudson Bay Lowland: An Ontario Overview. Nature Conservancy of Canada, Toronto ON 156 pp. ISBN 978-1-897386-27-9 link – Marshall, T.R. and Jones, N.E. 2011. Aquatic ecosystems of the Far North of Ontario state of knowledge. Ontario Ministry of Natural Resources. 43 p.+ appends. ISBN 978-1-4435-6512-7 Catalogue-natural-resource-scientific-and-technical-publications – Metcalfe, R.A. et al., 2013. Aquatic Ecosystem Assessments for Rivers. Science and Research Branch, Ministry of Natural Resources, Peterborough, Ontario. 210 pp.link		
27	■ Jennifer Fisk, Policy Specialist, Email from Ministry of Transportation with comments on Draft ToR, received on 20-Jan-2020	• Physiography, Terrain and Soils (page 49, section 7.2.3) – Consider adding potential impact of salt on roadside vegetation.	■ The identification of mitigation measures will be informed by best management practices, applicable resource management and / or recovery plan, Indigenous input, and industry standards.	■ Section 9

Table 11-3: Study Plan Federal and Provincial Concordance – Requirement Deviations

ID #	Federal TISG Reference or Provincial Draft ToR Comment Reference	Requirement / Comment / Concern	Response (Rationale for not meeting requirement)	Justification (for not complying with requirement including for example scientific research, precedence)	Proposed TISG Amendment
1	TISG Section 14.1, Page 85	▪ The Impact Statement must assess the potential for emissions from the Project to contribute to acid deposition and exceedances of critical loads for terrestrial and aquatic ecosystems;	▪ There will be no assessment of emissions from the project to contribute exceedances of critical loads for terrestrial and aquatic ecosystems. There is no threshold established to determine that a specific concentration of NOX and SO2 would be detrimental to the terrestrial and aquatic VCs.	▪ There is no threshold established to determine that a specific concentration of NOX and SO2 would be detrimental to the terrestrial and aquatic VCs. Studies to establish these thresholds have never been undertaken.	▪ Remove Requirement

12. References

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Marten Falls First Nation Proposed Terms of Reference Marten Falls Community Access Road – Environmental Assessment, Appendix B: Consultation & Engagement Plan to Support the Environmental Assessment / Impact Statement.

Alberta Wetland Policy, 2020:

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The Ecosystems of Ontario, Part 1: Ecozones and Ecoregions. Ontario Ministry of Natural Resources, Peterborough Ontario, Inventory, Monitoring and Assessment, SIB TER IMA TR-01, 71 pp.

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Standard for Terrestrial Ecosystem Mapping in British Columbia. Resources Inventory Committee, Province of British Columbia. x + 100 pp.

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Environment Canada, 2008:

Wetland Ecological Functions Assessment: An Overview of Approaches. Available Online: http://publications.gc.ca/site/eng/343283/publication.html

Environment Canada, 1991:

The Federal Policy on Wetland Conservation. Catalogue No. CW66-116/1991E. Environment Canada, Canadian Wildlife Service. Ottawa, ON. 13 pp.

Environment Canada, 2013:

How Much Habitat is Enough? Third Edition. Environment Canada, Toronto, Ontario. 130 pp.

Government of Ontario, 2020:
Ontario GeoHub. Fire Disturbance Area layer. Available Online: https://geohub.lio.gov.on.ca/datasets/fire-disturbance-area. Last Updated February 2020.

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Wetland Ecological Functions Assessment: An Overview of Approaches. Canadian Wildlife Service Technical Report Series No. 497. Atlantic Region. Sackville, NB. 59 pp.

Impact Assessment Agency of Canada, 2020:
Public Participation Plan for the Marten Falls Community Access Road Project Impact Assessment.

Impact Assessment Agency of Canada, 2020a:
Indigenous Partnership and Engagement Plan for the Marten Falls Community Access Road Project Impact Assessment.

Impact Assessment Agency of Canada, 2020b:
Tailored Impact Statement Guidelines for the Marten Falls Community Access Road Project Impact Assessment.

iNaturalist Network, 2020:
Observations Mapping. Available Online: https://www.inaturalist.org/observations

Jaeger, J., 2000:
Landscape division, splitting index, and effective mesh size: ne measures of landscape fragmentation. Landscape ecology. 15: 115-130.

