SNC·LAVALIN

# Webequie Supply Road

## Vegetation Work Plan

## Webequie First Nation

31 August 2020
661910

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# 1. Introduction

The proposed Webequie Supply Road Project (WSR, the Project) is a new all-season road of approximately 107 km in length from Webequie First Nation (WFN) to the mineral deposit area near McFaulds Lake (also referred to as the Ring of Fire). A Location Plan for the Project is shown on **Figure 1**. The preliminary corridor for the road consists of a northwest-southeast segment running 51 km from Webequie First Nation to a 56 km segment running east before terminating near McFaulds Lake. A total of 17 km of the corridor is within Webequie First Nation Reserve lands.

The goals and objectives of the Webequie Supply Road Project are as follows:

- To facilitate the movement of materials, supplies and people from the Webequie Airport to the area of existing mineral exploration activities and proposed mine developments in the McFaulds Lake area;
- To provide employment and other economic development opportunities to WFN community members and businesses that reside in or around the community's reserve and traditional territory, while preserving their language and culture; and
- To provide experience/training opportunities for youth to help encourage pursuit of additional skills through post-secondary education.

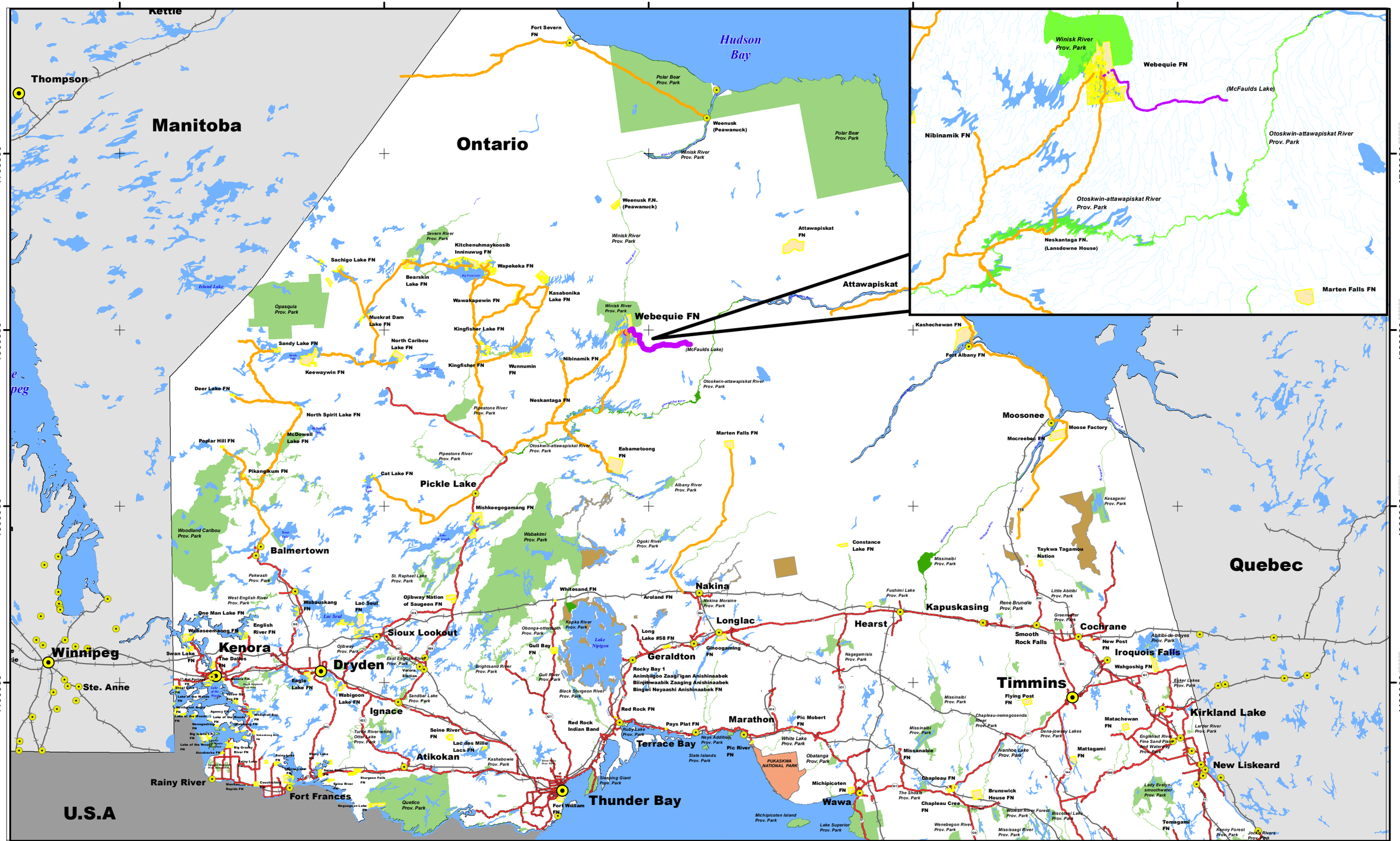
On May 3, 2018, the Ontario Minister of the Environment, Conservation and Parks (then Minister of the Environment and Climate Change) signed a voluntary agreement with Webequie First Nation to make the Webequie Supply Road Project subject to an Individual Environmental Assessment (EA) under Ontario's *Environmental Assessment Act*. The Project is also subject to meeting the requirements of the federal *Impact Assessment Act.* For the purposes of this work plan, the term "EA" is meant to include both the provincial environmental assessment and the federal impact assessment.

The Vegetation Work Plan is being submitted to the Impact Assessment Agency of Canada (IAAC, "the Agency") and the Ontario Ministry of the Environment, Conservation and Parks (MECP) with the request that a coordinated review be undertaken with the objective to provide Webequie First Nation with technical guidance in meeting the requirements of the federal Tailored Impact Statement Guidelines (TISG) and the draft provincial Terms of Reference (ToR, September, 2019) for the Project. It should be noted that Ontario's review of the work plan is preliminary and secondary to any further review and decisions related to a final approved ToR.

## 1.1. Defining Spatial and Temporal Boundaries

### 1.1.1. Spatial Boundaries

Spatial boundaries define the geographic extent within which the potential environmental effects of the Project are considered. As such, these spatial boundaries define the study areas for the effects assessment. Spatial boundaries to be established for the EA will vary depending on the valued component and will be considered separately for each. The spatial boundaries to be used in the EA will be refined and validated through input from federal and provincial government departments and ministries, Indigenous groups, the public and other interested parties.




Legend

- Proposed Preliminary Corridor for the Webequie Supply Road
- City/Town
- Airports
- Winter Roads
- All-Season Roads
- Rail
- First Nation Reserve
- Federal National Park
- Provincial Park
- Conservation Reserve
- Waterbody

WSR WEBEQUIE SUPPLY ROAD

0 50 100 Km

N

Canada Lambert Conformal Conic Projection

# Webequie Supply Road

*Project Location*

| Date: 2020/01/22 | File Number: 649920 | Sub Code: 0000 |
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Spatial boundaries will be defined taking into account the appropriate scale and spatial extent of potential effects of the Project; 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.

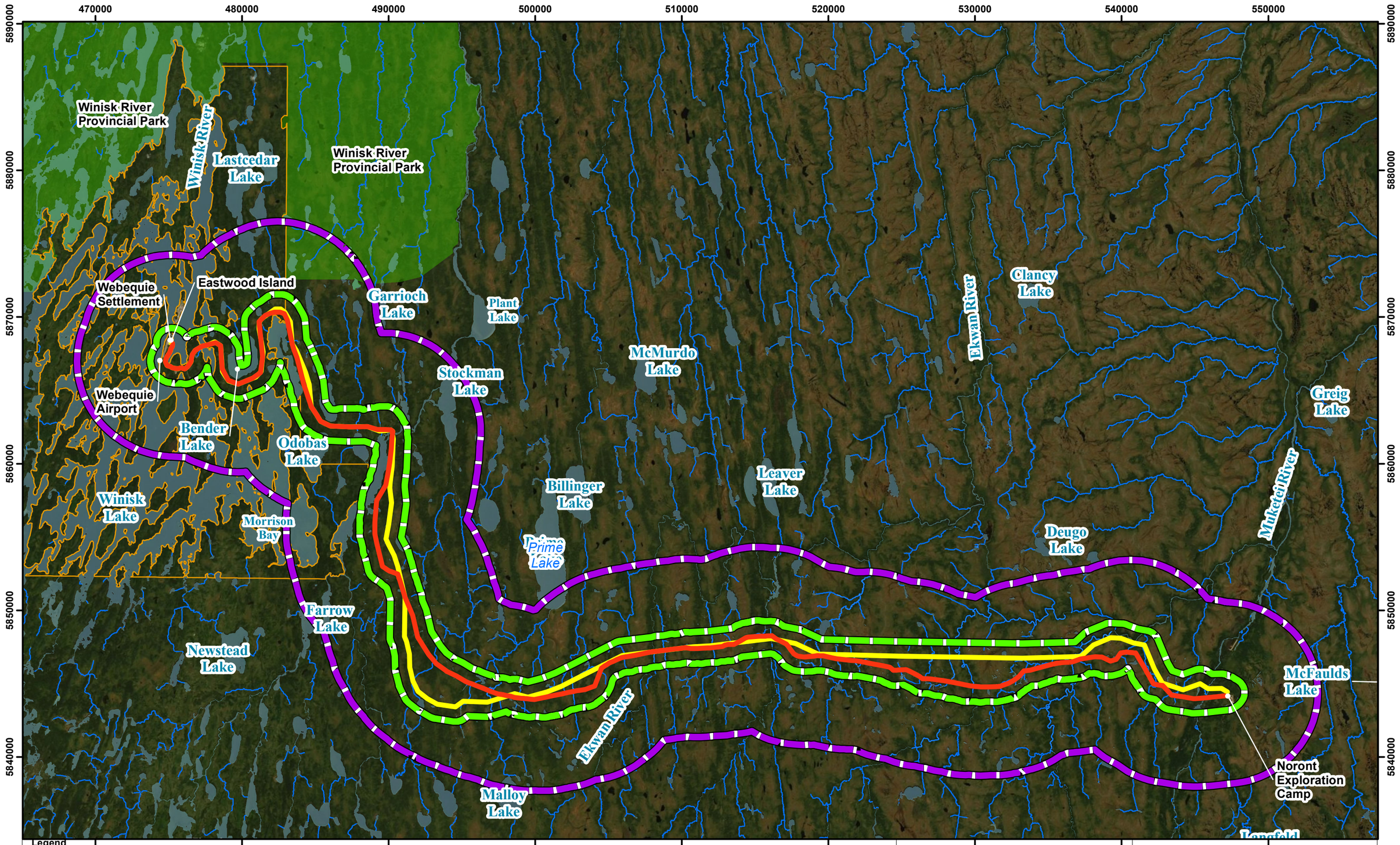
At this stage in the EA process, the spatial boundaries for the EA will include the following three (3) study areas to capture the potential direct and indirect effects of the Project for each valued component, unless otherwise specified in a work plan:

- **Project Footprint (PF)** – is the identified areas of direct disturbance (i.e., the physical area required for Project construction and operation). The PF is defined as the 35 m right-of-way (ROW) width for the WSR and temporary or permanent areas needed to support the Project, including laydown/storage yards, construction camps, access roads and aggregate extraction sites.
- **Local Study Area (LSA)** - is identified as the area where most effects of the Project are likely to be measurable; therefore, along the PF, the LSA will be the focus of data collection to characterize existing environmental conditions. The LSA for most valued components will extend or buffer approximately 1 km from the supply road alternatives ROW boundaries, and 500 metres (m) from the temporary or permanent supportive infrastructure.
- **Regional Study Area (RSA)** – encompasses the area outside of the LSA used to measure broader-scale existing environment conditions and provide regional context for the maximum predicted geographic extent of direct and indirect effects of the Project (e.g., changes to downstream surface water quality, caribou, or changes to socio-economic conditions such as regional employment and incomes). Cumulative effects of the Project in combination with past, present, and reasonably foreseeable developments are typically assessed at this larger spatial scale. The RSA is defined as extending approximately 5 km from the LSA boundary.

