Waasigan Transmission Line Field Work Plan - Terrestrial - Rev 2

August 2022

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Abbreviations

Abbreviations	Definition
a.m.	before noon
AMIS	Abandoned Mines Information System
BCR	Bird Conservation Regions
c.	chapter
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CWHC	Canadian Wildlife Health Cooperative
DFO	Fisheries and Oceans Canada
EA	environmental assessment
ECCC	Environment and Climate Change Canada
ELC	Ecological Land Classification
ESA	*Endangered Species Act, 2007*
FRI	Forest Resource Inventory
Golder	Golder Associates Ltd., a member of WSP
GPS	Global Positioning System
Hydro One	Hydro One Networks Inc.
IK/TLRU	Indigenous Knowledge/traditional land and resource use
LSA	local study area
MECP	Ministry of the Environment, Conservation and Parks
NDMNRF	Ministry of Northern Development, Mines, Natural Resources and Forestry (formerly the MNRF)
MNRF	Ministry of Natural Resources and Forestry
NHIC	Natural Heritage Information Centre
OBBA	Ontario Breeding Bird Atlas
OGS	Ontario Geological Service
PPS	Provincial Policy Statement, 2020
Project	Waasigan Transmission Line
QA	Quality Assurance
QC	Quality Control
ROW	right-of-way
RSA	regional study area

S.C.	Statute of Canada
S.O.	Statute of Ontario
SAR	species at risk
SARA	*Species at Risk Act*
SARB	Species at Risk Branch
SOCC	Species of Conservation Concern
SRank	subnational rank
SWH	significant wildlife habitat
ToR	Terms of Reference
TS	Transformer Station
WNS	white-nose syndrome

1.0 Introduction

Hydro One Networks Inc. (Hydro One) is completing a comprehensive environmental assessment (EA) for the Waasigan Transmission Line (the Project), a proposed new double-circuit 230 kilovolt (kV) transmission line between the Lakehead Transformer Station (TS) in the Municipality of Shuniah and the Mackenzie TS in the Town of Atikokan, and a new single-circuit 230 kV transmission line between the Mackenzie TS and the Dryden TS in the City of Dryden. The length of the transmission line will be approximately 350 kilometres (km). The Project also includes the separation of approximately 1 km of the double-circuit section of the existing 230 kV transmission line outside of Mackenzie TS in Atikokan (circuits F25A and D26A) into separate single-circuit transmission lines. In February 2022, the Ministry of the Environment, Conservation and Parks (MECP) approved the Amended Terms of Reference (ToR) for the Project. The EA will be carried out according to the approved Amended ToR and the requirements of the *Environmental Assessment Act*. The location of the Project is shown on Figure 1-1.

In anticipation of the Amended ToR approval and preparation for baseline data collection for the EA, draft field work plans were prepared in 2021 to document the Alternative Routes Field Work Plan and the 2021-2022 Field Work Plan for additional surveys for the preferred route. These plans were submitted in draft to the MECP and the Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF) as well as Indigenous communities for review and comment. Comments received on the draft field work plans have been considered in the preparation of this document. Generally, comments pertained to the proposed approach to baseline data collection and requested completion of a more comprehensive field survey program for the evaluation of alternative routes. For this reason, surveys previously proposed for the preferred route only will now be carried out across all alternative routes.

This document provides the field work plan proposed by Hydro One and Golder Associates Ltd. a member of WSP (Golder), to collect baseline data for the assessment of wildlife and wildlife habitat, vegetation and wetlands to support the alternative route evaluation for the selection of a preferred route, and ultimately to support the assessment of potential project effects. The proposed field work plan to support the collection of baseline data collection for fish and fish habitat and surface water has been prepared under a separate cover, titled “Waasigan Transmission Line Field Work Plan – Aquatics”.

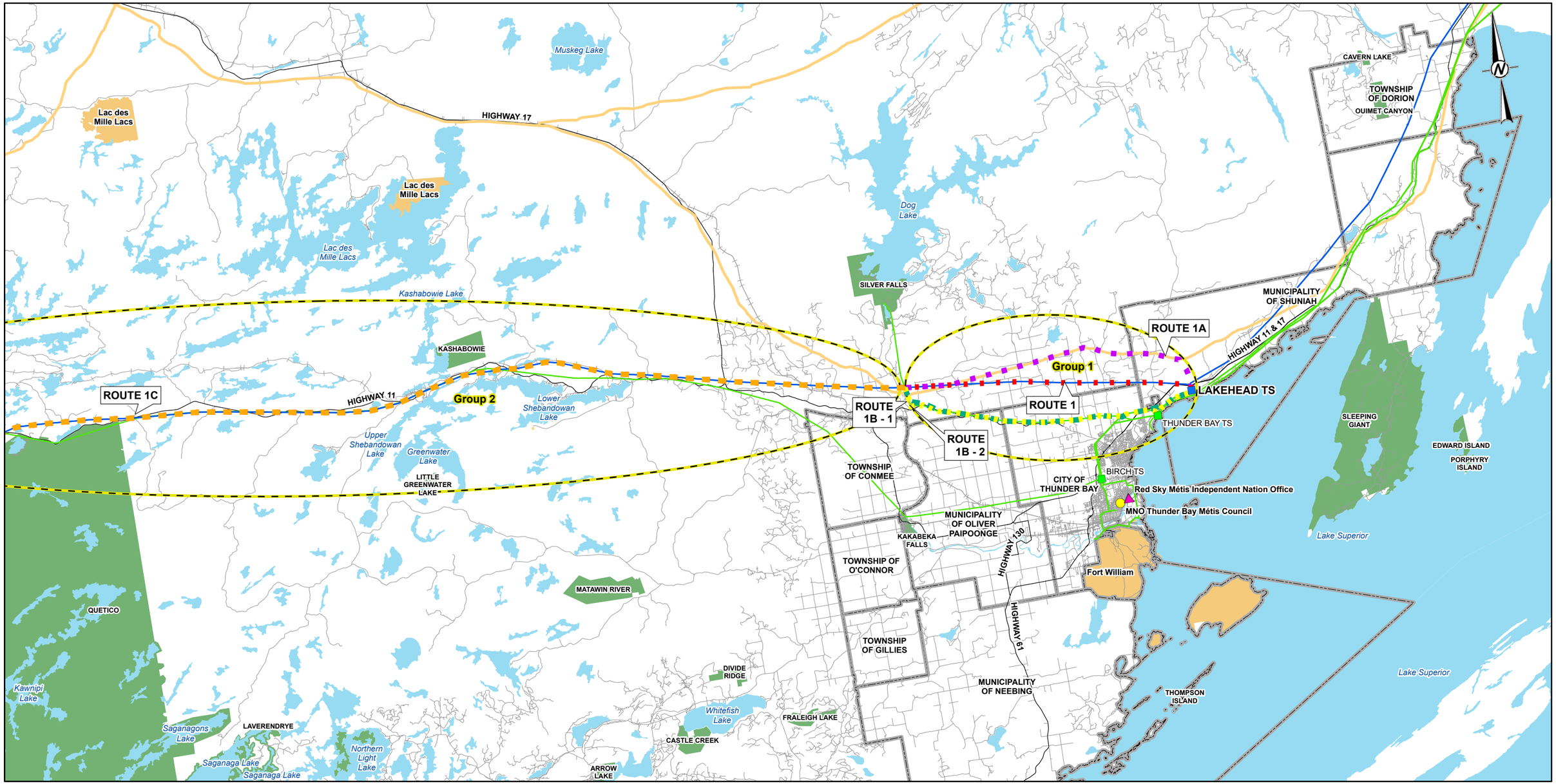
The terrestrial field program will include the following surveys for wildlife and wildlife habitat, vegetation, and wetlands:

- Bat Maternity Roost Habitat Assessment and Acoustic Monitoring
- Bat Hibernacula Visual Assessment and Bat Hibernacula Swarming Acoustic Monitoring
- Barn Swallow Survey
- Bank Swallow Survey

- Breeding Bird Survey
- Marsh Bird Survey
- Least Bittern Survey
- Common Nighthawk Survey
- Eastern Whip-poor-will Survey
- Gray Fox Survey
- Amphibian (Anuran - Frog and Toad) Call Count
- Turtle Survey
- Candidate Significant Wildlife Habitat
- General Wildlife Surveys and Habitat Assessment
- Ecological Land Classification and Botanical Survey

Efforts have been made to sample equally along all alternative routes for the various wildlife and vegetation field programs in order to support an evaluation of the alternative routes using the criteria and indicators as proposed. The field surveys will be completed on all alternative routes to support both the selection of a preferred route and the overall baseline characterization of the study area for the preferred route once selected, and to inform design refinements (including avoidance) and mitigation to minimize adverse effects.

A detailed diagram that shows both the alternative route evaluation process and how that process proceeds along with the surveys planned for the alternative routes is provided in Appendix A.