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Federal Policy on Wetland Conservation: Implementation Guide for Federal Land Managers. Environment Canada, Canadian Wildlife Service, Wildlife Conservation Branch. Ottawa, ON. 33 pp.

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Effects of a changing climate on Peatlands in Permafrost: A Literature Review and Application to Ontario's Far North. Climate Change Research Report CCRR-34. Available Online: https://cfs.nrcan.gc.ca/pubwarehouse/pdfs/34839.pdf

Ontario Ministry of Natural Resources and Forestry, 2014:
Far North Land Cover Layer. Available Online: https://geohub.lio.gov.on.ca/datasets/far-north-Ontario Ministry of Natural Resources and Forestry. 2014.

Ontario Ministry of Natural Resources and Forestry, 2014a:
Ontario Wetland Evaluation System Northern Manual. 1st Edition, Version 1.3. Toronto, ON. 280 p. Website: https://files.ontario.ca/environment-and-energy/parks-and-protected-areas/ontario-wetland-evaluation-system-northern-manual-2014.pdf.

Ontario Ministry of Natural Resources and Forestry, 2017:
Marten Falls First Nation All Season Community Access Road Preferred Route Selection and Preliminary Environmental Work - Ministry of Natural Resources and Forestry Project Proposal Review. Letter addressed to Mary Hennessy, Director, Northern Environmental Initiatives Office, Ministry of Environment and Climate Change. Letter written by Grant Ritchie, Director, Far North Branch, and Amanda Holmes, Director, Northwest Region, Ministry of Natural Resources and Forestry, dated June 19, 2017.

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Ontario Ministry of Natural Resources and Forestry, 2020c:
Ontario Land Cover Compilation v.2.0. Accessed online at https://geohub.lio.gov.on.ca/datasets/7aa998fdf100434da27a41f1c637382c

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Rapid Assessment Methodology for Evaluating Wetland Functional Values. Madison, WI. 8 pp.

Appendix A

Preliminary List of Data Sources

Information requests and publicly available data (i.e. data banks and databases) from the following sources:

- Federal government (e.g., Environment and Climate Change Canada, Health Canada)
- Ontario provincial government (e.g., MECP, MNRF, ENDM)
- Natural Heritage Information Centre Make-a-Map: Natural Heritage Areas and Rare Species Records (MNRF, 2020a)
- Crown Land Use Policy Atlas (MNRF, 2005)
- Land Information Ontario (LIO) base mapping data for Area of Natural and Scientific Interests (MNRF, 2020b),
- Ontario Land Cover Compilation V 2.0 (MNRF, 2020c)
- Ontario's Provincial Satellite Derived Disturbance Mapping digital resource (Government of Ontario, 2020)
- Ontario's Far North Land Cover Layer (MNRF, 2014) Ramsar Canada Sites (Ramsar Canada, 2020)
- Local Governments [e.g. Municipalities of Greenstone and Thunder Bay and local First Nations (e.g. Indigenous Knowledge)]
- Natural Resource Management Plans; Wetland guidance documents from other Canadian Provinces, and federal guidance documents [i.e. Far North Biodiversity Project (Ontario Biodiversity Council, 2020); Forest Management Plans (Long Lake Forest Products Inc, 2008), Alberta Wetland Policy (2020); The Wetland Ecological Functions Assessment (EC, 2008), The Wetland Network (2020)]
- Species Recovery and Restoration Plans
- Atlases (i.e. Ontario Reptile and Amphibian Atlas, iNaturalist [2020])

Other sources of data

- Academic institution and academic journal articles (e.g., Packalen et al., 2014; Leclair et al., 2015; MNRF, 2013)
- Field studies, including site-specific survey methods.
- Monitoring program databases protected areas, watershed or coastal management plans (e.g. Ring of Fire Baseline Environmental Monitoring Program).