**Figure 2** presents the spatial boundaries for the subject valued component. The study areas were selected to characterize existing environmental conditions and predict the direct and indirect changes from the Project on the subject valued component on a continuum of increasing spatial scales from the Project Footprint to broader, regional levels. The preliminary selection of study areas also considered the physical and biological properties of the valued component and related evaluation criteria.

The baseline data collection and effects assessment relative to the spatial boundaries will focus on the set of supply road conceptual alternatives within the proposed preliminary corridor, as identified in the federal Impact Assessment Detailed Project Description (November 2019) and the provincial Environmental Assessment draft Terms of Reference (April 2020). The alternatives include the Webequie First Nation community's preferred route for the supply road (35 m right-of-way width) along the centreline of an approximately 2 km wide preliminary corridor and the optimal geotechnical route within the same corridor.

The route alternatives are shown in **Figure 2** with the LSA and RSA boundaries for each route alternative, which have been **combined** to reflect the LSA and RSA study areas for the Project. At this stage of the EA process the supportive infrastructure components have yet to be determined. Note: it is anticipated that additional alternatives routes may be developed during the IA/EA. For example, a route that may be based on optimizing the geometric design of the community preferred route or optimal geotechnical route may be included. Where such additional alternatives are identified, the study area will be adjusted.




Legend

- Optimal Geotechnical Route
- Community Preferred Route
- Local Study Area (LSA 1km From Alternative Footprints)
- Regional Study Area (RSA 5km From Alternative LSA's)
- Webequie First Nation Reserve
- Waterbody
- Watercourse
- Winisk River Provincial Park

WSR WEBEQUIE SUPPLY ROAD

0 5 10 Km

N

NAD 83
UTM Zone 16N

# Webequie Supply Road

*Preliminary Route Alternatives an Combined Study Areas*

| Date: 2020/08/19 | File Number: 649920 | Sub Code: 0000 |
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### 1.1.2. Temporal Boundaries

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

Implementation of the Project will occur in phases (refer to Section 4.3.4 of the ToR). The potential interactions with the natural, cultural and socio-economic environments and the potential occurrence of residual impacts are anticipated to be different in each phase. In order to focus the assessment, the key activities can be divided into the three main phases:

- **Construction Phase**: All the activities associated with the initial development of the road and supportive infrastructure;
- **Operations Phase**: All activities associated with operation and maintenance of the road and any other permanent supportive infrastructure (e.g., operations and maintenance yard, aggregate pits) that will start after construction and continue indefinitely; and
- **Decommissioning/Abandonment/Closure Phase**: The Project will be operated for an indeterminate time period; therefore, retirement (decommissioning/abandonment/closure) is not anticipated and will not be addressed in the EA. Note that clean-up and site restoration, including the decommissioning and removal of temporary infrastructure (e.g., access roads) will be addressed in the construction phase.

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

### 1.1.3. Geomatics and Habitat Typing

Original source data were taken from the most recent Land Information Ontario (LIO) wetland, watercourse/waterbody data, and the Far North Land Cover, and Provincial Disturbance mapping. Digital satellite imagery was sourced from the ArcGIS base maps. It was determined that the LIO wetland and watercourse/waterbody data provided the most accurate starting point for wetland feature refinement, since it generally agreed with the Far North Land Cover data, while providing more detailed delineation of both the wetlands and waterbody features. Areas of “no data/unknown” in the LIO wetland and watercourse/waterbody data were populated with the values from the Land Cover dataset, where applicable.

Further delineation and typing of the vegetative units/polygons within the LSA and RSA is being conducted by refining published Far North Land Cover and LIO wetland data, using aerial photo interpretation (published satellite imagery and LiDAR imagery acquired in 2019), in combination with available terrain mapping (J.D. Mollard and Associates (JDMA), March 2019), topography, and surficial geology data.

The terrain mapping and LiDAR imagery acquisition was part of a preliminary corridor study conducted by J.D. Mollard and Associates in 2019 (Terrain Analysis, Potential Aggregate Sources & Identification of Route Alternatives, Draft). The corridor study covered the majority of the LSA, but no work was done within the RSA. This involved the interpretation of remotely sensed imagery (air photos and satellite images) and digital elevation data, supplemented with surficial geology, hydrology, and land cover data, to characterize the landforms, surficial materials, topography, hydrology, etc. Geospatial data sources available for this study were compiled in a geographic information system (GIS) and terrain units were manually digitized over base layers of imagery (air photos and satellite) and elevation data (elevation, shaded relief, and slope rasters). Terrain units were mapped and classified according to a legend developed for this area based on a compilation of previous reports and existing mapping (JDMA, 2010). Terrain units that were mapped during the terrain mapping process include:

- Till and glacial lake clay
- Silty till
- Ice-contact glaciofluvial deposits (kames and eskers)
- Alluvial floodplain
- Domed bog
- Northern plateau bog
- Net bogs
- Treed bog
- Thermokarst bog (collapse scar bog)
- String fen
- Ladder fen)
- Channel fen
- Watertrack fen
- Horizontal fen

Modelling of vegetation was rejected in favour of visual delineation and typing by experienced biologists either conducting the field programs, or with extensive experience typing vegetation in the region. Given the defined corridor from previous studies, which has limited the extent of the required mapping, and the quality of the published satellite imagery, in combination with the detailed LiDAR imagery and terrain data covering most of the combined local study areas, manual delineation and typing was selected as the most accurate method of delineation and typing. For the purposes of the vegetation characterization study, extrapolation refers to an iterative aerial interpretation process we are using to delineate and type the vegetation units.

The quality of the aerial imagery from published sources, and LiDAR imagery acquired in 2019, allows for visual identification of vegetative structures at fine resolutions (e.g., 1:1000 - 1:500). The process we are using is to visually refine/delineate unit boundaries of the current published Far North Land Cover and LIO wetland data throughout the LSA and RSA based on observable visual boundaries/changes in vegetative structure, topographic elevation/position (from LiDAR data, where available), and terrain/soils mapping derived from the project terrain mapping. Some limited sampling was conducted in 2019 to verify typing of selected units, and the refinement process was repeated to further refine/delineate unit boundaries and adjust typing.

The results of this process will be used in 2020 to run a stratified sample site selection model. Following the 2020 field season, another iteration of refinements to unit boundaries will be conducted and adjustments to typing will be made based on field sampling results.

Prior to completion of the process, mapped typing will be compared to that found in the field for the same location at all stages, and a statistical accuracy assessment calculated between predicted classes to observed classes to provide an estimate of the confidence level in the typing applied during the net effects process.

The results of the vegetation delineation/typing will also be used to support various wildlife field programs (e.g., identification of potential old growth deciduous/conifer stands) and inform the selection of (high) potential bat maternity habitat (i.e., large diameter trees) that could help scope ARU placement.

### 1.1.4. Ecosite Types and Relative Abundance Across Study Areas

An examination of the relative abundance of the vegetation classification between the Regional Study Area (RSA) and the Local Study Area (LSA) indicates that there is a marginal difference between the availability of the various defined vegetation (habitat) types as the extent of Study Area under consideration is expanded to the regional level. The majority of the values show a variation of less than 1% between the LSA and RSA, with only 4 vegetation types between 1-3% (Coniferous Swamp 1.81%, Swamp 1.86% less in the RSA, and Bog 2.27%, waterbody 2.54% more in the RSA). **Table 1** below shows a summary of the Ecosite type areas and relative abundance, within the LSA and RSA, based on the raw LIO Wetland, Watercourse/Waterbody, and Far North Land Cover data.

**Table 1: Summary of Community Class Areas and Relative Abundance in LSA vs RSA (Raw LIO Wetland Information and Far North Land Cover Data)**

| Source | Original Ecosite Types | LSA (ha) | RSA (ha) | LSA Rel % | RSA Rel % | Variation |
|---|---|---|---|---|---|---|
| **FN Land** | Deciduous Treed | 62.57 | 1294.09 | 0.23 | 1.01 | 0.78 |
| **FN Land** | Mixed Treed | 228.57 | 1,078.63 | 0.83 | 0.84 | 0.01 |
| **FN Land** | Sparse Treed | 184.28 | 742.16 | 0.67 | 0.58 | -0.09 |
| **FN Land** | Coniferous Treed | 1,548.12 | 6,868.25 | 5.60 | 5.34 | -0.26 |
| **FN Land** | Coniferous Swamp | 2,043.86 | 7,183.95 | 7.40 | 5.59 | -1.81 |
| **FN Land** | Open Bog | 5.56 | 20.98 | 0.02 | 0.02 | 0.00 |
| **FN Land** | Open Fen | 12.53 | 46.73 | 0.05 | 0.04 | -0.01 |
| **FN Land** | Thicket Swamp | 9.48 | 58.86 | 0.03 | 0.05 | 0.01 |
| **LIO Wet** | Swamp | 3,835.20 | 15,452.70 | 13.88 | 12.02 | -1.86 |
| **FN Land** | Treed Fen | 50.39 | 189.69 | 0.18 | 0.15 | -0.03 |
| **LIO Wet** | Fen | 5987.90 | 26,987.71 | 21.67 | 21.00 | -0.67 |
| **FN Land** | Treed Bog | 471.19 | 1803.20 | 1.71 | 1.40 | -0.30 |
| **LIO Wet** | Bog | 9,539.97 | 47,297.05 | 34.53 | 36.80 | 2.27 |
| **FN Land** | Exposed Bedrock | 0 | 3.21 | 0.00 | 0.00 | 0.00 |
| **FN Land** | Waterbody | 3,299.26 | 18,612.26 | 11.94 | 14.48 | 2.54 |
| **FN Land** | Community/Infrastructure | 61.36 | 118.50 | 0.22 | 0.09 | -0.13 |
| **FN Land** | Disturbance - Non and Sparse Woody | 40.51 | 94.29 | 0.15 | 0.07 | -0.07 |
| **FN Land** | Disturbance - Treed and/or Shrub | 245.80 | 646.46 | 0.89 | 0.50 | -0.39 |
| **FN Land** | Unknown | 8.33 | 32.62 | 0.03 | 0.03 | 0.00 |
| | **Totals** | **27,634.89** | **128,531.34** | **100.00** | **100.00** | **0.00** |

When we compared to the original LIO Wetland and Far North Land Cover data to the first iteration of the refined dataset, there are some marked differences. The refined dataset results in 0.38% less upland, 3.41% more wetland, 1.78% less lakes/rivers, and 0.61% less disturbed and rock barren areas. The area

ratio of treed versus open wetlands is essentially reversed, with the refined data showing an increase of 49.57% in treed wetlands, and a 46.16% decrease in open wetlands. Though we do show a significant decrease in total upland area, there is minimal change in the ratios between upland types (+/- < 1%). The percentages of conifer versus deciduous versus mixed differ by less than 1% of the LSA, but we do show an 11.67% increase in conifer systems, and a 3.24% decrease in mixed forest systems using the refined data. These differences are not unexpected, given the more fine-grained examination of the study area by high resolution satellite/LiDAR imagery, LiDAR contour data, helicopter flyovers, and ground truth plot sampling conducted during the 2019 field season. The majority of the values show a variation of less than 1% between the LSA and RSA, with only 4 vegetation types between 1-3% (Coniferous Swamp 1.81%, Swamp 1.86% less in the RSA, with Bog 2.27%, and waterbody 2.54% more in the RSA).

Given these results, it has been determined that a further expansion of the RSA is unnecessary to adequately capture the relative abundance of vegetation types affected by the Project, and that the project LSA and RSA spatial extents will be adequate for further detailed study in support the effects assessment conducted during the EA process.