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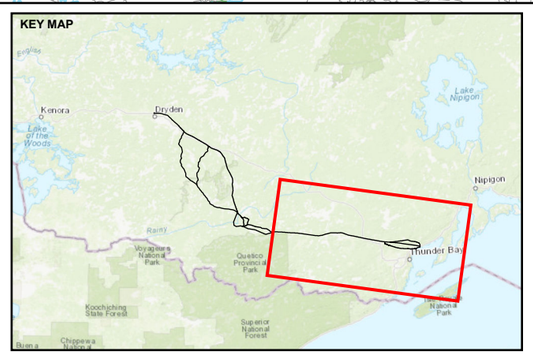
- ALTERNATIVE ROUTE 1A
- ALTERNATIVE ROUTE 1B - 2
- ALTERNATIVE ROUTE 1B - 1

GROUP 2
- ALTERNATIVE ROUTE 1C

- MNO COUNCIL OFFICE
- RED SKY MÉTIS INDEPENDENT NATION OFFICE
- 115 KV TRANSFORMER STATION (TS)
- 230 KV TRANSFORMER STATION (TS)
- HIGHWAY
- LOCAL ROAD
- RAILWAY
- NATURAL GAS PIPELINE
- TRANSMISSION LINE (115 KV)
- TRANSMISSION LINE (230 KV)
- FIRST NATION RESERVE
- WATERBODY
- PROVINCIAL PARK
- MUNICIPAL BOUNDARY

KEY MAP



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2. ROUTE ALTERNATIVES PROVIDED BY HYDRO ONE, AUGUST 2020
3. PROJECTION: UTM ZONE 15 DATUM: NAD 83

CLIENT
hydro one

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-03-21
DESIGNED	HK
PREPARED	MM
REVIEWED	CS
APPROVED	

PROJECT
WAASIGAN TRANSMISSION LINE

TITLE
PROJECT LOCATON

PROJECT NO.	CONTROL	REV.	FIGURE
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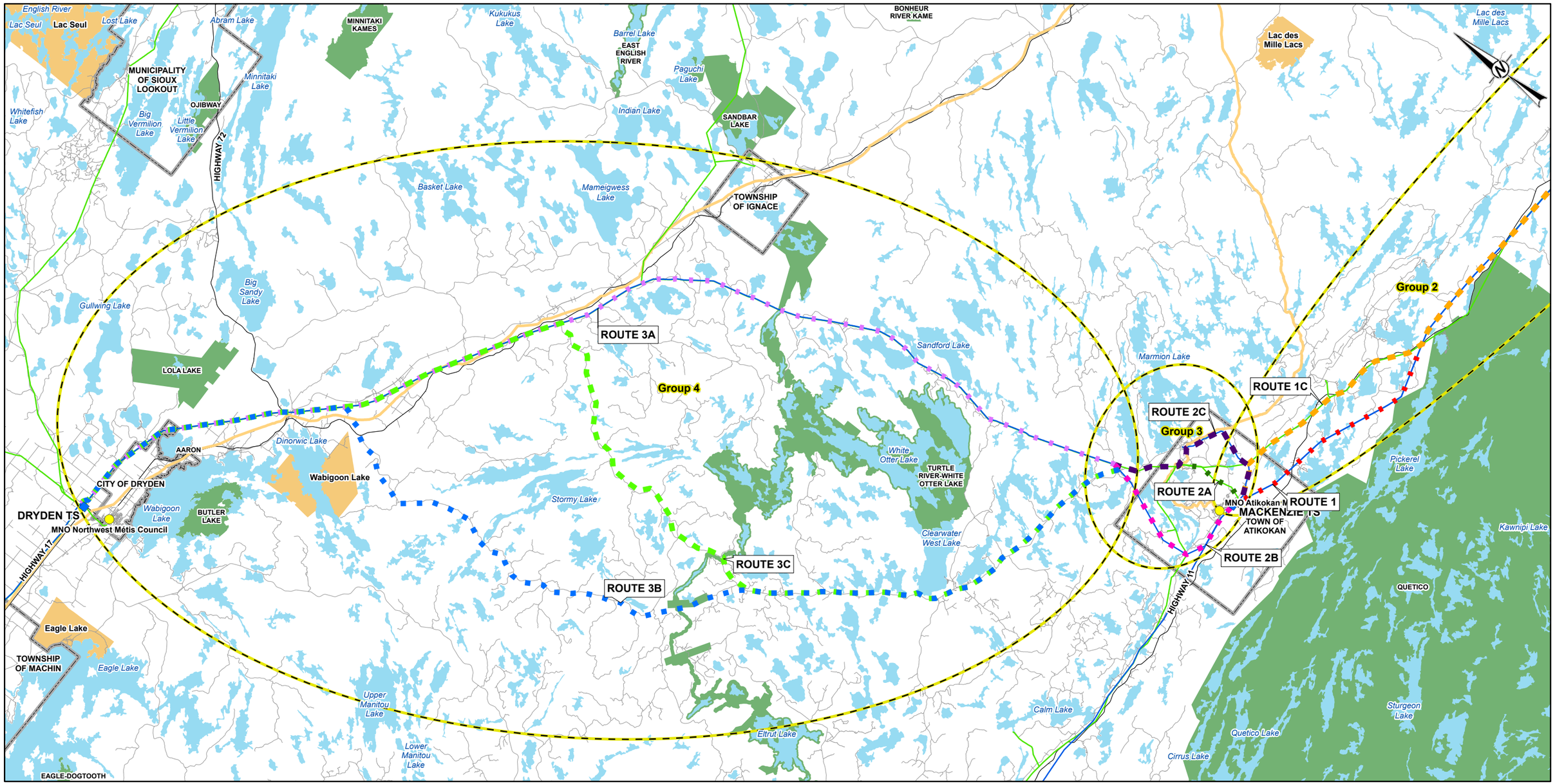

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GROUP 4
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- ALTERNATIVE ROUTE 3B
- ALTERNATIVE ROUTE 3C

- MNO COUNCIL OFFICE
- 230 KV TRANSFORMER STATION (TS)
- HIGHWAY
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- RAILWAY
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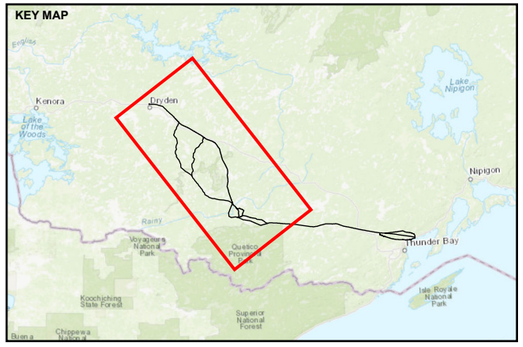

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PROJECT
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TITLE
PROJECT LOCATON

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1.1 Purpose

The purpose of baseline field surveys is to gather data about the wildlife and wildlife habitat, vegetation and wetlands components of the environment to support the evaluation of route alternatives and completion of a comprehensive EA for the Project. Overall, the wildlife and wildlife habitat, vegetation and wetlands baseline field surveys are designed to meet the following objectives:

- Characterize existing terrestrial conditions in the area of the Project;
- Incorporate Indigenous Knowledge/traditional land and resource use (IK/TLRU) as part of baseline conditions, where possible;
- Identify potential environmental constraints associated with the existing wildlife and wildlife habitat, vegetation and wetland conditions;
- Compile sufficient terrestrial baseline data to support the evaluation of alternative routes for the Project; and
- Compile sufficient baseline data to enable an assessment of direct and indirect effects from the Project using the wildlife and wildlife habitat, vegetation and wetlands criteria and indicators.

1.2 Study Area

Study areas are required to define the spatial extent in which baseline information and data are collected and compiled to describe existing conditions in enough detail to enable the evaluation of alternative routes. The study areas will then be used to provide spatial assessment boundaries in which potential Project effects will be identified, understood, and assessed.

The alternative routes included in the approved Amended ToR (Hydro One 2021) are discrete route segments without common start and end points. In order to effectively compare the alternative routes on a quantitative basis in the alternative route evaluation, the routes have been re-numbered into four groupings with common start and end points, and some routes now share common sections. No new routes have been added and no routes were removed from those that were previously included in the ToR. The alternative route groupings and revised route numbers are listed in Table 1-1 and are shown on Figure 1-1.

Table 1-1: Revised Alternative Route Numbers and Grouping

Grouping	Alternative Routes
Group 1 (Lakehead TS to Node 1)	• Alternative Route 1 • Alternative Route 1A • Alternative Route 1B-1 • Alternative Route 1B-2
Group 2 (Node 1 to Node 3)	• Alternative Route 1 • Alternative Route 1C
Group 3 (Node 3 to Node 5)	• Alternative Route 2A • Alternative Route 2B • Alternative Route 2C
Group 4 (Node 5 to Dryden TS)	• Alternative Route 3A • Alternative Route 3B • Alternative Route 3C

For the purposes of the Project, the Project footprint will be the smallest and most refined study area. A preliminary Project footprint for each alternative route has been identified and includes the following components:

- Transmission line right-of-way (ROW) approximately 40 to 45 metres (m) wide (in some sections of the ROW, additional width may be required depending on the specific location of the new transmission line, the local terrain, distance between the transmission structures and specific contractor requirements);
- Temporary and permanent access roads;
- Equipment and material laydown areas, as well as fly yards, construction/stringing pads and staging areas;
- Temporary construction camps;
- Construction offices;
- New aggregate pits and/or quarries, if required;
- Upgrades to existing transformer stations, including potential expansion of the fenced-in area of Lakehead TS, Mackenzie TS and Dryden TS; and
- Separation of approximately 1 km of the double-circuit section of the existing 230 kV transmission line outside of Mackenzie TS in Atikokan (circuits F25A and D26A) into separate single-circuit transmission lines.