- Land cover data, including: terrestrial ecosystem mapping products, forest cover maps, remote sensing resources.
- Important habitats and features to include:
  - water bodies, wetlands, watercourses;
  - riparian habitat;
  - river banks or other eroded habitats;
  - artificial water sources;
  - forest, tree patches, solitary trees (especially old decaying trees);
  - forest edges and tree rows;
  - ridges, including eskers;
  - caves and mines;
  - cliffs, rock outcrops, exposed bedrock, talus, and other karst topography;
  - buildings, bridges, and other anthropogenic features, including linear features;
  - sources of artificial lighting attracting insects;
  - critical habitat; and
  - any other habitat features known to be important in the area.
- Published literature, such as peer reviewed journals, reports by think tanks, nongovernment organizations and government reports (e.g., Committee on the Status of Endangered Wildlife in Canada Recovery Strategies).
- Environmental assessment documentation, including monitoring reports, from prior projects in the area and similar projects outside the area, regional studies, project assessments and strategic assessments.
- Renewable harvest data.

Appendix B

Agency Comments on the Draft Study Plan

Draft Study Plan Comments – Federal

Comment # / Ref #	Draft Study Plan Section	TISG Section	Comment / Context	Action Item	Final Response	Study Plan Reference
GC	■ GC	■ Sections 5,6,7,13,19.2 and 25	■ In addition to the required actions detailed below, other required actions to be addressed in the update to this study plan are detailed in a separate table titled "2020-07-02 – The Agency to MFFN CAR - General Comments on MFFN CAR Draft Study Plans". The Agency has provided these other required actions to highlight common sections of the Guidelines where requirements were not met in the draft study plans submitted to the Agency. These additional actions must be addressed in the updated study plans.	-	■ We have reviewed the relevant comments and incorporated where appropriate. Please refer to the Comment Table for "General Comments" for specific responses.	■ Various Sections
VE-01	■ Section 3 Spatial Boundaries: Study Areas ■ Table 3-1: Vegetation Study Areas "Project Study Area 100 m from centerline" ■ Figure 3-1: Vegetation Local and Regional Study Areas	■ Section 7.4 – "…The spatial and temporal boundaries to be used in the impact assessment are outlined and discussed through the tailoring process, and include comments and input from federal and provincial government departments and agencies…"	■ It is unclear if the Project Study Area is 100 m from centerline (i.e., 200 m wide) as described in Table 3-1 or 100 m wide as shown on Figure 3-1.	■ Clarify the size of the Project Study Area.	■ The description provided in **Section 6.2** has been updated to "100 m wide".	■ Section 6.2
VE-02	■ Section 4.1 2019 Vegetation Surveys ■ Section 4.3.2 Field Survey Site Selection – "Based on the anticipated size of the PSA (greater than 4000 hectares (ha), the intent of the field program is to complete field verification on 15 to 25% of the vegetation communities within the PSA. Ground Inspections and Visual Checks will be conducted in accordance with the survey intensity levels (Ecosystems Working Group 1998) at a ratio of 25:75 respectively. Although every effort will be made to adhere to this sampling intensity, the Project is located in a remote part of Canada with limited access. Access to vast portions of the proposed CAR will only be available by air, therefore survey locations will be limited to where a helicopter is capable of landing (i.e. cut helicopter landing pads, grassy riparian areas). Based on the anticipated size of the PSA (approximately 160,000 ha), the intent of the field program is to complete field verification on 2-4% of the vegetation	■ Section 7.2 – "Baseline data must be collected in a manner that enables reliable analysis, extrapolations and predictions. Resulting data should be suitable for analyses to estimate pre-project baseline conditions, derive predictions of impacts, and evaluate and compare post-project conditions and at scales of within and across the Project, Local and Regional Assessment areas. Modelling methods, error estimates and assumptions should be reported (as per section 7.1). Modelling and simulations should be used early in the planning phase to estimate the necessary sampling intensity and to quantitatively evaluate the effectiveness of design options." ■ Section 7.2 – "With regard to field studies, survey work must be planned to include multiple sampling locations and multiple visits to each location to support all required assessment analyses. Existing data	■ More detail is needed about the 2019 vegetation surveys and the planned future surveys to assess whether they meet the requirements in the Guidelines. It is unclear if multiple visits to each location occurred in 2019 or if the proposed future studies will include the locations from the 2019 survey to meet this requirement. ■ Detailed information is needed on the areal coverage of the habitat classes, and the numbers of samples intended for each habitat class under the selected sampling design.	■ Provide information on the 2019 surveys, including survey locations, season/dates and number of visits. ■ Provide detail to demonstrate that survey/ sampling designs meet the requirements in Section 7.2 of the Guidelines. ■ Provide a schedule to demonstrate when all future surveys are planned to be conducted. ■ Provide detail to demonstrate that two years of collected baseline data will be provided to inform the Impact Statement, as per the requirements in Section 7.2 and Section 7.4.2 of the Guidelines.	■ More details have been provided regarding the 2019 vegetation studies and proposed survey / sample design. Future surveys will be representative of the temporal perspective of multi-years of study by using baseline data from previous years / seasons and desktop studies to supplement proposed field studies. A detailed schedule for future field sampling will be outlined in an upcoming and separate Work Plan.	■ Section 7