# 2. Work Plan

## 2.1. Methodology

The following sections describe the planned approach to baseline data collection and the assessment of the potential impacts of the WSR Project on vegetation and wetland systems and assemblages, within the study area for the Project, to meet the discipline-specific requirements in the TISG (Sections 8.5, 8.7 and 14.3) and, where applicable, reflect the requirements of MECP and other provincial ministries such as the Ministry of Natural Resources and Forestry (MNRF ), as well as the results of the engagement and consultation process to date. The Work Plan also addresses relevant elements of TISG Section 13 (Effects assessment), Section 19 (Effects to Indigenous peoples and impacts on the exercise of Aboriginal and Treaty rights), Section 20 (Mitigation and enhancement measures) and Section 25 (Description of the project's contributions to sustainability).

## 2.2. Background Data Review

The vegetation and wetlands baseline data collection and effects assessment will be informed by a combination of desktop research and field work to provide a more accurate picture of the diversity and integrity of upland and wetland vegetation communities within the study area for the Project. The following is a preliminary list of information sources and guidance documents that will be used to characterize existing conditions for vegetation, including wetland and riparian environments:

- Aerial photography (Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community), 2020;
- Project LiDAR imagery and elevation data gathered by J.D. Mollard and Associates; 20 cm resolution (2016);
- Selected Provincial GIS Datasets - wetland, watercourse, waterbody, Far North Land Classification, Provincial Satellite Derived Disturbance Mapping, Land Information Ontario

(Ontario Open Data various creation dates), Provincial Parks, Conservation Reserves, Areas of Natural and Scientific Interest (ANSIs), and Provincially Significant Wetlands, downloaded 2020;
- Natural Heritage Reference Manual (2010);
- Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales (2010);
- Ontario Species at Risk, May 2000, Committee on the Status of Species at Risk in Ontario (COSSARO);
- Natural Heritage Resources of Ontario Rare Vascular Plants, Fourth Edition,2009;
- Natural Heritage Information Center (NHIC) Biodiversity Explorer databases;
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC) reports;
- Species at Risk in Ontario (SARO) List;
- The Ecosystems of Ontario, Part 1, Ecozones and Ecoregions, Crins *et al*., Ministry of Natural Resources, 2009;
- The Ecosystems of Ontario, Part 2, Ecodistricts, Wester *et al*., Ministry of Natural Resources, 2018;
- Guiding Principles of Wetland Ecological Functions Assessment: An Overview of Approaches, Hanson et al., 2008;
- Ecosites of Ontario, Boreal, Operational Draft, Banton *et al*., 2009.
- Field Guide to the Wetland Ecosystem Classification for Northwestern Ontario. Ontario Ministry of Natural Resources, Northwest Sci. Technol. Field Guide. Harris et al., 1996;
- Ecological Land Classification for Southern Ontario: First Approximation and Its Application. Ontario Ministry of Natural Resources, Lee. *et al*., 1998;
- Field manual for Describing Soils in Ontario. 4th Edition. Ontario Centre for Soil Resource Evaluation. Ontario Centre for Soil Resource Evaluation, 1993;
- Terrestrial and Wetland Ecosites of Northwestern Ontario. Ontario Ministry of Natural Resources, Northwest Sci. & Technol. Field Guide, Racey *et al*., 1996;
- Ecosystem Classification for northwestern Ontario. Ontario Ministry of Natural Resources, Northwest Sci. & Technol. Field Guide, Sims, *et al*., 1997;
- A Field Guide to Forest Ecosystems of Northeastern Ontario. 2nd Edition. Ontario Ministry of Natural Resources, Northeast Sci. & Technol, Taylor *et al*., 2000;
- A Guide to Translate Northwestern Ontario Ecosites into “Ecosites of Ontario”, Science and Information Resources Division, NWSI Tech. Note TN-48, 2012;
- The Canadian Wetland Classification System, Second Edition, National Wetlands Working Group, 1997;
- Forest Research Partnership ELC Papers and Fact Sheets (e.g., Draft v2.0 - Boreal Treed Vegetation Types 2015);
- Ontario Wetland Evaluation System, Northern Manual, 1st Edition, Version 1.2, 2013;
- All Season Community Road Study – Final report, (Webequie First Nation/Nibinamik First Nation/Neskantaga First Nation/Eabametoong First Nation, June 2016);
- McFaulds Lake Project - Airphoto Mapping for Route Location and Terrain Assessment Scoping/Prefeasibility-Level Study Alternative Road Route Locations (J.D. Mollard and Associates, February 2010);
- McFaulds Lake Project - Report On Mineral and Organic Terrain Mapping in a 10 km Radius Around Esker Camp (J.D. Mollard and Associates, September 2010);
- McFaulds Lake Project - High Level Terrain Mapping McFaulds Lake Winter Road Route (J.D. Mollard and Associates, February 2011);
- Eagle's Nest Project - Federal/Provincial Environmental Impact Statement/Environmental Assessment Report - Draft Copy (Noront, December, 2013); and

- TPA1B Webequie Community Supply Road Project Description – Draft (Webequie First Nation, January 2018).

## 2.3. Biodiversity

The objectives of the biodiversity component of this vegetation and wetland study are to assess abundance and distribution of species and ecological units at several scales across the landscape, as well as to assess fragmentation of the landscape within the LSA and the RSA. Specific objectives are to:

- Establish biodiversity indicators (LSA and RSA);
- Evaluate the biodiversity potential of each ecosite type;
- Determine the rarity of the ecosite types and land cover classes;
- Define the extent of fragmentation at the community and landscape level (LSA and RSA); and
- Determine the effects of the Project on biodiversity and fragmentation.

The biodiversity indicators selected for characterizing the baseline vegetation biodiversity, within the study area, will be based on a review of existing published data, and field data collected during the 2019 and 2020 field programs. Baseline biodiversity will be characterized at three levels: Species, Community, and Landscape.

### 2.3.1. Species Level Biodiversity

Species richness values, derived from calculations of Shannon's diversity, and Pielou's evenness will be used as the measure of species level biodiversity. Survey data collected as part of the baseline vegetation and wetland field programs will be used to calculate these indices.

Data from all survey plots within each sampled ecosite/polygon will be treated as replicates and analysed to develop an overall species richness value for the site. Site values from similar ecosite classes will then be combined to form a representative of the average range of species richness and abundance for the whole community class within the LSA and RSA. Survey data will also be used to estimate the biodiversity potential (i.e., rare or unique species occurrence, non-native/invasive species).

Species richness (S) will be calculated using Menhinick's index (D = s /√N), for vascular species only. Species diversity will be calculated using Shannon's Diversity Index ($H' = -\sum_{i=1}^{k} Pi * LnPi$) to derive an index of heterogeneity within each community. Evenness will be calculated using Pielou's evenness index (J' = H' / lnS).

### 2.3.2. Community Level Biodiversity

The community level assessment will be focused on a number of ecosites/community classes within the LSA, as well as the biodiversity potential of each. Biodiversity potential will entail an assessment of the ability of each ecosite or community to support a variety of self-sustaining plant and animal populations. This will be done by comparing the structure and composition of each ecosite or community, along with the rarity of the community at a landscape level. To score and rank biodiversity potential of each community, the following parameters will be utilized:

- proportion of the landscape covered by each ecosite phase;
- number of structural layers;
- total number of species in each ecosite phase as a percentage of the total species in the LSA;

- mean species richness;
- mean species evenness;
- mean Shannon diversity index;
- number of unique species found in each ecosite phase (species that occurred in only one ecosite phase);
- number of noxious and invasive species in each ecosite phase;
- rare plant occurrences of each ecosite phase; and
- rare plant potential of each ecosite phase.

Each parameter will be populated using both field data and mapping results. These will then be summed and sorted to find natural breaks in the data for each parameter, which will be used to determine the range and interval, or ranking assigned to each. Consideration will also be given to the number of survey plots sampled within an ecosite and the relative abundance of the ecosite within the landscape (e.g., rare ecosites will be given higher rank relative to significantly more common ecosites with more survey plots). This will be done to ensure that rare and relatively rare communities are given more weight, since their loss would affect landscape biodiversity more than those of more common sites.

### 2.3.3. Landscape Level Biodiversity and Fragmentation

The number and type of community classes in the LSA and RSA, along with the extent of habitat fragmentation, will be used to assess biodiversity at the landscape level. Information on the number and type of community classes in the LSA and RSA will be derived from the those utilized during the biodiversity assessment, and will be based on the dominant ecosites or community class assigned to each polygon during the LSA and RSA mapping process (refer to **Section 2.3** for details on the mapping process).

Habitat fragmentation will be assessed through analysis of the size, shape, number, and distribution of patches within the LSA and RSA (ecological land cover classes), along with the following associated metrics:

- Patch area (ha);
- Number of patches;
- Perimeter length (edge);
- Perimeter to area ratio (edge/area);
- Mean perimeter to area ratio (m/ha);
- Mean patch size (ha);
- Patch density (Patches/100 km2);
- Nearest neighbour;
- Mean Neighbour;
- Core area (ha);
- Core area index (core area/total patch area) x 100;

### 2.3.4. Invasive Species

Invasive species will be recorded during all vegetation and wetland filed surveys within the LSA and RSA. The Ontario list of tracked invasive species (https://www.eddmaps.org/ontario/species/) and the NHIC species list, which tracks introduced species (https://www.ontario.ca/page/get-natural-heritage-information) will be used to determine the status of each species observed. All locations of invasive species will be recorded during all field survey activities.

## 2.4. Vegetation Classification and Surveys

To gather the information required to support the Environmental Assessment (EA)/Impact Assessment (IA), vegetation surveys in accordance with provincial standards for Ecological Land Classification (ELC) will be used to identify and classify vegetative communities in the project area. ELC uses a hierarchical approach to identify recurring ecological patterns on the landscape in order to compartmentalize complex natural variation into a reasonable number of meaningful ecosystem units. This facilitates a comprehensive and consistent approach for ecosystem description, inventory and interpretation (Lee *et al*., 1998). The functional units from field assessments will follow the Ecosites of Ontario (Operational Draft) – Boreal Region (Banton *et al.,* 2009), which is the current standard arising from the previous Forest Ecosystem and Wetland Ecosystem Classification systems for the Northeast and Northwest regions of the province (Harris *et al*. 1996, Racey *et al*. 1996, Sims *et al*. 1997, Taylor *et al*. 2000). The ELC process will also be applied to wetlands, but wetlands will also be delineated, and scored using the desktop inventory method outlined in the Ontario Wetland Evaluation System (OWES), Northern Manual. Given the size and prevalence of wetland features within the study area (~81%), the field component of the OWES Northern Manual will not be applied and we will rely on the ELC and aerial interpretation for typing.

Generally, the goal of the sample location selection will be to confirm/compare the classifications developed during the desktop mapping and typing process, and further refine the characterization of the vegetative assemblages within the LSA, allowing for ecosite level typing. The survey plan will consider multiple survey locations in each vegetation type in order to represent the upland/wetland/riparian homogeneity and/or heterogeneity of the RSA, and to yield multiple survey locations per vegetation type. In 2020, a stratified sample site selection process was used to proportionally select vegetation classes in both the LSA and RSA using the NOAA Biogeography Branch's Sampling Design Tool for ArcGIS. The setting of sample numbers per vegetation type was modified somewhat during this process to ensure the capture of the very limited number of extremely rare vegetation classes and landforms (e.g., upland deciduous, eskers). The number of sample points per unit selected will be determined using a species-area curve. When possible, Vegetation team members will also accompany the Aquatic and Wildlife/SAR teams to characterize vegetation on those study areas to support their work.