Local study areas (LSAs) are defined as areas outside of the Project footprint where measurable changes to the environment resulting from the proposed activities from any Project phase may be anticipated. Regional study areas (RSAs) are defined as areas within which the

potential effects of the Project may interact with the effects of other projects, resulting in the potential for cumulative effects.

For wildlife and wildlife habitat, vegetation and wetlands, field surveys will focus on the LSA. The LSA is defined as a 1 km buffer of the Project alternative routes preliminary footprints, as shown on Figure 1-2. The LSA is designed to capture the area where direct and immediate indirect effects from the Project on soils, vegetation and wildlife, will occur at the local scale. Direct effects include mortality to individuals from Project-related hazards (e.g., towers, transmission lines and vehicles), and physical changes to terrain, soils, vegetation and wildlife habitat from construction, operation and maintenance of the Project. Indirect effects from the Project may extend beyond the physical footprint, such as air and dust emissions that can alter soil and water chemistry and plant communities. Sensory disturbances (e.g., noise, lights, and smells) from the Project can also influence wildlife movement and behaviour. Some animals may perceive the presence of human activity as a decrease in habitat quality and avoid the area. Therefore, sensory disturbance can reduce habitat availability for wildlife even where vegetation remains structurally and functionally intact.

The 1 km buffer of the preliminary Project footprint for each alternative route has been proposed for the LSA to capture the area where immediate indirect effects of the Project on wildlife and wildlife habitat, vegetation and wetlands are likely based on available evidence from literature. For example, effects of dust on vegetation have been detected within 50 m of roads, with some lesser effects outward to 500 m (Meininger and Spatt 1988; Walker and Everett 1987). Edge effects generally appear most concentrated within 100 m of the habitat edge (Wilson et al. 2016). Avoidance of noise disturbance (compressor stations) has been documented within 300 m by forest songbirds (Bayne et al. 2008). Activity setbacks are commonly recommended to limit human disturbance near heron rookeries, and many studies suggest an activity setback distance of 250 to 300 m around active rookeries (Gebauer and Moul 2001; Vennesland and Butler 2020). Laurian et al. (2008) found that moose (*Alces alces*) avoided areas up to 500 m from highways. American toad (*Anaxyrus americanus*) abundance was reduced at distances up to 300 m from a major highway (Eigenbrod et al. 2009).

The 1 km buffer also reflects anticipated activity setback distance requirements for *Endangered Species Act, 2007*, S.O. 2007, c. 6 (ESA) permitting (e.g., for bat hibernacula), and also accommodates recommended setbacks from various significant wildlife habitats (SWH; e.g., 120 m forested buffer from moose aquatic feeding areas).

The criterion-specific RSA is the scale at which cumulative effects are most appropriately assessed. For moose, the populations can be reasonably defined based on existing data (e.g., wildlife management units [WMU]); however, no information is available to delineate the population boundaries for the bat and birds criteria for example. Due to the length of the Project (i.e., approximately 350 km) and that three ecoregions are intersected (4W-Pigeon River, 3W-Lake Nipigon, and 4S-Lake Wabigoon), a number of populations of each of these criteria could be potentially influenced by the Project along the route, and likely have patchy to

continuous distributions. Populations intersected by the Project may be discrete or, more likely, exhibit variable connectivity through dispersal and movement.

Without estimates of population boundaries, the analysis of effects on assessment endpoints (maintenance of a self-sustaining and ecologically effective populations) involves uncertainty but can still be ecologically appropriate. For wildlife criteria with small to moderate breeding home ranges (i.e., wildlife criteria, except moose), the RSA was defined by an approximate 5 km area around the wildlife and wildlife habitat LSA boundary (Figure 1-3). The assessment area is anticipated to be large enough to contain important cumulative effects on populations of wildlife criteria that are distributed inside the assessment area, but probably also extend beyond its boundaries. A recent meta-analysis showed that effects from infrastructure on bird and mammal populations typically extended over distances of up to approximately 1 and 5 km, respectively (Benítez-López et al. 2010). The RSA for wildlife criteria is also directly linked to the analysis of vegetation and wetlands indicators, which provides support for the assessment of listed species, such as little brown myotis, bobolink, Canada warbler and eastern whip-poor-will, that use the same land cover classification system.

Moose in Ontario are managed at the WMU level according to the Cervid Ecological Framework Guidelines (MNR 2009a). The geographic extent for the moose RSA, which is defined by WMUs that overlap with the Project, captures the moose population at an ecologically appropriate scale to assess the dynamics between moose and their predators in the region, and assess potential effects for this wide-ranging species.

It is understood that future site-specific refinements to the study area may be required based on new Indigenous and stakeholder consultation feedback (e.g., culturally significant sites) and environmental mitigation requirements (e.g., results of field studies), or if new infrastructure is required and is not within the current study area.

Muskeg Lake
Lac des Mille Lacs
HIGHWAY 17
Lac des Mille Lacs
Lac des Mille Lacs
Dog Lake
CAVERN LAKE
TOWNSHIP OF DORION
OUIMET CANYON
SILVER FALLS
MUNICIPALITY OF SHUNIAH
HIGHWAY 11 & 17
Kashabowie Lake
KASHABOWIE
HIGHWAY 11
Upper Shebandowan Lake
Lower Shebandowan Lake
HIGHWAY 102
DAWSON ROAD
LAKEHEAD TS
THUNDER BAY TS
SLEEPING GIANT
EDWARD ISLAND
PORPHYRY ISLAND
Greenwater Lake
LITTLE GREENWATER LAKE
TOWNSHIP OF CONMEE
CITY OF THUNDER BAY
BIRCH TS
MNO Thunder Bay Métis Council
Red Sky Métis Independent Nation Office
MUNICIPALITY OF OLIVER PAIPOONGE
KAKABEKA FALLS
HIGHWAY 130
Lake Superior
TOWNSHIP OF O'CONNOR
Fort William
MATAWIN RIVER
HIGHWAY 61
QUETICO
TOWNSHIP OF GILLIES
DIVIDE RIDGE
Kawnipi Lake
MUNICIPALITY OF NEEBING
THOMPSON ISLAND
Lake Superior
Whitefish Lake
FRALEIGH LAKE
Saganagons Lake
LAVERENDRYE
CASTLE CREEK
Northern Light Lake
Saganaga Lake
Saganaga Lake
ARROW LAKE

LEGEND

- ALTERNATIVE ROUTE 1
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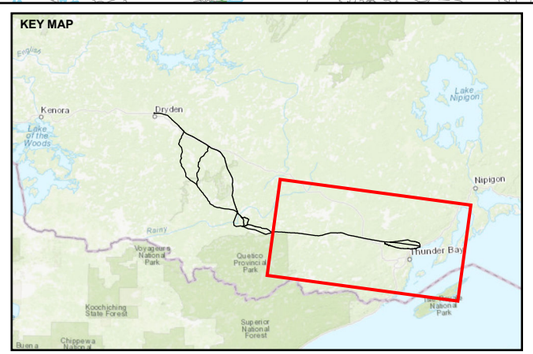
KEY MAP



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CLIENT: hydro one

CONSULTANT: WSP GOLDER

YYYY-MM-DD	2022-03-21
DESIGNED	HK
PREPARED	MM
REVIEWED	CS
APPROVED	

PROJECT: WAASIGAN TRANSMISSION LINE

TITLE: **LOCAL STUDY AREA - TERRESTRIAL**

PROJECT NO.	CONTROL	REV.	FIGURE
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English River
Lac Seul
Lac Seul
Lost Lake
Abram Lake
MINNITAKI KAMES
Kukukus Lake
Barrel Lake
EAST ENGLISH RIVER
BONHEUR RIVER KAME
Lac des Mille Lacs
Lac des Mille Lacs
MUNICIPALITY OF SIOUX LOOKOUT
Minnitaki Lake
Paguchi Lake
Whitefish Lake
Little Vermilion Lake
Big Vermilion Lake
OJIBWAY
Indian Lake
SANDBAR LAKE
Basket Lake
Mameigwess Lake
TOWNSHIP OF IGNACE
HIGHWAY 72
Big Sandy Lake
Gullwing Lake
Sandford Lake
LOLA LAKE
Marmion Lake
Dinorwic Lake
AARON
White Otter Lake
TURTLE RIVER-WHITE OTTER LAKE
Pickerel Lake
CITY OF DRYDEN
Wabigoon Lake
Stormy Lake
MNO Atikokan Métis Council
DRYDEN TS
MNO Northwest Métis Council
Wabigoon Lake
BUTLER LAKE
Clearwater West Lake
TOWN OF ATIKOKAN
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HIGHWAY 11
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TOWNSHIP OF MACHIN
Eagle Lake
Upper Manitou Lake
Calm Lake
Sturgeon Lake
Eltrut Lake
Quetico Lake
Lower Manitou Lake
Cirrus Lake
EAGLE-DOGTOOTH