Comment # / Ref #	Draft Study Plan Section	TISG Section	Comment / Context	Action Item	Final Response	Study Plan Reference
	communities within the PSA. Considering the level of existing information on vegetation communities within the RSA (Far North Land Cover and FRI mapping), field investigations for vegetation will not be conducted within the broader RSA. Effects on vegetation within the RSA are not expected to be wide ranging and therefore effects can adequately be assessed using the existing and desktop derived information."</br></br>■ Section 4.3.5</br>– Traditional use plants and SAR plant populations"Local indigenous communities will be engaged to develop an understanding of Traditional Use Plants and plants of importance to the various communities."	should be considered as a limited augmentation of this new data"</br>■ Section 7.4.2</br>– "Baseline data collection for all biophysical valued components is to be provided for a minimum of two years, unless specified otherwise. Temporal boundaries spanning more than one year will enable accounting for variation due to irregular events (e.g., masting events, storms on migration, late snowfalls)."</br></br>■ Section 6</br>– "The proponent must engage with all Indigenous groups that may be impacted by the Project. The Indigenous Engagement and Partnership Plan (IEPP), issued by the Agency, is available to assist the proponent in further developing or refining their engagement strategy and supporting ongoing trust and relationship-building. In addition to the requirements set out in section 6.1, 6.2 and 6.3, the proponent must provide Indigenous groups with an opportunity to: provide Indigenous knowledge during baseline data collection; comment on the list of valued components and indicators; inform the effects assessment and review its conclusions; and inform the development of mitigation measures and follow-up programs."	■ It is unclear which Indigenous communities are considered "local". As per Section 6 of the Guidelines, the Agency expects the proponent to engage with, at a minimum, the Indigenous groups listed in the IEPP.	■ Provide details to demonstrate that all of the Indigenous groups listed in the IEPP will be engaged with, including to develop an understanding of Traditional Use Plants and plants of importance. Provide details to demonstrate how Indigenous knowledge and input will be incorporated in data and information gathering, as well as the effects assessment and identifying mitigation measures and follow-up programs.	■ As identified in **Section 4.2** of the Study Plan, the Proponent will provide opportunities for consultation and engagement with Indigenous communities identified in **Table 4-1**, which is inclusive of all Indigenous communities identified in the *Indigenous Partnership and Engagement Plan for the Marten Falls Community Access Road Project Impact Assessment* (The Agency 2020a). Further information on how Indigenous Knowledge will be considered in the IS / EA Report has been included in **Section 5** of the Study Plan. Section 5 of the Study Plan provides further details on the two concurrent and complementary avenues for Indigenous communities and groups to be engaged with and provide input on the Project: the Indigenous Knowledge Program; and the Consultation and Engagement Program.	■ Section 4.2</br>■ Section 5
VE-05	■ Section 4.3.5 Traditional use plants and SAR plant populations</br>– "Using the information collected on the baseline condition of any observed non-native species, invasive species, and/or introduced species of concern, possible vegetation control approaches for the construction and operations stage of the Project will be described. Such controls may include manual vegetation control"	■ Section 8.7</br>– "describe any considered vegetation control alternative (including manual vegetation control methods)."	■ Section 8.7 of the Guidelines requires that the study plan describe any vegetation control alternatives as part of the baseline studies.	■ Provide detail to demonstrate how baseline information will be collected to meet all of the requirements of Section 8.7 of the Guidelines, including any vegetation control alternative. Provide details to demonstrate how Indigenous knowledge and input will be incorporated in the assessment of vegetation control alternatives.	■ Detailed baseline botanical inventories will be completed at each ground investigation location including a thorough invasive species inventory. Vegetation control alternatives will be explored during future consultation with indigenous communities and will be incorporated into the effects assessment phase of the Project	■ Section 7.5