Additionally, we plan to conduct a comprehensive engagement and consultation process with relevant agencies and First Nation community members to gather knowledge related to hunting, cultural usage/significance, and any other relevant Indigenous Knowledge (e.g., native traditional/country foods, medicinal plants, culturally important plants, harvest areas, etc.), which would be used to inform the following planned field surveys (refer to **Section 3 Consideration of Input from the Public and Indigenous Peoples** for details).

### 2.4.1. Field Data Collection

Each sample location survey will be conducted in alignment with the Guidelines and Methodologies outlined in the Ontario Parks Inventory and Monitoring Program Guidelines (Draft, Ver. 1.4, 2012). The OPIAM program is aligned with several other existing programs, thus maintaining data consistency and allowing direct comparisons and future data exchanges across programs. The collection of substrate and vegetation information gathered using the field data collection sheet provided in the OPIAM has been aligned with the provincial ELC program for the Boreal region.

The OPIAM manual was developed by Ontario Parks to outline the methodologies and associated standards used to collect inventory and monitoring information within either protected areas within their

parks or the surrounding landscape. The program was designed to align with existing provincial and/or national field programs to maintain consistent standards in order to allow information to be shared to the maximum extent possible. It has also been designed to allow for rapid collection of information in the field, as well as flexibility with respect to the information collected, to allow for information from very general inventory/monitoring work to very specific research work to be collected in a consistent manner and analysed together, when appropriate (OPIAM, 2012).

The OPIAM was developed by Ontario Parks Ecologists with direct and/or indirect contributions from a number of biologists associated with the Northwest Biodiversity Program, the provincial Ecological Land Classification (ELC) program, the Southern Protected Areas ELC Campaign partnership with MNRF's Southern Science and Information Section, the Natural Heritage Information Centre and the Thunder Bay Geomatics Service (OPIAM, 2012).

Within each vegetative unit for sampling, the survey plan will involve the placement of a plot that captures % cover of dominant and co-dominant/other prevalent plant species within the canopy, sub-canopy and understorey layers, as well as estimating vascular herbaceous material/dwarf shrubs and non-vascular plant cover, such as mosses and lichens. Substrate/soils information will also be recorded. This assessment will be used to drive the assignment of the appropriate ecosite code to each unit. To capture heterogeneity and ensure full capture of biodiversity, a number of 1 m quadrats will be established. The number of required quadrats within each unit will be determined using a species area curve (quadrats will stop when new species are no longer being identified).

If possible, contingent upon aerial and ground assessment of site conditions and the field work schedule, secondary plots, transect sampling, or cruising may be conducted in complex heterogenous units, or through transitional ecotones to gather some observations on the composition of inclusions/ecotones, dominance/percent cover/density estimates, and ensure species composition/presence is adequately captured. The need for the inclusion of these extra sampling efforts will be determined by field staff during the field visit. Considerations will include: the complexity of the specific vegetation unit being sampled; the need for further definition of transitional ecotone data to support the aerial delineation process and typing process; if there is time to execute; and, it is safe to execute.

Based on the field data, each site will be assigned an ecosite classification based on the Boreal manual. As surveyors inventory each polygon, a complete list of all vascular plants observed will be collected. These sampled units/polygons will then be compared to the current mapped vegetation classifications to calculate the level of certainty/error between known and projected classifications. The results will inform the classification process of similar un-sampled areas within the study areas to develop the final study area-wide vegetation classifications, based on grouped ecosites with similar community characteristics and types (e.g., Deciduous/Conifer/Mixed Forest, Open/Treed/Sparse treed Bog/Fen, Deciduous/Conifer/Mixed/Thicket Swamp, etc.), and used to determine impacts.

### 2.4.2. 2019 Survey Site Selection

Site selection for the 2019 program was done manually by project vegetation specialists to verify delineations and typing of selected units, which were developed using existing Far North Land Cover, LIO wetland datasets, and aerial imagery interpretation. As part of the 2019 program, 43 discreet vegetation units were sampled, representing 21 different vegetation classes (e.g., Open Bog, Fen Upland Deciduous, etc.) within the combined LSA of the preliminary route alternatives (refer to **Figure 3a** and

**Figure 3b** below). The results from these surveys were then used to conduct a second round of assessment to further refine/delineate unit boundaries and adjust typing.

480000 490000 500000 510000 520000

5870000 5860000 5850000

Provincial Park
Eastwood Island
Garrioch Lake
Plant Lake
McMurdo Lake
Stockman Lake
Bender Lake
Odobas Lake
Billinger Lake
Leaver Lake
Vinisk Lake
Morrison Bay
Prime Lake
Farrow Lake
Newstead Lake

V43 V38 V37 V24 V1 V2 V23 V3 V4 V22 V21 V5 V6 V7 V8 V9 V10 V11 V12 V14 V15 V13 V36 V16 V25 V31 V32

**Legend**

- 2019 Vegetation Survey Points
- 2019 Vegetation Delineations
- Optimal Geotechnical Route
- Community Preferred Route
- Local Study Area (LSA 1km From Alternative Footprints)
- Regional Study Area (RSA 5km From Alternative LSA's)
- Webequie First Nation Reserve
- Waterbody
- Watercourse
- Winisk River Provincial Park

WSR WEBEQUIE SUPPLY ROAD

10.50 1 2 3 Km

N

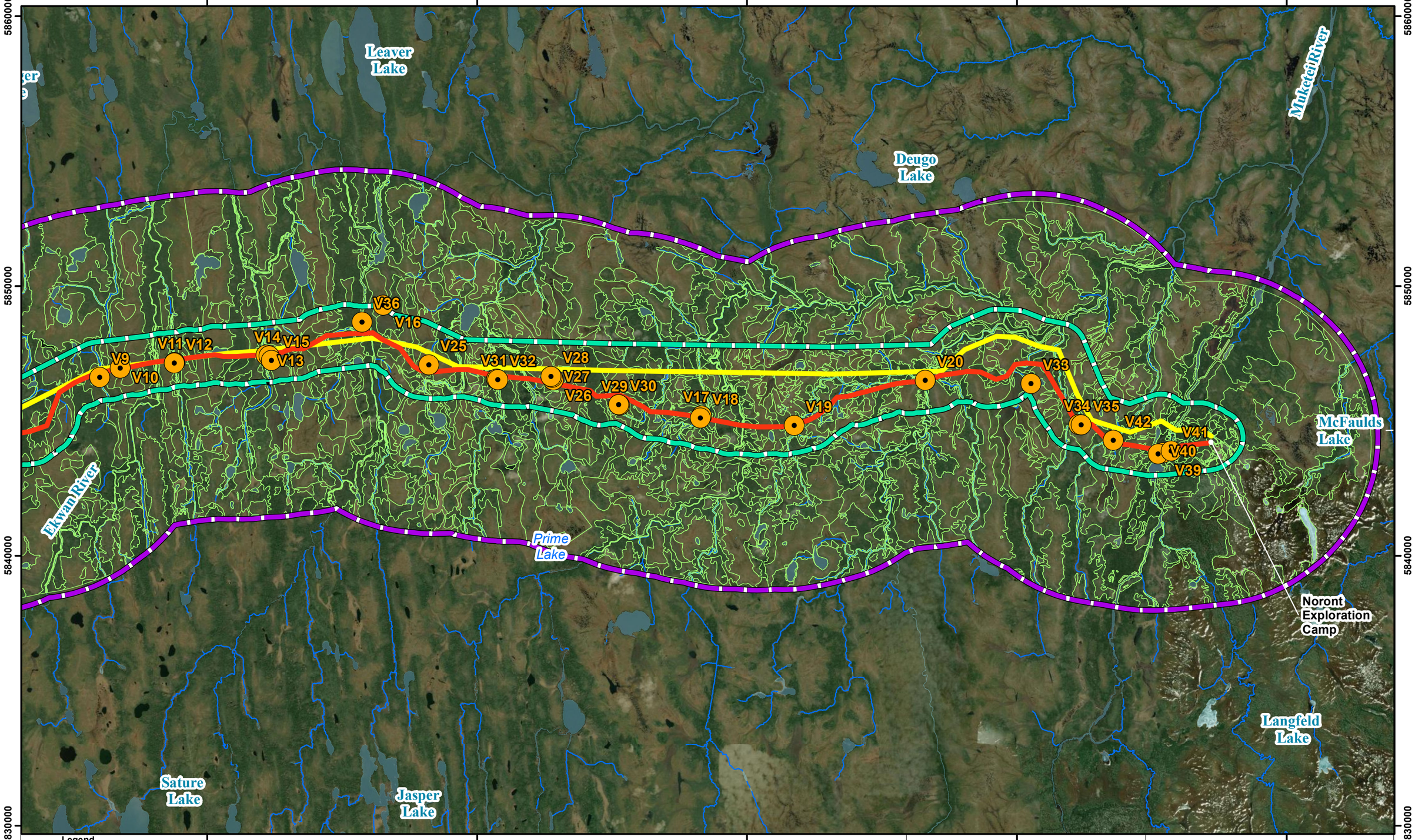
NAD 83
UTM Zone 16N

# Webequie Supply Road

*2019 Vegetation Survey Locations (Western Segment)*

| Date: 2020/08/19 | File Number: 649920 | Sub Code: 0000 |
|---|---|---|
| Figure Number: 3a | | Rev. 0 |

Document Path: I:\E&W\Projects\661910 - Webequie First Nation Supply Rd\40_Execution\45_GIS_Dwgs\MXD\Workplans\20200819_661910_WSR_Veg2019Samp_West_Fig_3a.mxd




**Legend**

- 2019 Vegetation Survey Points
- 2019 Vegetation Delineations
- Optimal Geotechnical Route
- Community Preferred Route
- Local Study Area (LSA 1km From Alternative Footprints)
- Regional Study Area (RSA 5km From Alternative LSA's)
- Webequie First Nation Reserve
- Waterbody
- Watercourse
- Winisk River Provincial Park

WSR WEBEQUIE SUPPLY ROAD

10.50 1 2 3 Km

N

NAD 83
UTM Zone 16N

# Webequie Supply Road

*2019 Vegetation Survey Locations (Eastern Segment)*

| Date: 2020/08/19 | File Number: 649920 | Sub Code: 0000 |
|---|---|---|
| Figure Number: 3b | | Rev. 0 |

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### 2.4.3. 2020 Surveys Site Selection

In 2020, a stratified sample site selection process was used to select discreet vegetation units (sites) to sample in both the LSA and RSA using the NOAA Biogeography Branch's Sampling Design Tool for ArcGIS. The setting of sample numbers per vegetation type was modified somewhat during this process to ensure the capture of the very limited number of extremely rare vegetation classes and landforms (e.g., upland deciduous, eskers). The model was run for the selection of 150 vegetation units/polygons (≥= 5 ha, 77 in LSA, 78 in RSA), with a random plot positioned in each one. Plots within the polygon will be completed per the field methodology to guide selection of the appropriate ecosite type for the polygon. In order to capture variability and species diversity within the plot, a number of quadrats (1 m x 1 m) will be sampled at random within each polygon. This will be done until the species area curve flattens (i.e., no new species are observed).

Following the 2020 field season, a third iteration of refinement of unit boundaries will be conducted and adjustments to typing will be made. This process will focus on deriving representative vegetation classifications within the project area as a whole, with specific focus on identified areas requiring clearing. Consideration of any temporary or permanent supporting infrastructure will also be included in the survey plans in order to characterize impacts associated with construction staging requirements, or supporting infrastructure required for long term maintenance of the supply road (refer also to **Section 2.6.1 Consideration and Evaluation of Alternatives**). For temporary staging areas/access roads/construction camps, consideration will also be given to using existing characterization to guide recommendations for potential restoration activities to be implemented following construction.

It should be noted that the remote nature of the study area (helicopter access only), will require a certain level of field fit, which may alter the sampling locations if a safe landing site is unavailable and/or foot travel to the selected location is deemed unsafe in relation to our corporate Health and Safety protocols.