LEGEND

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- ALTERNATIVE ROUTE 1C
- ALTERNATIVE ROUTE 2A
- ALTERNATIVE ROUTE 2B
- ALTERNATIVE ROUTE 2C
- ALTERNATIVE ROUTE 3A
- ALTERNATIVE ROUTE 3B
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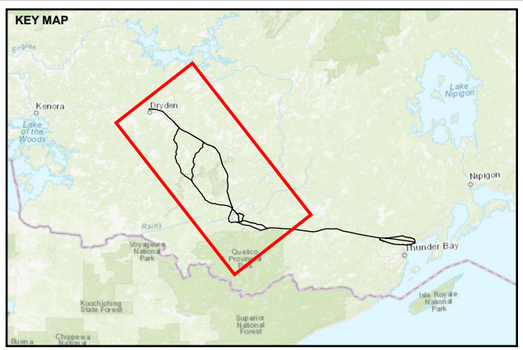

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CLIENT
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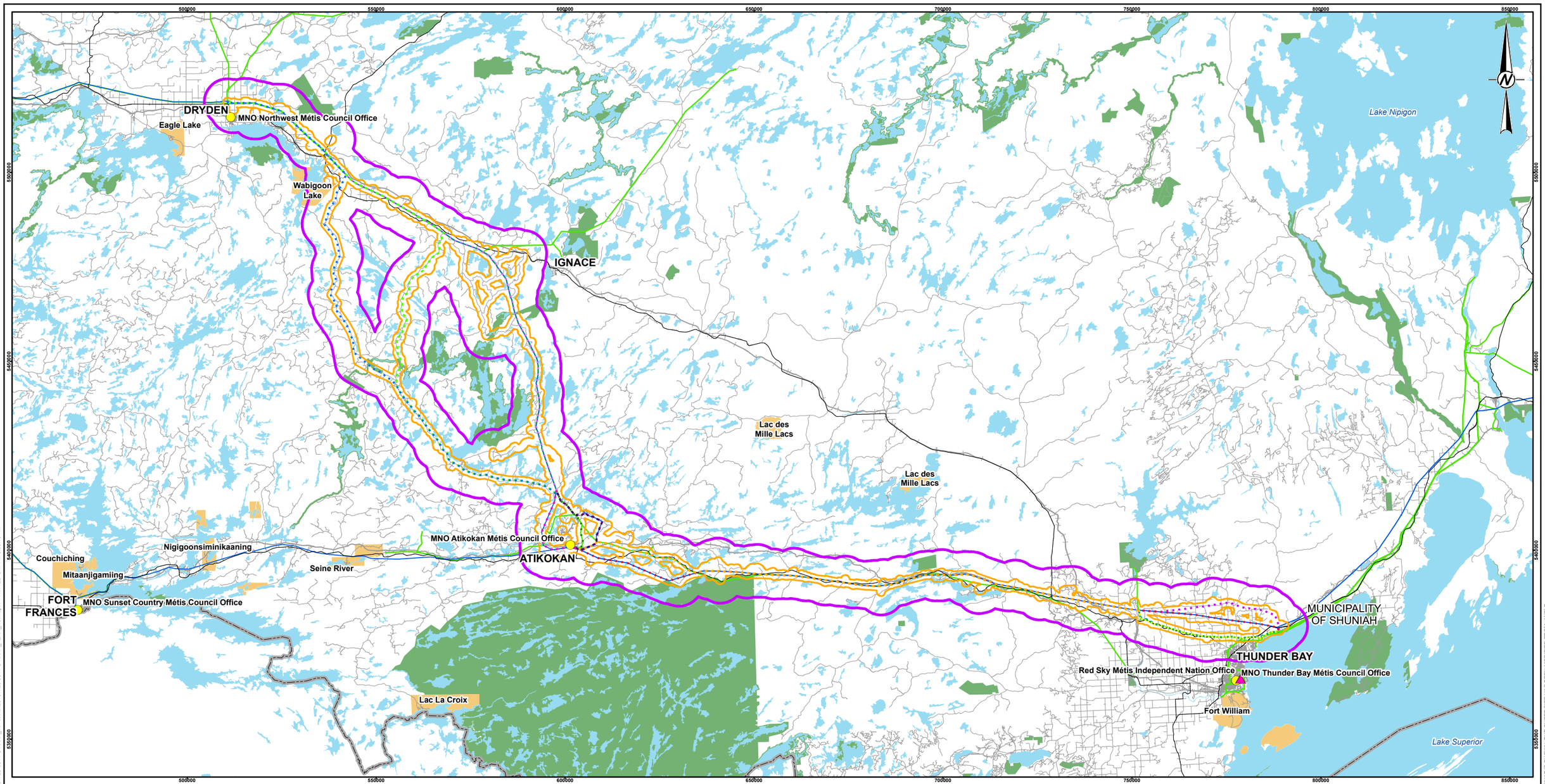

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- INTERNATIONAL BORDER
- WATERBODY
- PROVINCIAL PARK

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CLIENT
HYDRO ONE NETWORKS INC.

PROJECT
WAASIGAN TRANSMISSION LINE

CONSULTANT
GOLDER

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PREPARED	MM
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2.0 Baseline Characterization Schedule

Desktop analysis to support the alternative route evaluation started in fall 2020 and focused on the 150 m alternative route corridors[1]. Additional desktop analysis has been ongoing and will continue for the alternative routes as the preliminary Project footprint designs are prepared (e.g., ROW siting and identification of access roads). Wildlife and wildlife habitat, vegetation and wetlands field surveys are expected to take place between May and the end of September in 2022. Baseline reporting is planned to occur in the fall of 2022 after the field surveys are complete.

IK/TLRU studies are being completed by Indigenous communities for the Project and IK/TLRU information will be used to support the baseline characterization in the EA, as it is shared. These studies are expected to become available throughout the preparation of the EA, with varying timelines for different Indigenous communities. Hydro One will work with Indigenous communities to integrate their IK/TLRU information into the EA and into Project decisions, as it is received. Hydro One is also working with interested Indigenous communities to discuss the sharing of information ahead of planned field programs to inform the desktop analysis and alternative route evaluation.

Schedules tailored to specific criteria and indicators are detailed further in the respective sections.

[1] The 150 m-wide corridors are intended to allow for flexibility with the final location of the 40-45 m wide transmission line right-of-way (ROW).

3.0 Health, Safety and Environment

Field surveys will be completed with a minimum of two trained environmental specialists (e.g., biologists), and at least one Indigenous field crew member, where possible. Additional details about Indigenous participation in the field surveys are provided in Section 4.1. In addition to a review of Golder's health, safety, security and environmental policies and procedures, training of Indigenous field crew members will include Health and Safety Basics, Hazard Identification, Evaluation and Control and Bear Awareness.

Hydro One and Golder understand the importance of preventing the spread of COVID-19 in northwestern Ontario and within Indigenous communities. Golder has prepared a list of general mitigation that will be implemented for the field programs which will be shared with all field crews. This mitigation will be applied for the duration that provincial health protocols deem it necessary to do so. The following mitigation will be implemented, as applicable, specific to limiting the potential spread of COVID-19:

- Field surveys will be staffed by field crews from Golder's Thunder Bay office, where possible. If field crews are required outside of the Thunder Bay region, they will self-monitor daily and follow the protocols of the Thunder Bay District and Northwestern Health Units.
- Field crews will not enter First Nation reserves during 2022 field work until it is deemed safe to do so based on permission from the applicable First Nation and in accordance with federal and provincial health guidelines.
- For field crew members from Indigenous communities, Hydro One and Golder will work with the community to determine if additional mitigation is required prior to the field surveys and for the field crew to return to their community (e.g., isolation period).
- Prior to the field crew meeting at the start of each day, each field crew will confirm to the crew lead that neither they, nor those they live with or have been in close contact with, have developed symptoms of COVID-19 (e.g., temperature, cough, sneezing, fever, sore throat, difficulty breathing). If a field crew has developed these symptoms during the course of the program, the Project Manager will be notified immediately, will then notify Hydro One, and the survey will be postponed until it is deemed safe for the field crew member(s) to return to work or until one or more alternate field crew is available.
- Field crews will wash and/or disinfect their hands with hand sanitizer immediately after using public facilities (e.g., washrooms, garbage cans with lids, and surfaces at gas stations), prior to and following equipment use, and frequently over the course of each field day (i.e., after completion of each site, before and after taking breaks (i.e., lunch), and at the start and end of each shift).
- As part of the field/decontamination kit and procedures, crews will maintain an adequate supply of clean water, liquid soap, sanitizer gel, and sanitizing wipes (or equivalent, i.e., paper towel and disinfectant spray) for the full duration of the journey and field work period. Field crews will routinely (e.g., start/end of day, and during the day) clean frequently touched surfaces in the field, such as shared field equipment, countertops, doorknobs, and vehicle components. Used materials will be disposed of in garbage bags and waste will be disposed of daily.

4.0 Engagement

Section 4.2 of the Project's Amended ToR (Hydro One 2021) identifies the need for field surveys to be undertaken to support the EA. This includes an aerial reconnaissance of the alternative routes completed in 2020, and the surveys planned to collect baseline data in support of the alternative routes evaluation, and the net effects assessment of the preferred route. The Amended ToR also identifies that field work plans will be prepared in consultation with applicable agencies and through engagement with Indigenous communities. Accordingly, this work plan will be finalized following an opportunity for review and comment by agencies with a mandate to consider the baseline data proposed to be collected including, the MECP and NDMNRF, as well as the Indigenous communities being engaged for the Project, as identified in Section 10.4.1 of the Amended ToR.

A summary of the findings of the 2022 surveys will be included in the documentation of the EA. As well, these findings will be shared through Community Open House events and community meetings planned to support the EA, as identified in Section 10.0 of the Amended ToR.