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	■ Section 6.1 Indicators and Expression of Change ■ Table 6-1: Vegetation Indicators – "Wetland and Riparian Ecosystems Upland Ecosystems Designated Areas Traditional Use Plants & SAR Plant Populations"	■ Section 8.11 – "key habitat associated with species at risk should be considered valued components, including eskers and similar geologic features, wetlands and peatlands"	■ Eskers are not specifically mentioned in the study plan. It is assumed that they would be included in Upland Ecosystems, but not enough information is provided to verify this assumption or to assess whether the study plan adequately accounts for baseline conditions and effects assessment of eskers.	■ Provide details to demonstrate how the studies that will be conducted to estimate baseline conditions and the conduct effects assessment for eskers.	■ Eskers are discussed in greater depth in the Wildlife Study Plan as they relate directly to SAR and wildlife habitat. Baseline information collection regarding eskers have been added to this Study Plan. Vegetation as it relates to eskers will be explored as part of the upland ecosystems. The LSA has been designed to allow for adequate field investigation of these rarer habitats on the landscape.	■ Section 7.3
VE-06	■ Concordance table – "Impacts associated with……will be described'	■ Refer to the Guidelines for additional relevant requirements of Section 14.3	■ Methodologies for many of the requirements in Section 14.3 of the Guidelines are not included in the effects assessment section of the study plan. The effects assessment must consider the effects of each of the project components and physical activities, in all phases, and be based on a comparison to the proposed baseline work.	■ Provide detail to demonstrate the proposed approach and methods used to integrate the requirements from Section 14.3 of the Guidelines in the study plan.	■ Effects assessment describes the methodologies for addressing Section 14.3 of the TISG (the Agency 2020b) and considers the effects of each Project component and physical activities and will be compared to the proposed baseline investigations.	■ Section 9

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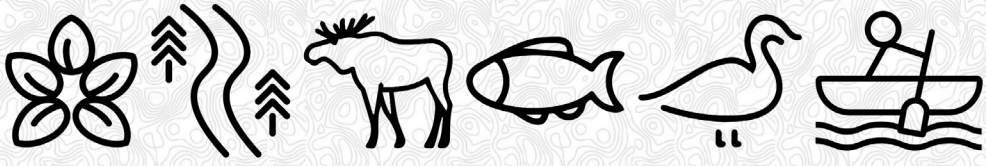