### 2.4.4. Upland Vegetation Surveys

Upland vegetation surveys will be conducted at accessible representative sites of deciduous, mixed, conifer, exposed bedrock, and meadow composition. Each sample location survey will be conducted in alignment with the ELC data requirements using Ontario Parks datasheets for Vegetation Plot Layers, and Groundcover/Substrate Plot Information. Vegetation will be assessed for:

- Trees – species composition of canopy and sub-canopy trees;
- Understory shrubs and tree regeneration, as well as dwarf shrubs;
- Herbaceous vegetation species (forbs/graminoid);
- Moss/lichen species;
- SAR species;
- Invasive species;
- Snags/cavities/woody debris/exposed bedrock; and
- Dominance/percent cover/density estimates.

For sites where trees exceed 10 m in height, or 9.5 cm diameter at breast height (dbh), a representative individual of dominant species (or codominant species) will also be measured for dbh and height.

At each sampling point, soils investigations will also be conducted to establish:

- Organic, or mineral soils;

- Mineral soil texture;
- Mottling, or presence of gley (depths);
- Depth to bedrock (if applicable); and
- Depth to water table (if applicable).

These will be used to make a preliminary determination of moisture regime and drainage class. Other data collected will include:

- GPS coordinates;
- Date/time/surveyors;
- Slope/aspect;
- Landform;
- Wildlife sightings; and
- General comments.

### 2.4.5. Wetland Vegetation Surveys

Wetland vegetation surveys will be conducted at accessible representative sites of open/treed bog, open/treed fen, tree and thicket swamp, and marshes. Each sample location survey will be conducted in alignment with the ELC data requirements using Ontario Parks datasheets for Vegetation Plot Layers, and Groundcover/Substrate Plot Information. In more open wetlands, 1 m quadrat sampling will also be conducted to accurately establish dominance and cover and inform the determination of the function and conservation status of the wetland types at a local, regional, and provincial level.

Vegetation will be assessed for:

- Trees – species composition of canopy and sub-canopy trees;
- Understory shrubs and tree regeneration, as well as dwarf shrubs;
- Herbaceous vegetation species (forbs/graminoid);
- Emergent/submergent/floating species;
- Moss/lichen species;
- SAR species;
- Invasive species;
- Woody debris/exposed bedrock; and
- Dominance/percent cover/density estimates.

For sites where trees exceed 10 m in height or 9.5 cm diameter at breast height (dbh), a representative individual of dominant species (or codominant species) will also be measured for dbh and height.

At each sampling point, soils investigations will also be conducted to establish:

- Organic, or mineral soils;
- Mineral soil texture;
- Mottling, or presence of gley (depths);
- Depth to bedrock (if applicable);
- Depth to water table (if applicable); and
- PH.

These will be used to make a preliminary determination of moisture regime and drainage class. Other data collected will include:

- GPS coordinates;
- Date/time/surveyors;
- Percent open water;
- Slope/aspect;
- Hydrologic form and subforms (in accordance with the The Canadian Wetland Classification System);
- Wildlife sightings; and
- General comments.

Where applicable, transect, and/or cruising sampling will be conducted to refine dominance/percent cover/density estimates and ensure species composition/presence is adequately captured and can enable reliable extrapolation in space for the PF, LSA and RSA.

## 2.4.6. Riparian Vegetation Surveys

Riparian vegetation surveys will be conducted at accessible representative sites using the appropriate methods and data collection parameters listed above, depending on the interface type encountered (upland/wetland). Particular attention will be given to the aquatic/terrestrial interface to determine the hydrologic form, and subforms, in accordance with the The Canadian Wetland Classification System (National Wetland Working Group, 1998).

## 2.4.7. Plants Species/SAR Surveys

### 2.4.7.1. Plant Species Surveys

Where feasible, transect or cruising surveys will be conducted in conjunction with vegetation community plot surveys, at all sample locations, in order to develop a comprehensive list of species present in each unit. Any species encountered during these or any other activities will also be identified and recorded in field notes for that location and added to a running list of project area species.

### 2.4.7.2. Species at Risk Plant Species

Rare or Listed species will be searched for during all field survey activities, along with the collection of data used to support and assessment of rare/listed species potential. A list of plants with the potential to be present in the study area will be generated based on previous studies, as well as a review of updated databases (NHIC, COSSARO, COSEWIC) and legislation (Ontario *Endangered Species Act*, federal *Species at Risk Act*). Plants listed on NHIC under designations S1-S3 will be included in the list. Descriptions and photos of these species, as well descriptions of potential community characteristics, will be given to field staff to facilitate the likelihood of opportunistic sightings during normal field activities. Some targeted sample location selection will also be applied to vegetation communities with the potential for these species. If located, photos and GPS coordinates will be recorded, along with a description of the surrounding site environmental characteristics. All species at risk data collected during field surveys will be provided to MECP's Species at Risk Branch and MNRF's Natural Heritage Information Centre (NHIC).

#### 2.4.7.3. First Nation Nutritional/Medicinal/Spiritual Plants

Section 3 below outlines the First Nation engagement and consultation process, but there were specific consultation activities designed to help identify plants species of nutritional, medicinal or spiritual importance to the local FN community members. A workshop was held within the Webequie First Nation community in 2019 in which pressed specimens from the field program were reviewed by SNC-Lavalin botanists and community elders, foragers, and hunters to determine the cultural significance of each specimen. Further general community surveys were also conducted in 2020 to derive a list of important nutritional, medicinal or spiritual plants which would receive focused attention during field programs, including in the context of country or traditional foods.

Based on consultation with WFN to date, the community has identified nutritional/medicinal/spiritual use plants, including blueberries (*Vaccinum* sp.), gooseberries (*Ribes* sp.), Northern Sweetflag (*Acorus americanus*), White Cedar (*Thuja occidentalis*), Labrador Tea (*Rhododendron groenlandicum*), and Crowberry (*Empetrum nigrum*). As part of the 2020 field program, identification of local patches used by WFN will be sampled.

### 2.4.8. Wetlands Function Assessment

Wetlands perform many ecological functions that have value to both the ecological systems and societal landscape in which they are found. These functions (sometimes called ecological services) include fish and wildlife habitat, groundwater recharge, stormwater retention, water quality, lake/stream bank stabilization, and carbon sequestration. Values include foraging, hunting, fishing, spiritual/archaeological, aesthetic and commercial opportunities. To conduct the wetland functions assessment, a preliminary review of reference material, such as current wetland delineation and typing data, soil data, topography, watersheds, waterbody interactions (e.g., shorelines, inlets, outlets), upland interactions/land uses, and aerial photographs, will be conducted. These will be used to derive the initial wetland mapping within the PF, LSA, and RSA. Vegetative field surveys will be used to iteratively refine/confirm delineation and typing.

Currently, we are planning to use a combination of Level 1, 2 and 3 assessments, including the Minnesota Routine Assessment Method (MnRAM) Evaluating Wetland Function, (Version 3.4, 2000), in combination with the field data collection requirements of the Wisconsin Wetland Rapid Assessment Methodology (Version 2.0, WDNR, 2014), and the Canadian Wetland Classification System (CWCS) to ensure that assessment level 3 form, vegetation and habitat data, is collected during the vegetation field surveys. The CWCS type designations will be applied for the purposes of the final Wetland Functions Assessment. Non-vegetative parameters/data will be acquired for the respective EA/IA programs/disciplines (e.g., hydrologic, water quality, hydrogeologic and wildlife). The following preliminary list of wetland values will form part of the Wetlands Function Assessment.

- Vegetative Diversity/Integrity
- Biological Productivity
- Maintenance of Characteristic Hydrologic Regime
- Flood/Stormwater/Attenuation
- Groundwater Interactions
- Downstream Water Quality
- Maintenance of Wetland Water Quality
- Carbon sequestration/climate
- Shoreline Protection

- Maintenance of Characteristic Wildlife Habitat Structure
- Maintenance of Characteristic Fish Habitat
- Maintenance of Characteristic Amphibian Habitat
- Aesthetics/Recreation/Education
- Commercial Uses
- Cultural Significance (foraging/hunting/spiritual/archaeological)

Note the above process is preliminary at this stage, designed mainly to inform the field data collection process. The detailed development of the final Wetlands Function Assessment procedure will continue in consultation with IAAC and MECP biologists during the conduct of the EA.

## 2.5. Criteria and Indicators

Criteria are components of the environment that are considered to have economic, social, biological, conservation, aesthetic or cultural value (Beanlands and Duinker, 1983). The assessment will focus on valued components, and applicable specific criteria, that have physical, biological, social, economic or health importance to the public, Indigenous groups, federal and provincial authorities and interested parties, and have the potential for change as a result of the Project. Valued components have been identified in the federal TISG and by the Project Team and are, in part, based on what Indigenous communities and groups, the public and stakeholders identify as valuable to them in the EA process to date. The list of valued components identified to date include the following:

- Geology, Terrain and Soils;
- Surface Water;
- Groundwater;
- Air Quality;
- Climate Change;
- Noise;
- **Vegetation and Wetlands** (subject of this work plan);
- Fish and Fish Habitat;
- Federal or Provincial Species at Risk;
- Wildlife, including migratory birds;
- Archaeological Resources;
- Cultural Heritage Resources;
- Socio-economic Environment;
- Aboriginal Land and Resource Use;
- Visual/Aesthetic Environment;
- Human Health; and
- Aboriginal and Treaty Rights and Interests.

The list of valued components will be informed, validated and finalized through the engagement and consultation process, including those to whom these concerns are important and the reasons why, such as environmental, cultural, spiritual, historical, health, social, economic and their relation to the exercise of Aboriginal and Treaty rights.

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

- Engagement with Indigenous communities and groups and the extent to which the valued component is linked to the interests or exercise of Aboriginal and Treaty rights of Indigenous peoples;
- Stakeholder engagement, including discussions with interest holders, and government authorities;
- Presence, abundance and distribution within, or relevance to, the area associated with the Project;
- Extent to which the effects (real or perceived) of the Project and related activities have the potential to interact with the valued component;
- Species conservation status or concern;
- Umbrella or keystone species with potential to represent a broad range of potential effects;
- Uniqueness or rarity in the study area;
- Likelihood of an indirect effect on an associated criterion (i.e., a link exists between the affected criterion and another criterion, such as vegetation removal affecting wildlife habitat);
- Ecological, social and economic value to Indigenous communities, municipalities, stakeholders, government authorities, and the public; and
- Traditional, cultural and heritage importance to Indigenous peoples.

### 2.5.1. Criteria

As per IAAC direction in the TISG, the following will be selected as criteria for the EA to assess the effects of the Project on vegetation assemblages. The selection of vegetation and wetlands criteria is designed to take a broad approach to the assessment, and initially examine the biodiversity of the region at the broadest level using the following coarse criteria:

- Upland Ecosystems
- Wetland Ecosystems
- Riparian Ecosystems

These criteria are preliminary at this stage and will be further refined prior to further analysis through a focused consultation with FN community members, the general public, stakeholders and relevant government ministries and agencies (refer to **Section 3** Consideration of Input from the Public and Indigenous Peoples).

### 2.5.2. Indicators

In order to evaluate the effects of the WSR, each criterion will have one or more indicators that will identify how the potential project effects will be measured. The proposed preliminary indicators for vegetation that will be used include the following, which will be further refined to determine and describe direct, incidental and cumulative predicted positive and/or adverse effects to the terrestrial environment.

- **Upland Landcover Type (Quantity, Availability and Quality)**: a calculation of quantitative removals, including quality of upland vegetation associations available to wildlife species and their various life history stages. Habitat quantity will involve a quantitative assessment of potential changes to total area of specific upland vegetation associations, and assessment of

the conservation status, and relative abundance locally, regionally and provincially. An assessment will also be made of any known or assumed critical life cycle role the habitat provides (e.g., breeding, rearing, etc.). The effects of the implementation the Project and will be calculated and presented as absolute (i.e., area – hectares or square metres) removals, as appropriate, with an associated value to represent its ecological importance in terms of quality and availability.