4.1 Indigenous Participation

Hydro One believes that the Project will benefit greatly with the active engagement of Indigenous communities since they hold IK/TLRU information for the area. Section 4.2.3.6 of the Amended ToR provides a detailed description on how Indigenous knowledge will be obtained and incorporated into the Project. Hydro One's consultant, Golder, is actively working with Indigenous communities to identify interested community members to participate in field work as equal members of the field team. This will include community members hired directly by their community, as well as community members hired directly by Golder.

Incorporation of Indigenous participation and other considerations in the field work will include the following:

- Indigenous field crews will be included as valued core team members for field surveys;
- Indigenous field crews will be provided with training and technology to assist with data and field collections;
- Cooperation will be given to independent Indigenous field monitors, including sharing field study schedules in a timely manner;
- Inclusion of Indigenous names of species (i.e., for plants, wildlife, and fish) and waterbodies in the EA;
- Real-time mapping, as practicable; and
- Non-Indigenous field crews will have completed Indigenous cultural awareness training.

4.2 Indigenous Knowledge

Hydro One will consider Indigenous Knowledge, including traditional knowledge/traditional lands and resource use (TK/TLRU), at all stages of the Project. This field work plan was provided to Indigenous communities for review and input.

Hydro One is also providing field notices prior to field work. These include the field survey locations so that Indigenous communities can review and provide input. Such input could include identifying sensitive areas that a community would like undisturbed, or areas communities believe should be included in the field studies. Hydro One is also planning open house sessions with Indigenous communities where the field plans and maps will be available, and feedback can be received.

Indigenous Knowledge may be shared through a variety of sources, including from Indigenous field crew members, TK/TLRU studies completed by Indigenous communities and/or through engagement with Indigenous communities. Indigenous Knowledge received in relation to wildlife, vegetation, fish and fish habitat and surface water resources will be highlighted and incorporated in the baseline studies and effects assessments, where it is shared by Indigenous communities for inclusion. In addition to the biophysical components, the socio-economic assessment will be informed by information shared and through the understanding of the land informed by the field programs.

5.0 Baseline Wildlife and Wildlife Habitat Characterization Studies

5.1 Purpose

The purpose of the wildlife and wildlife habitat field surveys for the Project is to characterize the existing environment for wildlife for each alternative route to support the alternative route evaluation and EA for the Project. In particular, the main objective of the field work is to gather sufficient information to develop a comprehensive understanding of the existing wildlife and habitat prior to any potential influence from Project construction or operation (i.e., baseline conditions). Secondary source data acquired and data collected in the field will be used to characterize the existing environment as it relates to wildlife by describing the presence, distribution, and relative abundance (where possible) of taxa with a particular focus on wildlife species at risk (SAR), as well as to characterize and quantify wildlife habitat within the LSA, with focus on SAR habitat and SWH. The collated data will be documented in the wildlife and wildlife habitat section of the EA to facilitate assessment of Project-related effects on wildlife and wildlife habitat using the approved criteria and indicators. The data will also be used to support future permitting requirements, where applicable.

For the purposes of this field work plan, SAR are defined as the following:

- Any species listed under Schedule 1 of the *Species at Risk Act*, S.C. 2002, c. 29 (SARA) as Threatened, Endangered, or Extirpated; and/or
- Any species listed under the *Endangered Species Act, 2007*, S.O. 2007, c. 6 (ESA) as Threatened, Endangered, or Extirpated.

For the purposes of this work plan, Species of Conservation Concern (SOCC) are defined as:

- Any species listed under Schedule 1 of SARA as Special Concern;
- Any species designated Threatened, Endangered, or Extirpated by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (unless otherwise listed as SAR under SARA or the ESA);
- Any species listed under the ESA as Special Concern (unless otherwise listed as SAR under SARA); and/or
- Any species with a subnational rank (SRank) of SH, S1 – S3 as designated by the Natural Heritage Information Centre (NHIC).

Table 5-1: Species at Risk Surveys for the Baseline Wildlife and Wildlife Habitat Studies

Species At Risk	Survey Type	Section
Little brown myotis and Northern myotis	a) Bat maternity roost habitat assessment and acoustic monitoring. Data will be collected based on diameter at breast height of trees, approximate tree heights, and counts of standing dead trees (snags) (MNR 2011a). Field data collected will include any standing live or dead tree ≥10 cm diameter at breast height (dbh) with cracks, crevices, hollows, cavities, and/or loose or naturally exfoliating bark (MNRF 2017). Wildlife Acoustics Song Meter SM4BAT FS acoustic monitors will be deployed and programmed to record from 30 minutes before sunset to 30 minutes after sunrise for a period of at least 10 days during the bat maternity roosting season (MNR 2011a). b) Bat hibernacula visual assessment and bat hibernacula swarming acoustic monitoring. A visual inspection will be conducted from the exterior of the potential hibernaculum feature using the methods outlined in the Protocol for Assessing Bat Use of Potential Hibernacula (PGC and USFWS 2012). Acoustic monitoring stations will be set up during the swarming period (approximately August 1 to late September) at features confirmed to be candidate hibernacula during the visual assessment, known hibernacula (for cross-reference), and activity control stations. Wildlife Acoustics Song Meter SM4BAT FS acoustic monitors will be set to record from 30 minutes before sunset to 30 minutes after sunrise.	Sections 5.3 and 5.4
SAR birds		
Canada warbler (*Cardellina canadensis*), Olive-sided flycatcher (*Contopus cooperi*)	Breeding bird surveys will be conducted in accordance with methods outlined in the Canadian Breeding Bird Survey (Downes and Collins 2003) and the Ontario Breeding Bird Atlas (Cadman et al. 2007).	Section 5.7
Barn swallow (*Hirundo rustica*) Bank swallow (*Riparia riparia*)	Suitable habitats, identified from pre-field mapping and incidentally in the field, will be surveyed for evidence of nesting.	Sections 5.5; 5.6
Bobolink (*Dolichonyx oryzivorus*)	Suitable bobolink nesting habitats, identified from pre-field mapping and incidentally in the field, will be surveyed in accordance with the provincial guidelines for surveying threatened grassland birds (MNR 2011b).	Section 5.7
Chimney swift (*Chaetura pelagica*)	Suitable habitats, identified from pre-field mapping and incidentally in the field, will be surveyed for evidence of use.	Section 5.14

Species At Risk	Survey Type	Section
American white pelican (*Pelecanus erythrorhynchos*)	Suitable habitats, identified from pre-field mapping and incidentally in the field, will be surveyed for evidence of use.	Section 5.15
Eastern whip-poor-will (*Antrostomus vociferus*)	Suitable habitats, identified from pre-field mapping will be surveyed using the Draft Survey Protocol for Eastern Whip-Poor-Will (Caprimulgus vociferus) in Ontario (MNRF 2014).	Section 5.11
Common nighthawk (*Chordeiles minor*)	Crepuscular point counts will be conducted in the month of June using an unlimited-radius point count sampling design and methods adapted from the Canadian Nightjar Survey Protocol (Knight 2019).	Section 5.10
Least bittern (*Ixobrychus exilis*)	Call playback surveys will be conducted to detect secretive marsh birds, using protocols for surveying marsh birds modified from the Marsh Monitoring Program (Bird Studies Canada 2009).	Section 5.9
SAR mammals		
Gray fox (*Urocyon cinereoargenteus*)	Suitable denning features, identified from pre-field mapping and incidentally in the field, will be surveyed for evidence of use. Gray fox camera/scent lure surveys will be undertaken to determine presence and distribution in areas of the LSA with known occurrence records.	Section 5.12
American badger (*Taxidea taxus*)	Suitable habitats, identified from pre-field mapping and incidentally in the field, will be surveyed for evidence of use.	Section 5.15
SAR reptiles		
Common snapping turtle *(Chelydra serpentina*)	Suitable wetland habitats, identified from pre-field mapping and incidentally in the field, will be surveyed for evidence of turtle basking. Areas identified in pre-field mapping as potentially suitable for turtle nesting will be visually assessed in the field for evidence of use.	Section 5.14

Other non-SAR specific surveys to be undertaken are Anuran Call Counts (Section 5.13), Candidate SWH surveys (Section 5.14) and other general wildlife surveys and habitat assessments (Section 5.15) to gather data for various species, including species groups, and species of concern to Indigenous communities not specifically targeted through the surveys listed above.

5.2 Desktop Analysis and Field Planning

Existing literature and digital data provided by Hydro One, available in-house at Golder, (including NDMNRF Land Information Ontario [LIO] and Natural Heritage Information Centre [NHIC] data), and obtained through publicly available databases, published reports and grey literature, as well as IK/TLRU studies received from Indigenous communities, are being reviewed and compiled to determine which data are available to support the requirements for the wildlife baseline.

Specific to gray fox, a request will be made to the Thunder Bay Field Naturalist for occurrence data from their gray fox Monitoring Project. The MECP Species at Risk Branch (SARB) has also

provided some recent occurrence records for this SAR, and iNaturalist occurrence data has been downloaded for consideration in the preparation of the gray fox assessment and field studies program.

Much of this data compilation and review has already commenced and will be ongoing as the design of the alternative routes progresses to support the alternative route evaluation process. Results from the fall 2020 aerial reconnaissance and mine site survey (Golder 2021b) are also being reviewed, compiled, and analyzed, and mapping refined.