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1	■ Page 2, s. 2 – Same comment in Wildlife, Ungulates and Vegetation work plans	■ MECP, Environmental Assessment Branch	■ Key objectives of conducting an EA include the elements mentioned in the work plan and also describing the existing environment, describing potential effects (positive and negative) of the project and alternatives, and consult about the project.	■ Suggest the following revisions to add additional key objectives of the EA process: – *The key objectives of conducting an IA / EA are to describe the existing environment, gather sufficient information to predict Project-related effects (positive and negative) of the project and alternatives on the environment, ~~on Ungulates (moose and woodland caribou) and~~ determine measures needed to avoid or minimize adverse Project effects and enhance beneficial Project effects where feasible, and undertake consultation.*	■ The MECP's updated wording for the purpose and objectives have been incorporated.	■ Section 2
2	■ Page 2, footnote – Same comment in Wildlife, Ungulates and Vegetation work plans	■ MECP, Environmental Assessment Branch	■ The footnote is appreciated though requires clarification. Will the study plans be updated to reflect any other comments during the ToR review process or post-ToR, e.g. federal, Indigenous, public?	■ Please clarify if the study plans will be included with the ToR submission. – If not included in the ToR submission, please clarify if and when the project team intends to consult broadly on the work plans. The footnote should also be revised to state that the study plans will be updated to reflect the approved ToR if approval is obtained.	■ A summary of the consultation plan for Indigenous communities, government agencies, and interested persons has been provided in **Section 4** of the Study Plan; further details can be found in the IS / EA Consultation Plan included as Appendix B of the ToR. Specific consultation and engagement activities and schedules are currently in development and will be shared with the MECP and The Agency once available.	■ Section 4
3	■ Page 5, Figure 3-1 – Same comment in Wildlife, Ungulates and Vegetation work plans	■ MECP, Environmental Assessment Branch	■ Figure 3-1 is missing locations for other project infrastructure – can this be added to the map?	■ Please add locations of other project infrastructure and associated study areas to Figure 3-1, or clarify when these locations will be known.	■ Locations cannot be provided at this time. The locations of other Project infrastructure are unknown at this stage of Project design.	■ NA
4	■ Page 18, s. 6.2	■ MECP, Environmental Assessment Branch	■ Page 18, 3rd paragraph in section 6.2, refers to “an effective mesh size assessment” in a paragraph that talks about assessment of potential landscape fragmentation effects. It is not clear what this means.	■ Can the paragraph please describe briefly what “mesh size assessment” is for the benefit of the reader?	■ Wording in **Section 9.4** of the Study Plan has been revised to indicate that the “The fragmentation assessment will consider relevant previous methods for the assessment of fragmentation (e.g. Jaeger 2000).	■ Section 9.4
5	■ Page 19, s. 6.3 – Same comment in Wildlife, Ungulates and Vegetation work plans	■ MECP, Environmental Assessment Branch	■ A few comments on the first paragraph: – It is stated that project phases include construction and operation. It would be helpful if this section clarifies that the construction phase includes decommissioning of temporary infrastructure, per page 14 of the draft ToR. – Residual effects are mentioned but not explained. For clarity, there should be a statement that residual effects (net effects using provincial language) are the effects left over after application of impact management measures, per Ontario’s EA Code of Practice. – The paragraph states the residual effects will “be described in terms of the magnitude, geographic extent, **timing, duration**, frequency, **social and ecological context,** likelihood, and whether effects are reversible or irreversible.” These characteristics	■ Please add to this section that the construction phase includes decommissioning of temporary infrastructure, using consistent language as the ToR. ■ Please add to this paragraph that ‘residual (net) effects are the effects remaining after the application of impact management measures.’ ■ Please align the work plan methodology with the final ToR methodology in terms of assessing effects and alternatives, or provide sufficient rationale if methodologies are different. Per Ontario’s EA Code of Practice, the evaluation method(s) chosen must be able to produce an assessment that is clear, logical and traceable.	■ Decommissioning of construction works is included in the construction phase as noted in **Section 6.1**. ■ Residual effects are defined further in **Section 9.6.**	■ Section 6.1 ■ Section 9.6