- **Wetland Landcover Type (Quantity, Availability and Quality)**: Quantitative removals, including quality of upland vegetation associations available to wildlife species and their various life history stages. Habitat quantity will involve a quantitative assessment of potential changes to total area of specific wetland vegetation associations, and assessment of the conservation status, and relative abundance locally, regionally and provincially. An assessment will also be made of any known or assumed critical life cycle role the habitat provides (e.g., breeding, rearing, etc.). The effects of the implementation the Project and will be calculated and presented as absolute (i.e., area – hectares or square metres) removals as appropriate, with an associated value to represent its ecological importance in terms of quality and availability.

- **Riparian Habitat Type (Quantity, Availability and Quality)**: Quantitative removals, including quality of riparian vegetation associations available to wildlife species and their various life history stages. Habitat quantity will involve a quantitative assessment of potential changes to total area of specific upland vegetation associations, and assessment of the conservation status, and relative abundance locally, regionally and provincially. An assessment will also be made of any known or assumed critical life cycle role the habitat provides (e.g., breeding, rearing, etc.). The effects of the implementation the Project and will be calculated and presented as absolute (i.e., area – hectares or square metres) removals as appropriate, with an associated value to represent its ecological importance in terms of quality and availability.

- **Conservation Status**: A separate calculation of quantitative removals of rare/critical vegetation assemblages resulting from combinations of unique landforms and specific vegetation communities (e.g., eskers, deciduous, old growth).

- **Structural/Vegetative Complexity**: Quantitative/qualitative assessment of the of homogeneity/heterogeneity, plant species richness, and structural variability (age/height classes, cover, etc.) within vegetation classifications, which would be used to inform potential conservation status and functional assessments.

- **Edge habitat**: A quantitative assessment of baseline edge habitat vs edge habitat following project implementation. May also be used to inform structural complexity assessments.

- **Plant Species Relative Abundance/Overlap**: Occurrence data used to inform the identification of locally rare plant species and identify species with high habitat specificity potentially affected by project activities.

- **Non- native/Invasive species**: Occurrence data assessment of invasive species observed (location, vegetation class), and potential for introduction through project activities.

- **Fire potential**: Quantitative and qualitative assessment of existing and past signs of fire events, and assessment of potential fire hazard potential of vegetation classes.

- **Hydrologic changes**: Quantitative assessment of natural water levels, movement, and quality (derived from hydrology and water quality programs).
- **Habitat usage (wildlife)**: Quantitative assessment of wildlife occurrence and qualitative assessment of potential usage (derived from wildlife programs).
- **Rare species occurrence/potential (vegetation/wildlife)**: Identification of rare species occurrences, and potential of occurrence in each vegetation class (derived from vegetation and wildlife programs).
- **Cultural significance or importance (First Nations/general public)**: Survey of First Nation or general public usage and cultural importance of vegetation classes/locations (derived from community consultation program and vegetation specific consultation (e.g., community health and well-being workshops).

In general, the above proposed indicators represent attributes that can be used to characterize changes to the criteria. Each indicator will be assessed quantitatively where sufficient data and information exist to support a numerical assessment, and/or qualitatively, where applicable. Changes for each indicator will be described in terms of ecosystem availability and distribution or the amount of the ecosystem present for each criterion. Ecosystem availability would be quantitatively measured as the amount of area (i.e., hectares) of each ecosystem type, while ecosystem distribution would be qualitatively measured using mapping to visually analyse the spatial configuration (or arrangement) and connectivity of ecosystems. Indicators would also be used to characterize changes to ecosystem composition, such as species richness, species abundance and species diversity. Ecosystem composition will be measured qualitatively using scientific literature review and baseline data on the presence of listed and invasive species.

The rationale for selection of the criteria and indicators will be further described in the EAR/IS, with consideration of input received during engagement and consultation with Indigenous communities and others.

## 2.6. Effects Assessment Approach

The approach for the assessment has been developed to satisfy regulatory requirements under the *Environmental Assessment Act* and is based on the MECP *Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario* (MOECC, 2014), and the Terms of Reference for the Project that is currently pending approval from the MECP. The approach for the assessment has also been developed to meet the requirements of the federal TISG and specifically Section 13 – Effects Assessment. The approach has also taken into consideration the Ministry of Natural Resources and Forestry (MNRF) Class Environmental Assessment for MNR Resource Stewardship and Facility Development Projects (MNRF, 2003).

### 2.6.1. Consideration and Evaluation of Alternatives

The EA process requires that two types of project alternatives be considered: “alternatives to” the Undertaking (i.e., functionally different ways of addressing an identified problem or opportunity to arrive at the preferred planning solution) and “alternative methods” of carrying out the Undertaking (options for implementing the preferred planning solution). The consideration and evaluation of alternatives to the

Undertaking were documented in the federal Impact Assessment Detailed Project Description (November 2019) and the provincial Environmental Assessment draft Terms of Reference (September 2019) and concluded that developing a new all-season road between Webequie and the McFaulds Lake area is the preferred alternative. It is not proposed that this analysis and conclusion be re-examined as part of the EA process, but it will be documented in the EAR/IS. Therefore, in keeping with the focussed approach, the preferred planning alternative (developing a new all-season road) has been carried forward to the initial consideration of alternative methods of carrying out the Undertaking.

The consideration of alternative methods will focus on the supply road conceptual alternatives within the proposed preliminary corridor, as identified in the Detailed Project Description (November 2019) and the draft Terms of Reference (September 2019). These alternatives include the Webequie First Nation community's preferred route for the supply road along the centreline of an approximately 2 km wide preliminary preferred corridor and the optimal geotechnical route within the same corridor (Refer to Figure 2). In addition, the following alternative methods related to supportive infrastructure and the preferred supply route will be examined.

- Alternative sites for temporary and/or permanent aggregate extraction pits and production facilities needed for construction and operation of the road, including access roads to these sites;
- Alternative sites for supportive infrastructure (i.e., temporary laydown and storage areas, and construction camps, including access roads to these areas);
- Watercourse crossing structure types (i.e., culverts, bridges), span length, lifecycle, and construction staging methods at waterbody crossings;
- Road attributes, including roadbed foundation; horizontal alignment, vertical alignment (elevation/profile), and adjustments to the cross-section and right-of-way (ROW) width of the corridor.

The assessment of alternatives will include environmental, socio-economic, cultural and technical factors, using criteria and indicators for the comparative analysis. This will also include specific consideration of community based Indigenous land and resource uses (e.g., fishing, hunting) and cultural (e.g., built, sacred or spiritual sites) criteria of value to Indigenous communities within the broader factors. As noted previously, the criteria and indicators will be developed in detail as part of the EA through input from the engagement and consultation activities with Indigenous communities, the public and stakeholders. Both a quantitative and/or qualitative assessment of alternatives for each criterion will be conducted to allow for a comparison of the advantages and disadvantages and selection of a preliminary recommended route for the WSR and the sites/access routes for supportive infrastructure.

### 2.6.2. Assessment of Net Effects

A step-wise process will be used to assess the environmental effects of the Project in a systematic and transparent manner once the relevant project elements and activities and their interactions, assessment boundaries, and relevant environmental criteria and indicators are identified and finalized through the engagement and consultation process. The net effects assessment method will include the following primary steps:

- Identification of potential environmental effects;
- Identification of technically and economically feasible impact management measures;
- Prediction of net effects following implementation of impact management measures; and

› Evaluation of the predicted net effects (i.e., describe and determine the magnitude, duration, extent, frequency, and significance of the predicted net effects).

#### 2.6.2.1. Identification of Potential Environmental Effects

The net effects assessment will consider the potential interactions between the project components and activities and the criteria within the identified spatial boundaries and phases of the Project (i.e., construction and operation). Potential effects of the Project on valued components will be determined by comparing baseline conditions to those expected to result from the construction and operation and maintenance of the Project. Potential effects will be described for each assessment criterion, including an indication of whether they are expected to be direct (i.e., as a result of a project component or activity affecting a valued component), or indirect (i.e., as a result of a change to one valued component affecting another valued component). Relevant project works and activities will be analysed individually to determine if there is a plausible pathway for an effect on valued components.

The assessment of potential effects to vegetation communities will include the characterization of baseline conditions in the project study area using both publicly available information on a regional scale and data obtained in the field or via desktop review on a local scale or site-specific basis. As potential effects from the development of the supply road and supportive infrastructure could affect vegetation communities within the PF and LSA we will also assess specific potential effects that could have lingering detrimental effects to vegetation in the study areas, such as increased human access, injury or mortality, physical alteration of waterbodies or channel morphology and spills.

Effects to vegetation communities as a result of the Project will consider the specific items contained in Section 15.3 of the TISG.

#### 2.6.2.2. Identification of Impact Management Measures

Once potential effects are identified, technically and economically feasible impact management measures (or “mitigation measures”) to avoid and minimize potential adverse effects will be identified for each phase of the Project. Design considerations and impact management measures for vegetation communities will be identified to offset or eliminate potential adverse effects (e.g., construction timing constraints) and will be described in the EAR/IS. Refinements to these measures may also be made in the future detail design phase of the Project. Impact management measures will be developed for the Project based on:

› Knowledge and experience of the Project Team with linear infrastructure developments;
› Industry best management practices and applicable agency requirements and guidance; and
› Measures identified by Indigenous communities, the public and stakeholders through feedback received as part of the engagement and consultation program.

It is understood that impact management measures are not always fully effective; therefore, WFN will identify a compliance monitoring and effects monitoring program as part of the EA for implementation during the project phases (refer to **Section 2.3.2.6**).

#### 2.6.2.3. Prediction of Net Effects

A net effect, or the alternative term residual effect, is considered an environmental (biophysical), social, economic or health effect from the Project and its related activities that is predicted to remain after the implementation of impact management measures. A potential effect is considered to occur where anticipated future conditions resulting from the Project differ from the conditions otherwise expected from natural change without the Project. In some situations, the recommended impact management measures

will eliminate a potential adverse effect, while in other situations impact management measures may reduce, but not eliminate the effect. Impact management measures may also enhance positive effects. A potential effect that will be eliminated, or considered unlikely after impact management measures, will be identified as not resulting in a net effect (i.e., no net effect) and will not be considered further in the net effects assessment. An effect that may remain after the application of impact management measures will be identified as a net effect and will be further considered in the effects assessment. Positive effects will also be considered further in the effects assessment, including means of enhancing benefits of the Project. Neutral changes will not be carried forward for the characterization of net effects, but where identified will be characterized in terms of the confidence in the predictions and the likelihood of the effect.

#### 2.6.2.4. Characterizing the Net Effects

The characterization of net effects will provide the foundation for determining the significance of incremental and cumulative effects from the Project for each assessment criterion. The objective of the method is to identify and predict net adverse and positive effects that have sufficient magnitude, duration, and geographic extent to cause fundamental changes to the self-sustainability or ecological function of a valued component and, therefore, result in significant combined effects.

Using the vegetative environment as an example, the magnitude of the potential effect will be qualitatively assessed by inferring the anticipated changes relative to baseline conditions using the identified preliminary criteria and indicators related to habitat availability, distribution and abundance. Where appropriate, the magnitude of potential effects to vegetation communities will be quantitatively evaluated based on the proportion of the vegetation type or complex that is expected to be disturbed or influenced by a specific project activity. In general, the magnitude is the intensity of the effect or a measure of the degree of change from existing conditions and will be defined by each discipline assessment. If a significant effect is identified, the contribution of the Project to the combined effect will be described. The assessment of significance of the net effects of the Project on vegetation communities and other valued components will be informed by the interaction between significance factors (as defined below), in addition to those concerns raised by Indigenous groups, interested agencies, and individuals during the consultation and engagement for the EA. Therefore, predicted net effects, where identified, will be described in terms of the following significance factors (MNRF, 2003), with integration of the assessment methodology identified in the federal TISG, as required.