5.2.1 Site Selection

Outcomes of the desktop analysis will support the selection of sampling locations and facilitate logistical arrangements. The objectives of the sampling design will be to provide adequate survey coverage of the preliminary Project footprint for each route alternative and LSA, across the range of land cover types. Survey intensity will be highest in the preliminary Project footprints and in areas with the highest potential to support wildlife (e.g., undisturbed areas).

5.2.2 Access and Field Maps

Data gathered during the aerial reconnaissance and aerial imagery will be reviewed to determine the preferred mode of access for the ground-based field surveys. Survey sites are expected to be physically accessible by truck, foot, all-terrain vehicle, and/or helicopter, though land-owner permission to access the survey locations will need to be obtained on a case-by-case basis[2].

A map book of proposed survey locations will be created once the preliminary Project footprint for each alternative route is available (i.e., after the access roads and supporting infrastructure are designed). As such, maps of proposed survey locations are not currently available to accompany this Field Work Plan.

5.3 Bat Maternity Roost Habitat Assessment and Acoustic Monitoring

Little brown myotis (*Myotis lucifugus*) and northern myotis (*Myotis septentrionalis*) are both designated as endangered under the ESA and the SARA, and both have potential to occur in the LSA. Maternity roosting sites have been identified as critical habitat for SAR bats and are protected under the ESA. Little brown myotis typically roost in large dead trees, in specific stages of decay that project above the canopy in relatively open areas. Northern myotis usually roost in hollows, crevices, and under loose bark of mature trees. Maternity roosts of other tree-roosting bat species are a form of SWH. Forested areas in the LSA may provide suitable bat maternity roosting habitat.

[2] Where land access is not available, results will be extrapolated from the survey data and analyse and a conservative approach will be applied in the EA for impacts to SAR and SAR habitat by assuming they will be present in candidate habitats.

5.3.1 Pre-field Mapping

Initially, a geographic information system (GIS) analysis of ecosites was conducted to identify all potential SAR bat maternity roost habitat polygons. This was based on MECP guidance regarding suitable forest types (i.e., ecosites) using available Forest Resource Inventory (FRI) data. FRI ecosite metadata categorized as Pri_eco, contains the forest ecosites classification data that was used in the screening. The MECP provided a list of suitable forest ecosites (Bayne et al.):

- G/B015-019 Very Shallow: Dry to Fresh: Mixedwood/hardwood
- G/B023-028 Very Shallow: Humid: Conifer/Mixedwood
- G/B039-043 Dry, Sandy: Hardwood/Mixedwood
- G/B054-059 Dry to Fresh: Coarse: Mixedwood/Hardwood
- G/B069-076 Moist, Coarse: Mixedwood/Hardwood
- G/B087-092 Fresh, Clayey: Mixedwood/hardwood
- B103-108 Fresh, Silty to Fine Loamy: Mixedwood/Hardwood
- B118-125 Moist. Fine: Mixedwood/Hardwood
- B130-133: Swamps

The resultant habitat mapping is depicted Appendix B and is being considered candidate maternity roost habitat for SAR bats.

This mapping, along with the results of the 2020 aerial reconnaissance, has been used to select suitable field survey locations/candidate bat maternity roost habitat to survey along all alternative routes. The final bat acoustic station locations will be confirmed in the field based on habitat assessment and accessibility.

5.3.2 Field Surveys

The candidate bat maternity roost habitats determined from the mapping exercise discussed above will be targeted for acoustic monitoring to establish the presence (or non-detect) of bats, particularly little brown myotis and northern myotis, during the maternity roosting season in 2022.

The commonly accepted maternity roosting period in Ontario is between June 1 and June 30 (MNR 2011a). Wildlife Acoustics Song Meter SM4BAT FS acoustic monitors will be deployed and programmed to record from 30 minutes before sunset to 30 minutes after sunrise for a period of at least 10 days during the bat maternity roosting season (MNR 2011a). Twenty-five acoustic monitoring stations will be set up to record at select suitable field survey locations/candidate bat maternity roost habitat along all alternative routes.

Twenty-five bat acoustic monitoring stations were selected in order to achieve adequate coverage within candidate bat habitat throughout the LSA. The sub-sample of 25 bat stations has been evenly distributed throughout the LSA in the ecosites screened as candidate maternity roost habitat for SAR bats, making sure that stations are distributed evenly across route

alternatives as well. The subsample selection of 25 acoustic monitoring stations was based on the prevalence of candidate maternity roost habitat for SAR bats in the LSA based on the pre-field mapping. The 25 acoustic monitoring stations provides enough sampling effort to cover the study area and provide for the collection of data that can then be extrapolated to other candidate maternity roost habitat mapped in the LSA. The objective of the sampling design is to assess bat species distribution and composition throughout the LSA and the intent of the baseline data collection is not to determine roost occupancy. The information collected at each of the 25 stations will be analyzed by SonoBat and then manually vetted by a trained bat acoustic expert, as discussed in Section 5.3.3. Analysis will include species identification, composition, and relative bat activity per night at each of the stations. Through this analysis, adequate baseline data for bats shall be achieved.

To reduce any potential impacts to bats within the LSA, seasonal timing mitigation measures will be implemented, such as avoiding tree removal during the bat active season from May 1 to August 31. In previous communications, the MECP SARB have disclosed that bat roosting/maternity habitat in northern Ontario is not limiting. Therefore, if the standard seasonal timing mitigation is followed, the above survey approach for a sub-sample of 25 stations is considered sufficient to document the presence/absence of SAR bats within the LSA.

At each bat maternity roost acoustic monitoring station, additional habitat characterization will be completed during 2022 spring and summer surveys to document the quality of the candidate bat maternity roost treed habitat within 200 m of the acoustic stations. It is not feasible to search for cavity trees during the leaf-off period; therefore, survey efforts have been modified to effectively search for cavity trees throughout the LSA. This survey will also be supported by the bat acoustic monitoring program to determine presence/absence, species composition and distribution within the LSA. To avoid potential impacts to bats, the Project will implement seasonal timing mitigation where trees are prohibited for removal from May 1 to August 31.

A rapid snag density survey will be conducted at all 25 acoustic survey stations. The snag density survey will be conducted at three randomly selected plots per station based on provincial guidelines outlined in *Survey Protocol for Species at Risk Bats within Treed Habitats* (MNRF 2017) and Bat and Bat Habitat: Guidelines for Wind Power Projects (MNR 2011). Each plot will consist of a circle with 12.6 m radius to equal an area of 0.05 ha. Field data collected in each plot will include any standing live or dead tree ≥10 cm dbh with cracks, crevices, hollows, cavities, and/or loose or naturally exfoliating bark (MNRF 2017). Photographs will also be taken to record habitat conditions. A blank Bat Habitat and Snag Density field form is included as an example in Appendix C.

5.3.3 Data Analysis

The data will be analyzed to establish which bat species are present/non-detect at each monitoring station. The data will be auto classified using SonoBat 4.4.5 nnE. The Sonobat program is specifically intended for discrimination of bats to the species level, wherever possible, and validation of the species-level classification will be conducted by a bat acoustic specialist. Once automated classification is complete, the high frequency files and a subset of

low frequency files will be reviewed for Quality Assurance/Quality Control (QA/QC) by an experienced bat acoustic specialist using the SonoVet tool. The bat acoustic specialist will validate all high-frequency bat passes, and all passes classified as species with a relative frequency of less than 10% per station. The classifications will be tallied on a nightly basis to quantify the number of bat passes per night across the bat species (or species groups) at the monitoring stations. Once nightly tallies are calculated, various metrics will be calculated, including average bat passes per night, maximum passes within one night, and peak activity within the night, with focus on SAR.

Data from the entire monitoring period (i.e., during the entire night) will be compiled and filtered to calls by SAR bat species. Calls of these species will then be filtered to the primary roost emergence period during each night of monitoring. The emergence window is the period of the night where the likelihood of capturing the activity of a bat that has just emerged from a roost to forage for the night is highest. A bat recorded in flight during this period was considered likely to have emerged from a roost tree in close proximity to the detector. Bats are capable of long-distance flights each night and can fly at speeds up to 35 kilometres per hour (km/h) (Fenton and Barclay 1980); therefore, distinguishing roost emergence from foraging or commuting activity is not possible later in the night because bats detected at these times may have already travelled long distances from a roost (e.g., Cryan et al. 2001).

5.4 Bat Hibernacula Visual Assessment and Bat Hibernacula Swarming Acoustic Monitoring

Bats are particularly vulnerable during winter hibernation when they congregate in large numbers and are inactive. Features used as hibernacula, such as caves, adits and other mine features, and rock overhangs, are also far less common on the landscape than those that support other life requisites (e.g., roosting, foraging) and therefore are considered limiting factors for the distribution of bat species that hibernate. Three species of bats hibernate in northwestern Ontario, including two SAR, little brown myotis and northern myotis, both designated as endangered under the ESA. Hibernacula that support SAR bats are protected under the ESA. Those that support non-SAR bats, such as big brown bat, are a form of SWH.