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			are not all the same as what was stated in the draft ToR: "**direction**, magnitude, geographic extent, **direction** [sic], frequency, reversibility and likelihood" (p. 54-55 of draft ToR). Bolded font added to show differences. The remainder of section 6.3 describes further effects assessment methodology. The work plan and final ToR should align in methodology.			
6	■ Indigenous knowledge – Same comment in Wildlife, Ungulates and Vegetation work plans	■ MECP, Environmental Assessment Branch	■ The work plan indicates that the EA will consider Indigenous knowledge to inform the effects assessment. The work plan does not provide a proposed methodology for how the proponent intends to seek Indigenous knowledge, from whom, and how it will be incorporated.	■ Please provide further details about how Indigenous knowledge will be collected and incorporated. Alternatively it may be helpful to include a reference to the relevant components of the ToR and ToR consultation plan that provide further details.	■ Consideration of Indigenous Knowledge and the methodology for seeking it is described in **Section 5.**	■ Section 5
7	■ Criteria and indicators table – Same comment in Wildlife, Ungulates and Vegetation work plans	■ MECP, Environmental Assessment Branch	■ For the tables containing criteria and indicators, some work plans include the three columns Valued Component, Indicators and Rationale for Selection. Other work plans include the columns Indicator, Expression of Change and Rationale for Selection. The table formats of criteria and indicators should be consistent across work plans. There are also differences between the criteria/indicators in the draft work plans vs. the criteria and indicators in the draft ToR.	■ Please review draft work plans to achieve consistent format in how criteria and indicators are presented in the tables. Where there are differences between the criteria/indicator tables in the draft work plans and the draft ToR Appendix A, please ensure the work plans and final ToR align so that the assessment methodology is consistent and to avoid confusion.	■ Criteria and Indicator tables have been streamlined across study plans and with the ToR.	■ Section 9.2
8	■ Pg. 6 / s.4.1 – 2019 Vegetation Community Surveys	■ MECP, Species at Risk Branch	■ As per comments provided by MECP-SARB on the draft Wildlife Work Plan (e.g., comment #2 regarding Eastern Whip-poor-will, comment #11 regarding bat acoustic survey stations, etc.), insufficient information is provided on the proposed surveys (e.g., number of survey stations/monitoring locations, a map illustrating these locations, dates of surveys, etc.). This information is necessary to appropriately inform components of proposed SAR surveys (e.g., Automatic Recording Unit placement for Bat surveys and, where appropriate, Eastern Whip-poor-will surveys, etc.).	■ Update draft Work Plan accordingly.	■ Information on proposed surveys including number of stations / monitoring locations, maps, dates of surveys will be provided in the Work Plan.	■ NA
9	■ Pg. 13 / s.4.3.5 – Traditional Use Plants & SAR Plant Populations ■ Pg. 15 / s.5.2 – GIS	■ MECP, Species at Risk Branch	■ In addition to IAAC, should any SAR plants be identified through ground surveys all relevant information should be provided to MNRF's Natural Heritage Information Centre (NHIC). If the species is listed as Threatened or Endangered under the ESA (O.Reg. 230/08), all relevant information should also be provided to MECP's Species at Risk Branch.	■ Update the draft Work Plan to indicate that all SAR information will be provided to NHIC and/or MECP's SARB.	■ All SAR information gathered through ground surveys will be provided to MNRF's Natural Heritage Information Centre (NHIC), and in addition, any information on species listed as Threatened or Endangered under the *Endangered Species Act, 2007 (*ESA) will be provided to MECP's Species at Risk Branch. ■ All geographic data, along with accompanying metadata, pertaining to SAR will be provided to Natural Heritage Information Centre (NHIC) and MECP's Species at Risk Branch.	■ Section 7.3

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10	■ Pg. 8 / s.4.3.3 – Vegetation Communities – Upland ■ Pg. 15-16 / s.5.3 – Vegetation Community (Upland, Wetland and Riparian) Extrapolation	■ MECP, Species at Risk Branch	■ The draft Work Plan indicates that LiDAR data has been procured for the PSA and LSA and that this will be reviewed by vegetation specialists to delineate individual vegetation communities along with other background information (e.g., Far North Land Cover Mapping, etc.). Similar to identifying potential hibernacula (as identified in section 4.3.2.1 of the draft Wildlife Work Plan), LiDAR data also provides some unique opportunities for the identification of high potential bat habitat (e.g., large diameter trees, density of large diameter trees, etc.) that, where possible, should be considered in the placement of Automatic Recording Units that could increase the likelihood of identifying maternity roost habitat.	■ Consider the relevant information through available LiDAR data in determining high potential bat maternity roost habitat to inform the placement of ARU's planned.	■ Relevant information related to potential bat maternity roost habitat (e.g., large tree diameter, density of large diameter trees) gathered through the analysis of LiDAR data will be considered during the placement of Automatic Recording Unit (ARUs) and will be discussed in the Wildlife Study Plan.	■ Wildlife Study Plan
11	■ Comment on Wildlife, Ungulates and Vegetation work plans	■ MNRF, Nipigon District	■ MNRF staff have reviewed these draft field work plans. We found that they address the field work needs related to our mandates. However, MNRF may have items/comments to contribute during the further development of the ToR and the EA.	■ N/A	■ Any further items / comments provided by the MNRF during the development of the ToR and the EA will be addressed at that time.	■ NA

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