- **Direction** – The direction of change in effect relative to the current value, state or condition, described in terms of Positive, Neutral, or Negative.
- **Magnitude** - The measure of the degree of change from existing (baseline) conditions predicted to occur in the criterion.
- **Geographic Extent** - The spatial extent of which an effect is expected to occur/can be detected and described in terms of the PF, LSA and RSA.
- **Severity** - The level of damage to the valued component from the effect that can reasonably be expected; typically measured as the degree of destruction or degradation within the spatial area of the PF, LSA and RSA. Severity would be characterized as: Extreme; Serious, Moderate or Slight.
- **Duration/Reversibility** - Duration is the period of time over which the effect will be present between the start and end of an activity or stressor, plus the time required for the effect to be reversed. Duration and reversibility are functions of the length of time a valued component is exposed to activities. Reversibility is an indicator of the degree to which potential effects can be reversed and the valued component restored at a future predicted time. For effects that are

permanent, the effect is deemed to be irreversible. Duration/Reversibility would be characterized for each adverse effect as: Short-Term (0- 5 years), Medium-Term (6-20 years), Long-Term (21 to 100 years) or Permanent (>100 years).

- **Frequency** – Is the rate of occurrence of an effect over the duration of the Project, including any seasonal or annual considerations. Frequency would be characterized as: Infrequent; Frequent or Continuous.
- **Probability or Likelihood of Occurrence** – Is a measure of the probability or likelihood an activity will result in an environmental effect. Probability or likelihood of occurrence would be characterized as: Unlikely, Possible; Probable and Certain.

The definitions and description of the above factors will be described in detail in the EAR/IS. An effort will be made to express expected changes quantitatively/numerically. For example, the magnitude (intensity) of the effect may be expressed in absolute (e.g., changes to wetland extent – hectares) or percentage values above (or below) baseline conditions or a guideline value (e.g. surface water quality). Additionally, the definition of effect levels may vary from one valued component or criterion to another, recognizing that the units and range of measurement are distinct for each. Lastly, effects may impact communities, Indigenous groups and stakeholders in different ways, including through a gender-based lens (refer to Section 2.3.3) and they may respond differently to them. Therefore, determining and characterizing effects will be based largely on the level of concern expressed through engagement with the Indigenous groups and community members.

#### 2.6.2.5. Assessment of Significance

MNRF's Class Environmental Assessment for MNR Resource Stewardship and Facility Development Projects (MNRF 2003) require the assessment of significance of environmental effects and provides guidance for assessing the significance of potential environmental effects under individual criteria, for the alternative alignments, and the project as a whole.

In addition to the Class EA guidance, the determination of significance of net effects and cumulative effects from the Project and other previous, existing, and reasonably foreseeable developments will generally follow the guidelines and principles of the *Draft Technical Guidance Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under the Canadian Environmental Assessment Act* (CEA Agency, 2017) and the *Operational Policy Statement: Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under the Canadian Environmental Assessment Act*, 2012 (CEA Agency, 2015).

In general, the assessment of significance of net effects will be applied to each valued component for which net effects are predicted, and net adverse effects or positive effects will be classified as significant or not significant (i.e., binary response). Additional details on the application of biophysical, cultural, socio-economic and health criteria and definitions that would describe "significant" and "not significant" will be provided in the EAR/IS.

#### 2.6.2.6. Identification of a Monitoring Framework

Webequie First Nation will develop a monitoring framework during the EA process for each project phase (construction and operation and maintenance). The two primary types of monitoring to be developed will include:

- Compliance monitoring; and
- Effects monitoring.

The compliance monitoring will assess and evaluate whether the Project has been constructed, implemented and/or operated in accordance with commitments made during the EA process, and any conditions of the federal IA and provincial EA approvals and other approvals required to implement the Project.

The effects monitoring will be designed to verify the prediction of the effects assessment, and to verity the effectiveness of the impact management measures. This would include construction and operational monitoring that would identify actual effects, assess the effectiveness of the measures to minimize or eliminate adverse effects, and evaluate the need for any additional action to ensure that environmental commitments and obligations are fulfilled and mitigation measures are effective.

### 2.6.3. Gender Based Analysis Plus (GBA+)

Information and data collected will be disaggregated by diverse subgroups (women, youth, elders, etc.), as part of applying a Gender Based Analysis Plus (GBA+) lens. For vegetation, the baseline information will focus on species harvested and consumed or used for medicinal and spiritual purposes and will be obtained through such methods as socio-economic and health surveys (using Survey Monkey), key informant interviews with community members who gather/harvest (gender, youth, elders), desktop research and Indigenous Knowledge where provided. This will include qualitative and quantitative data that help to characterize and describe the importance of vegetation of cultural significance to Indigenous communities through a GBA+ lens, including, where feasible, the data disaggregated by sex, age, and other identity factors. Through Survey Monkey the data will be filtered and disaggregated based on the demographic questions answered (i.e., gender, age, Indigenous community membership, etc.).

The Project Team will work with the Indigenous communities to identify the appropriate participants for each of the subgroups that are willing to contribute to the baseline data collection through surveys and key informant interviews. The Project Team will tailor how they engage with these groups based on community protocols (i.e., it is expected that elders would prefer in-person dialogue and will require a community translator, versus youth, who would participate in online survey).

# 3. Consideration of Input from the Public and Indigenous Peoples

## 3.1. Public Participation

EA study participants as identified in the Agency *Public Participation Plan* dated February 24, 2020 for the WSR Project will be engaged and consulted. The Public Participation Plan was developed by the Agency to set out proposed opportunities for participation during the impact assessment process for Agency-led activities. The proponent, or its subject matter experts, may participate in activities as requested by the Agency.

The ToR provides a plan for engaging and consulting government ministries and agencies, the public and stakeholders based on EA study milestones similar to those for Indigenous communities.

All identified affected and/or interested stakeholders and members of the public will be notified at the EA study milestones. The public and stakeholders will have the opportunity to attend two (2) open house sessions that will be held in the City of Thunder Bay, focussing on:

1. Project and EA process overview; baseline data collection; spatial and temporal boundaries for assessment; criteria and indicators; and identification and preliminary evaluation of alternatives; and

2. Presentation of the selected preferred alternatives/the Project, including potential effects, mitigation, net effects and their significance and follow-up monitoring.

The open houses will include display materials and handouts containing information on the Project, the EA study process, known existing environmental conditions, the results of studies that have been conducted to date; the development and evaluation of alternatives, including the rationale for use of criteria and indicators; the project schedule; and the results of the consultation program. The Webequie Project Team will be available to receive and respond to questions and have an open dialogue regarding the EA process. Written comments may be prepared and left at the open house venue or sent to the Project Team within a specified period following the event.

The public and stakeholders will be notified regarding the commencement of the EA and submission of the Draft and Final EAR/IS. The EAR/IS will be available for review on the Project Website, and at municipal offices or nearby public libraries in:

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

In summary, the methods and activities for engagement and consultation with the public will include:

- Notification letters;
- Public notices and newspaper advertising at key EA milestones – Notice of Commencement; Notice of Open Houses; Notices for Draft and Final EAR/IS;
- Open houses;
- Communication materials for use at meetings such as slide decks, project fact sheets, handouts, etc.;
- Project Website; and
- Opportunities to review and provide comments on the Draft and Final EAR/IS.

All comments received from the public engagement and consultation activities will be tracked (i.e., Record of Consultation) and considered by the Project Team with the objective that the public be provided meaningful opportunities to participate, including in meaningful discussions in the EA process.

## 3.2. Indigenous Engagement and Consultation

### 3.2.1. Communities to be Included in the Assessment

The assessment of the vegetation community component will include the 22 identified Indigenous communities that are to be consulted as part of the EA process, as shown in **Table 2** below. These communities have been identified by the MECP and the Agency as communities whose established or asserted Aboriginal and/or Treaty rights may be adversely affected by the Project and/or may have interests in the project. Communities marked with an asterisk are those whose Aboriginal and Treaty rights may be affected by the Project.

The table also includes those communities that have been identified by Webequie First Nation based on Elders' guiding principles and Webequie's Three-Tier approach to Indigenous consultation and engagement. WFN identified communities and assessed them based on the following criteria:

- Geographically closer to the project area than others;
- Known to have traditionally used some of the potentially affected lands in the past, or currently;
- Downstream of the Project and may experience impacts as a result of effects to waterways;
- Considered to have closer familial/clan connections to the members of WFN; and/or
- Have been involved in all-season road planning in the Region, either directly with the WFN, or in consideration of all-season road planning that the WFN has been involved with in recent years.

Based on these factors, the communities identified by WFN will be offered the deepest or intensive consultation/engagement.

**Table 2: Indigenous Communities to be Consulted**

| Indigenous Community | Identified by WFN | Identified by MECP | Identified by IAAC |
|---|---|---|---|
| Webequie First Nation | ✓ | ✓* | ✓* |
| Aroland First Nation | | ✓* | ✓* |
| Attawapiskat First Nation | ✓ | ✓* | ✓* |
| Constance Lake First Nation | | ✓* | ✓ |
| Eabametoong First Nation | ✓ | ✓ | ✓* |
| Fort Albany First Nation | | ✓* | ✓* |
| Ginoogaming First Nation | | ✓ | ✓ |
| Kasabonika First Nation | ✓ | ✓* | ✓* |
| Kaschechewan First Nation | | ✓* | |
| Kitchenuhmaykoosib Inninuwug | | ✓* | ✓ |
| Kingfisher Lake First Nation | | ✓* | |

| Indigenous Community | Identified by WFN | Identified by MECP | Identified by IAAC |
|---|---|---|---|
| Long Lake #58 First Nation | | ✓ | ✓ |
| Marten Falls First Nation | ✓ | ✓* | ✓* |
| Mishkeegogamang First Nation | | ✓ | |
| Neskantaga First Nation | ✓ | ✓* | ✓* |
| Nibinamik First Nation | ✓ | ✓* | ✓* |
| North Caribou Lake First Nation | | ✓ | |
| Wapekeka First Nation | | ✓* | |
| Wawakapewin First Nation | | ✓* | |
| Weenusk (Peawanuck) First Nation | ✓ | ✓* | ✓* |
| Wunnumin Lake First Nation | | ✓* | |
| Métis Nation of Ontario – Region 2 | | ✓ | |

### 3.2.2. Approach and Methods

The Project Team will consult and engage with Indigenous communities throughout the assessment process, and specifically the vegetation component with focus on those species for consumption or where use may have Indigenous cultural, social or economic importance. It is also the Project Team's objective that the EA captures Indigenous Knowledge and any issues, concerns or other information being provided by Indigenous communities accurately and appropriately. As such, Indigenous communities will have the opportunity to provide input and feedback during the following steps of the EA and more specifically the assessment of the vegetative environment as outlined in this work plan:

- Provide input to defining the vegetation study areas or spatial boundaries for the purposes of the baseline data collection and effects assessment;
- Provide input on the criteria and indicators, such as criteria and metrics to measure changes to baseline vegetation community conditions as a result of the Project;
- Provide input on methods and types of baseline data and information to be collected, including opportunity to provide Indigenous Knowledge;
- Validate how baseline information is captured and used in the EA;
- Provide input on the effects assessment methodology, including alternatives;
- Discuss potential effects based on predicted changes to vegetation community distribution and abundance; and
- Provide input to identify mitigation measures and any follow-up monitoring programs during the construction and/or operation phases of the Project, including predicted overall net effects and significance, including those that may interfere with the exercise of rights of Indigenous peoples.