5.4.1 Pre-field Mapping

For the fall 2020 mine site survey completed for the alternative route evaluation, spatial information from the Abandoned Mines Information System (AMIS) database (ENDM 2020) was reviewed to identify mine features that may support bat hibernacula. The desktop criteria used to determine whether an abandoned mine feature was a candidate bat hibernaculum were:

- Characteristics of the feature (e.g., keywords such as adit or shaft hold more potential than trench or open excavation);
- Dimensions of the feature (i.e., minimum of 15 m deep, referred to as either depth or length of feature in AMIS dataset); and
- Additional details on natural or anthropogenic alterations to these features.

Additionally, the AMIS data were overlayed with SAR bat element occurrence data and bat hibernacula data provided by the NDMNRF and MECP to identify which mine features had been previously confirmed as bat hibernacula.

Further bat hibernaculum suitability mapping was undertaken with orthophotography and topographic maps to identify natural features, such as caves or bedrock openings, that may serve as appropriate hibernacula features, warranting field investigation to confirm candidacy. Ontario Geological Service (OGS) was consulted for additional records of known naturally occurring caves, and to request information on any geological formations in the study area that may be conducive to the formation of natural caves. No areas conducive to the formation of caves were identified.

Additionally, a feature was noted by the MECP SARB in comments on the first draft Alternative Routes Field Work Plan (Golder 2021a) and will be investigated as a candidate hibernaculum.

Previous Candidate Bat Hibernacula Field Work

Mine site field surveys took place on October 7 and 8, 2020 at nine AMIS features identified as candidate bat hibernacula. Once a mine feature was located in the field by surveyors, additional habitat characterization was conducted to confirm whether it had potential as a candidate hibernaculum. Mine features were visually inspected from the exterior of the mine openings using the methods outlined in the Protocol for Assessing Bat Use of Potential Hibernacula (PGC and USFWS 2012). Field crew members did not enter any of the features and observed from the exterior only, thereby avoiding potentially picking up or spreading the fungus spores that are responsible for white nose syndrome (WNS). As an additional precaution, field crew members disinfected their boots and outerwear with fungicide between features to prevent the potential spread of WNS. Even though the field crew members did not come into contact with any bats and the risk of human to bat COVID-19 transmission is nil, field crew members wore masks at all times during the field work, in addition to the many other strict COVID-19-related precautions in place to protect the health and safety of our field crew members during the pandemic, as described in Section 3.0.

If a mine feature met any of the following criteria, the habitat was re-classified as low or nil potential to support hibernating bats (PGC and USFWS 2012):

- There is one horizontal opening, less than 15 cm in diameter, and no or very little airflow is detected;
- The opening is a vertical shaft less than 30 cm in diameter;
- The passage terminates at a distance for which the observer can clearly ascertain by visual inspection from the opening that there are no fissures that bats can access;
- The opening/feature is prone to flooding, collapsed shut and completely sealed, or otherwise inaccessible to bats; or
- It is a “new” opening, which has formed recently (less than 1 year old) due to subsidence.

An aerial reconnaissance of the study area was conducted in the fall of 2020. The aerial reconnaissance surveyed a 500 m buffer on either side of the alternative routes. As a result of the aerial survey, two additional candidate hibernacula were identified.

A total of 19 candidate bat hibernacula stations were identified as part of the above exercises (see Table 5-2 and Appendix D). Note that as details of the Project footprint are currently being finalized, additional candidate hibernacula may occur within the LSA and thus will be added to the field program once details are acquired and further desktop analysis is completed.

Table 5-2: Candidate Bat Hibernacula

Candidate Hibernacula Site [(a)]	Description	Data Source
AMIS Site Identified as Candidate Hibernacula During the 2020 Field Verification Surveys		
AMIS site: Big Six; 08504 AMIS feature 85971 (1 station)	Visual Assessment completed in 2020: Opening dimension of 3 m x 2 m. Fissures are present, but no additional passageways seen. Old fencing present, but no recent disturbance. Adjacent ecosite is mixed immature upland forest. Balsam poplar (*Populus balsamifera*), balsam fir (*Abies balsamea*).	LIO; mine site survey (low potential)
AMIS site: Eye Lake; 08517 AMIS feature 85974 (1 station)	Visual Assessment completed in 2020: Adit mostly sealed with concrete, but 1.5 m x 0.5 m opening. Adit in cliff face, west facing. Can only see ~3 m horizontally, but adit then turns sharply vertical. Depth unknown. Light, cool airflow. Guano seen on rock outside entrance. Adjacent ecosite Semi-mature white cedar (Thuja occidentalis) dominant mixed forest.	LIO; mine site survey (moderate potential)
AMIS site: Eye Lake; 08517 AMIS feature 85973 (1 station)	Visual Assessment completed in 2020: Large adit in cliff face, blocked by concrete, with 1 m x 0.15 m opening. Cannot see inside. No discernable airflow.	LIO; mine site survey (low potential)
AMIS site: Andowan 08538 AMIS feature 79976 (1 station)	Visual Assessment completed in 2020: Opening with 2 m x 2 m opening, 5 m deep. Unknown if adit or shaft. No discernable airflow, opening very exposed	LIO; mine site survey (low potential)

Candidate Hibernacula Site [a]	Description	Data Source
Additional Candidate Sites and Features Identified Through a Review of the AMIS Database[b]		
Shuniah (8429), includes features: 85867, 79792, 79793. (3 stations) Thunder Bay Silver (8449), includes features: 79821, 85827, 85829, 85828, 79820. (5 stations) Quinn (8524), includes feature: 79949. (1 station) Thunderhead (8495), includes feature: 79904. (1 station) Steeprock C Zone (8421), includes feature: 83781. (1 station) Elizabeth (8533): features: 79964, 79963, 79965, 85763 (all same waypoint) (1 station)	AMIS features with potential underground workings. All these additional features identified from the AMIS database will be visually assessed prior to proceeding with acoustic monitoring.	LIO
Candidate Sites Identified During the 2020 Aerial Survey[b]		
Cliff/Ridge (1 station)	Along lakeshore near Steep Rock Mine. Exposed bedrock ridge in forest, adjacent to lake. Some cliff-like features along the north-east shore of the lake.	Aerial reconnaissance 2020
Bedrock ridge-cut (1 station)	Within transmission line ROW near Highway 11, east of Crystal Lake. Blasted face in bedrock ridge where it crosses hydro line. Small cliff face present, possible cracks.	Aerial reconnaissance 2020
Candidate Site Identified by MECP SARB[b]		
Seine River Dam Spillway Tunnel (1 station)	Potential bat hibernacula associated with the former Steep Rock and Caland mine site near Atikokan, Ontario (inlet portal: 15U 0603336 5409082; outlet portal 15U 0603267 5409004)	MECP SARB

[a] # of candidate bat hibernacula stations as depicted in Appendix D.
[b]These sites are to be visually assessed prior to acoustic surveys in August 2022. Those features that retain candidacy following visual assessment will be selected for acoustic monitoring during the swarming period to confirm activity and likely use as bat hibernacula.

In addition to acoustic monitoring at candidate bat hibernacula, the study design will incorporate monitoring at known hibernacula (e.g., NDMNRF's previously assessed AMIS features) in proximity to the preliminary Project footprint for each alternative route (if possible, acoustic monitoring will occur at known hibernacula located within 1 to 10 km from each preliminary Project footprint), to confirm if the monitoring of candidate hibernacula did capture the appropriate timing window for swarming activity within the region, during the year of 2022. Information on the activity levels and timing for peak swarming activity at known hibernacula will be used as guidance for cross-referencing to acoustic activity levels recorded at the candidate

hibernacula and allow for QA/QC. For instance, activity patterns at the candidate hibernacula can be compared to the pattern of activity at known hibernacula to decipher if the pattern is associated with swarming behaviour or consistent with initial evening burst of foraging activity.

Some additional “activity control” stations will also be selected as an additional QA/QC measure. The activity control stations will be in proximity (i.e., within 500 m) of the candidate hibernacula. Each candidate hibernaculum will have an associated activity control stations (e.g., candidate hibernaculum #1 will have activity control station #1). Acoustic detectors at the activity control stations will be programmed to record the same as the acoustic detectors at candidate hibernacula and known hibernacula.

Activity control stations will be used to differentiate peaks in activity recorded at a candidate hibernaculum feature from activity unrelated to swarming that would reflect high activity due to the presence of a travel corridor or foraging feature on the landscape. For instance, landscape features that are known to have higher bat activity are:

- Linear cleared areas or other landscape features acting as travel corridors; and
- Wetlands, ponds, or lakes (areas typically associated with high foraging activity).

Therefore, it is necessary to conduct acoustic monitoring at these activity control stations concurrent to the swarming monitoring (adjacent to the potential commuting or foraging landscape feature but separated from the candidate hibernaculum feature).

5.4.2 Field Surveys

As was done during the mine site survey completed in fall 2020, natural features in the LSA for each alternative route that have been identified as candidate bat hibernacula through desktop analysis will be investigated in the field to confirm their suitability. Initially, a visual inspection will be conducted from the exterior of the feature using the methods outlined in the Protocol for Assessing Bat Use of Potential Hibernacula (PGC and USFWS 2012). If a mine feature meets any of the following criteria, the habitat will be re-classified as low or nil potential to support hibernating bats using the guidance mentioned above as follows:

- There is one horizontal opening, less than 15 centimetres (cm) in diameter, and no or very little airflow is detected;
- The opening is a vertical shaft less than 30 cm in diameter;
- The passage terminates at a distance for which the observer can clearly ascertain by visual inspection from the opening that there are no fissures that bats can access;
- The opening/feature is prone to flooding, collapsed shut and completely sealed, or otherwise inaccessible to bats; or
- It is a “new” opening, which has formed recently (less than 1 year old) due to subsidence.