A variety of activities and materials will be used to provide information and receive input from Indigenous communities during the EA process. These are outlined and detailed in the provincial ToR which includes the mechanisms, activities and events that are planned for various stages throughout the EA process and will be used at milestone points to ensure optimal engagement with Indigenous communities. In summary this includes the following:

- Notification letters sent by registered mail to all of the identified Indigenous communities and groups (i.e., Tribal Councils) informing them at key milestones (e.g., Commencement of provincial EA; Submission Draft EAR/IS and Submission of Final EAR/IS);
- Community visits throughout for those communities identified by IACC and MECP whose established or asserted Aboriginal and/or treaty rights may be adversely affected by the Project;
- Meetings (2) with off-reserve community members of the 22 Indigenous communities to be consulted as part of the EA;
- Information meetings with Métis Nation of Ontario;
- Engagement with Tribal Councils and Nishnawbe Aski Nation, with meetings held upon request;
- Communication materials for use at meetings, such as slide decks, project fact sheets, handouts, etc., including, where requested, translation to native language;
- Audio and visual products for those Indigenous communities that have the capability; community meetings and presentations will be live-streamed through local community media to allow for a wider audience to participate in the meetings;
- Use of surveys (e.g., “Survey Monkey”) or focused community-based meetings to obtain information (e.g., socio-economic, human health, etc.) and identify concerns from Indigenous people;
- Project Website (www.supplyroad.ca) for the public to review project related information and documents, including informative video tutorials (e.g., EA studies); and
- Project Newsletter letters.

Engagement with Indigenous groups has been undertaken as part of the ToR phase and included components of the work plan (e.g., baseline studies for valued components, spatial and temporal boundaries, criteria and indicators, EA alternatives, etc.) and will continue as part of the planned EA engagement activities for the Project.

All outreach efforts and consultation activities will be recorded as part of the Record of Consultation to allow for validation by the Agency and the MECP. The EAR/IS will describe how input from Indigenous communities and public was incorporated into the vegetation community assessment and other valued components.

### 3.2.3. Indigenous Knowledge

Through engagement activities, the Project Team will also collect Indigenous Knowledge relevant to the WSR study area and specific valued components, where available, from the 16 Indigenous communities identified by Ontario and the 10 Indigenous communities identified by the Agency. Indigenous Knowledge will assist in describing existing conditions (e.g., characterizing the study area, natural environment conditions, social and economic conditions, cultural characteristics, community characteristics, past and current land uses and other values of importance. In the context of vegetation communities, the focus will be on the identification of species of nutritional, medicinal and spiritual value; their location; and potential project effects (refer to **Section 2.4.7.3. First Nation Nutritional/Medicinal/Spiritual Plants** with respect to how Indigenous Knowledge gathering has informed this Work Plan to date). Indigenous

Knowledge will be used to assist in developing mitigation measures, monitoring commitments and accommodation measures, where necessary. The Project Team will document efforts to obtain Indigenous Knowledge. It is recognized that each community may have its own protocols and procedures to be followed in transferring Indigenous Knowledge to outside parties such as WFN and the Project Team. The Project Team will ensure that related protocols are respected and will work with each community to understand how the information will be transferred, securely stored, and applied. Additionally, the Project Team will ensure that the Indigenous Knowledge provided will be protected and kept confidential. The Project Team will seek guidance from the community as to how the information will be used and published.

As Indigenous Knowledge is holistic it can provide insights related to interrelationships between the natural, social, cultural, and economic environments, community health and well-being, Indigenous governance and resource use. Therefore, Indigenous Knowledge, where provided, will be included in all of aspects of the technical assessments of potential impacts of the Project on Indigenous peoples, or, given is holistic nature, may be presented in one section of the EAR/IS. It will also be considered in technical sections or chapters of the documents (e.g., baseline data on vegetation communities will include baseline information gathered through collection of Indigenous Knowledge). It is recognized that it is important to capture the context in which Indigenous groups provide their Indigenous Knowledge and to convey it in a culturally appropriate manner. Indigenous Knowledge will only be incorporated in the EAR/IS where written consent has been granted.

### 3.2.4. Aboriginal and Treaty Rights

The Webequie Project Team will be engaging with Indigenous communities regarding potential impacts of the Project on the exercise of rights, and where possible, the project's interference with the exercise of rights. Potential effects to be considered will include both adverse and positive effects on the current use of land and resources for traditional purposes, physical and cultural heritage, and environmental, health, social and economic conditions of Indigenous peoples impacted by the Project. For example, this will include such effects as reductions in the quantity and quality of resources available for harvesting (e.g., species of cultural importance, including traditional and medicinal plants; or interference with the current and future availability and quality of country foods (traditional foods). Webequie First Nation and the Project Team will discuss with Indigenous communities their views on how best to reflect and capture impacts on the exercise of rights in the EAR/IS. Should impacts on the exercise of Aboriginal and Treaty rights be identified, Webequie First Nation and the Project Team will work with Indigenous communities to determine appropriate mitigation measures to reduce or eliminate such impacts. Where no mitigation measures are proposed or mitigation is not possible, the Project Team will identify the adverse impacts or interference to the exercise of Aboriginal and Treaty rights and this will be described (e.g., level of severity) and documented in the EAR/IS. Webequie First Nation and the Project Team will advise Ontario and the Government of Canada on concerns Indigenous communities may have in relation to their exercise of Aboriginal and Treaty rights and whether their concerns cannot be addressed or mitigated by the Project Team.

# 4. Contribution to Sustainability

## 4.1. Overarching Approach

As recognized in the Agency's current guides to considering how a project will contribute to sustainability, it is not until baseline information has been collected and the potential effects of the Project are assessed that a full understanding or determination of the project's contribution(s) can be achieved/made. However, information and data requirements for sustainability have been considered from the outset of the WSR Project for planning purposes. In the absence of the potential effects assessment, this section outlines the general approach to determining sustainability contributions for this valued component.

The approach is based on the goal of providing a broad or holistic description of the project's potential positive and negative effects, including the interactions among those effects and the long-term consequences of the effects. In the context of the IAA requirements, sustainability means "the ability to protect the environment, contribute to the social and economic well-being of the people of Canada and preserve their health in a manner that benefits present and future generations", with the aim of "protecting the components of the environment and the health, social and economic conditions that are within the legislative authority of Parliament from adverse effects caused by a designated project", recognizing that the Minister's or the Governor in Council's public interest determination must include sustainability as one of five factors to be considered in rendering a final decision.

The approach also considers the level of effort required to assess a project's contribution to sustainability to be scalable, depending on the phase of the process and the context of the project, and can/will be adjusted/scoped as the impact assessment proceeds. For example, effects on future generations requires temporal scoping (i.e., consideration of next generation to "seventh generation"), based on expectations as to how many generations it will take for effects to become fully apparent, including return to VC baseline conditions; resilience of the VC; and whether a VC is expected to recover from effects.

As part of the public participation and Indigenous peoples engagement programs described in Section 3.2.2, the Project Team has (and will continue to) facilitate early identification of values and issues to better inform the assessment of the project's contribution to sustainability; and identify VCs that should be carried forward into that assessment, scoping related criteria and indicators to reflect the project context. As part of sustainability considerations, this information has also been used (with regard to which VCs are considered most important to Webequie First Nation) to identify alternative means of carrying out the Project and select alternatives to be carried forward for an assessment of sustainability contributions. Ultimately, with the appropriate input from the engagement and consultation program, the sustainability assessment will culminate with the development of commitments to ensuring the sustainability of Indigenous livelihood, traditional use, culture and well-being.

In identifying and scoping key VCs for sustainability contributions, the Project Team will consider VCs that:

- could experience long-term effects, including how those effects could change over time, and how they could affect future generations;
- may interact with other VCs;

- may interact with potential effects of the designated project; and/or
- may interact with project activities.

## 4.2. Assessment of Contribution to Sustainability

During preparation of the Impact Statement, the four (4) Sustainability Principles identified in the Agency's guides and the TISG will be applied as follows:

**Principle 1 - Consider the interconnectedness and interdependence of human-ecological systems**

A systems approach will be used to determine/express VC interconnectedness. The degree of interconnectedness within systems and/or subsystems may vary greatly (may be characterized as very intricate and tight/direct, or quite loose and indirect). The focus will be on those aspects that are most important to communities, the social-ecological system and to the context of a project. All interactions, pathways and connections among effects to the environment, and to health, economic and social conditions will be described, as will how these interactions may change over time. The Project Team will ensure that the description of systems and the direct and indirect relationships are guided by input from Indigenous Knowledge. It is expected that a graphic with simple pictorial images will be developed to visually represent the connections between human and ecological systems to facilitate comprehension and encourage input/feedback.

**Principle 2 - Consider the well-being of present and future generations**

The long-term effects on the well-being of present and future generations will be assessed. To conduct an analysis on future generations, the Project Team will first determine the potential long-term effects on well-being. This will entail consideration of the elements of environmental, health, social and economic well-being, across a spectrum of VCs, that communities identified as being valuable to them. In the context of subject VC (vegetative environment), well-being could include community cohesion, protection of the environment, culture, stress, or livelihoods. Available Comprehensive Community Plans (CCP) will be consulted to determine whether sustainability is a CCP central theme. How the environmental, health, social and economic effects on well-being could change over time will also be assessed, as information permits. Although effects on future generations could include effects beyond the lifecycle of a project, this is not expected to be major consideration for the WSR Project, as no expected decommissioning or abandonment timeframe has been identified. With respect to temporal scoping, there is still a need to determine what the "future generation" is (i.e., how far into the future the project effects will be considered). Predicted potential effects on future generations will be assessed based on the supporting data or uncertainty; any uncertainty will be documented.

**Principle 3 - Maximize overall positive benefits and minimize adverse effects of the designated project**

The Impact Statement will include a consideration of ways to maximize the positive benefits of the Project and consider mitigation measures that are technically and economically feasible and would mitigate any adverse effects of the Project. Sustainability considerations will include: whether additional mitigation measures are required; have additional benefits been identified and, if so, how can they be maximized; does the direction of the impact (i.e., positive or negative) shift between different groups and sub-populations; are there particular strengths or vulnerabilities in the potentially affected communities that

may influence impacts; do the impacts cause regional inequities; and do the near term benefits come at the expense of disadvantages for future generations.

**Principle 4 - Apply the precautionary principle and consider uncertainty and risk of irreversible harm**

The precautionary principle states that "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation". All uncertainties and assumptions underpinning an analysis will be described. A precautionary approach will be applied in cases where there is risk of irreversible harm (irreversible harm refers to project-related effects from which a VC is not expected to recover; reversibility is influenced by the resilience of the VC). Taking such a conservative approach may include setting out worst-case scenarios for decision-makers to consider, particularly when there is uncertainty about the significance or irreversibility of potential effects. As appropriate, the precautionary approach may be extended to commitments regarding the project's design (to prevent adverse effects, prevent pollution, deal with unplanned events) and the development of monitoring and follow-up programs to verify effects predictions, or gauge the effectiveness of mitigation measures. Uncertainty may be characterized quantitatively (e.g., description of confidence levels of modelled predictions) or qualitatively (e.g., through descriptors such as "high", "medium", and "low"). Qualitative descriptions of uncertainty will explain how the level of uncertainty was determined, identify sources of uncertainty and data gaps, and describe where and how professional judgment was used.

# 5. Schedule

The following field studies are currently planned for 2020:

- Targeted ELC and Spring Emergent/SAR species Surveys (June);
- Targeted ELC/Riparian Habitat, associated wetland, and general species/SAR species surveys (August); and,
- Targeted ELC and Fall Flowering/SAR species Surveys (September).

# 6. Reporting

The baseline vegetation data will be collected in the spring, summer and fall of 2020 and will be compiled into a comprehensive baseline report that will include data from the 2019 baseline studies. The overall baseline report is tentatively scheduled to be completed by December 2020.

# 7. Closure

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