In addition to the visual assessment of any natural features identified as having potential to serve as a hibernaculum, AMIS mine features that had been previously confirmed as bat

hibernacula and that are within 10 km of the preliminary Project footprint for each alternative route will be inspected. A visual assessment of these features will be conducted to determine if there have been physical changes to the features that may preclude bats from hibernating in them (e.g., opening has collapsed). If these features are intact, it will be assumed that they are still being used as hibernacula. A subset of intact features will be selected for acoustic monitoring.

Acoustic monitoring stations will be set up during the swarming period (approximately August 1 to late September) at natural features confirmed to be candidate hibernacula during the visual assessment, the one mine feature confirmed to be a candidate hibernaculum during the mine site survey, known hibernacula (for cross-reference), and activity control stations. Wildlife Acoustics Song Meter SM4BAT FS acoustic monitors will be deployed. The dates each monitor is deployed and retrieved will be recorded. The acoustic monitors will be set to record from 30 minutes before sunset to 30 minutes after sunrise.

Although no bat handling or entry into potential bat hibernacula will be required, guidance from the Canadian Wildlife Health Cooperative (CWHC) with respect to WNS and SARS-CoV-2 will be followed as a precaution to avoid potential transmission of these diseases. Measures will include the following:

- Surveyors will wear nitrile gloves, surgical masks and long-sleeved coveralls when deploying and retrieving acoustic monitors, in accordance with CWHC guidance against SARS-CoV-2 transmission (CWHC 2020); and
- Provincial agencies will be contacted ahead of the surveys to determine if any of the planned survey locations have confirmed WNS, to determine appropriate level of decontamination, per CWHC guidelines (CWHC 2017).

At each candidate hibernaculum station, additional habitat characterization will be completed at the time of initial detector deployment to document the quality of the adjacent habitat particularly to serve as roosting habitat. Field data collected will include any standing live or dead tree ≥10 cm dbh with cracks, crevices, hollows, cavities, and/or loose or naturally exfoliating bark (MNRF 2017).). Photographs will also be taken to record habitat conditions at each location. Photographs will be taken of each candidate hibernaculum and included in the EA to support the ranking (i.e., nil, low, moderate, high).

5.4.3 Data Analysis

The data will be analyzed and auto-classified using SonoBat 4.4.5 nnE classifier for automated classification. The Sonobat program is specifically intended for discrimination of bats to the species level, wherever possible, and validation of the species-level classification will be conducted by Golder's bat acoustic specialist.

Manual call analysis of a portion of the calls will be performed to determine at what threshold the software's species attributions become unreliable. Manual call analysis will also be performed to test attribution of call sequences to the non-bat category (e.g., birds, rodents, static discharge).

Since multiple Myotis species are known to co-swarm at locations in eastern Canada, and specifically little brown myotis and northern myotis (e.g., Fenton 1969; Burns and Broders 2015), calls from potentially swarming Myotis species will be grouped together for analysis of swarming activity and hibernacula potential. This grouping included little brown myotis, northern myotis, and eastern small-footed myotis, as well as unidentified high-frequency calls, to achieve a grouping of calls from listed or potentially listed Myotis species. Ontario is considered a white nose syndrome affected province in Canada (EC 2015). Given the potential reduction in most (but locally unconfirmed) Ontario populations of little brown myotis and northern myotis from white nose syndrome, this grouping of call data also served to increase the likelihood of detecting mixed species swarming events by individuals within these potentially decreased populations.

Once the entire data set is analyzed, call data are sorted into the number of calls by species group by 30-minute windows. It is possible to determine data characteristics that will be useful to make determinations on the likelihood of hibernacula presence. The characteristics for determination of whether candidate hibernaculum has likely swarming activity and inferred use by the three ESA-listed Myotis species (little brown bat, northern myotis and eastern small-footed myotis) are as follows:

- The overall and relative magnitude of bat passes recorded (i.e., a strict threshold of minimum number of passes per night is too simplistic to consider alone when not in context with the other considerations);
- The time of night when elevated activity level was initiated (the OMNR 2011 and Buck 2015 guidance suggests visual emergence monitoring should occur within the first 5 hours after sunset, inferring swarming activity should occur within that time period);
- The duration (i.e., number of successive 30-minute blocks) of elevated activity within each monitoring night;
- Number of successive monitoring nights with elevated activity at similar periods of the night; and
- Consideration of potential recording of non-swarming related activity due to the presence of a linear travel corridor or foraging feature (i.e., comparison to activity at paired activity control locations – where monitored).

After the bat swarming data are analyzed, consultation with the MECP SARB will be completed to allow for a consensus on the interpretation of the data as to whether a candidate hibernacula is confirmed SAR bat habitat.

5.5 Barn Swallow Surveys

Barn swallow is designated as threatened under the ESA and has potential to occur in the LSA. Barn swallows breed in areas that contain a suitable nesting structure, open areas for foraging, and a body of water. This species nests in anthropogenic structures including barns, buildings, sheds, bridges, and culverts, and suitable nests from previous years are often reused. Mud

nests are fastened to vertical walls or built on a ledge underneath an overhang. Culverts, bridges, and other anthropogenic structures in the LSA may provide suitable nesting habitat.

5.5.1 Pre-field Mapping

A desktop analysis of available aerial imagery and watercourse mapping has been completed to identify features that could support barn swallow nests (e.g., bridges and buildings). Documented barn swallow nesting sites and element occurrence records that imply nesting habitat available from provincial mapping will also be considered for field survey planning. Candidate barn swallow nesting habitat will be mapped prior to field surveys; however, only those features that could support barn swallow nesting and have the potential to be altered for construction of the Project will be visited during the field program.

5.5.2 Field Surveys

Ground-based visual surveys of features determined to be candidate barn swallow nesting habitat will be conducted in the LSA. These features, as well as other candidate habitats identified in the field, will be visually inspected for the presence of nesting barn swallows during the peak breeding season (late May to early July). Surveys will consist of the surveyor scanning the candidate habitat from a distance with binoculars to search for individuals and listening for their calls, followed by closer inspection of the area for nests or other signs, where accessible. Survey effort will focus on candidate habitats that intersect the preliminary Project footprint for each alternative route, as this is where highest disturbance is anticipated. The rationale for this effort is due to the specificity of the habitat of the species (nesting structure) and the prevalence of potential habitat in the LSA and the unlikelihood of impact to the nesting habitat of this species by the Project works and activities unless the Project footprint was proposed on top of or in close proximity to the feature.

5.5.3 Data Analysis

Data collected during the field surveys will be entered into a spreadsheet at the end of the field program for subsequent reporting.

5.6 Bank Swallow Surveys

Bank swallow is designated as threatened under the ESA and has potential to occur in the LSA. Bank swallows breed in a variety of natural and anthropogenic habitats, including lake bluffs, stream and riverbanks, sand, and gravel pits, and roadcuts. Nests are generally built in a vertical or near-vertical bank. Breeding sites are typically located near open foraging sites such as rivers, lakes, grasslands, agricultural fields, wetlands, and riparian woods. Lake bluffs, stream banks, sand, and gravel stockpiles, and roadcuts within the study area may provide suitable nesting habitat. Any bluffs, steep riverbanks, sand, and gravel pits, or roadcut in the LSA may be suitable nesting habitat.

5.6.1 Pre-field Mapping

A desktop analysis of available aerial imagery; LIO data on aggregate sites and the results of the aerial reconnaissance flight has been used to identify features that could support bank swallow nests (i.e., candidate bank swallow nesting habitat). Documented bank swallow nesting sites and element occurrence records that imply nesting habitat available from provincial mapping are also be identified for field surveys.

5.6.2 Field Surveys

Ground-based visual surveys of features determined to be candidate bank swallow nesting habitat will be conducted in the LSA. These features, as well as other candidate habitats identified in the field, will be visually inspected for the presence of nesting bank swallows during the peak breeding season (late May to early July). Surveys will consist of the surveyor scanning the habitat from a distance with binoculars to search for individuals and listening for their calls, followed by closer inspection of the area for nests or other signs, where accessible. Survey effort will focus on features that intersect the preliminary Project footprint for each alternative route where highest disturbance would be anticipated. The rationale for this effort is due to the specificity of the habitat of the species (nest on banks of rivers or anthropogenic features in aggregate pits) and the unlikelihood of impact to these nesting features by the Project works and activities unless the Project footprint was proposed in close proximity to the feature.

5.6.3 Data Analysis

Data collected during the field surveys will be entered into a spreadsheet at the end of the field program for subsequent reporting.

5.7 Breeding Bird Surveys

Diurnal breeding bird surveys will be conducted to describe bird community composition, relative abundance and habitat associations in the LSA, including occurrences of bird SAR. Breeding birds are commonly studied in baseline and monitoring programs because they provide practical indicators of habitat quality and habitat change (Cumming et al. 2010).

5.7.1 Pre-field Mapping

Target locations for breeding bird surveys will be identified using available land cover mapping (e.g., FRI data) compiled during the desktop analysis. Survey stations will be distributed throughout the LSA in representative habitats that are likely to support breeding birds, with an emphasis on SAR, such as red-headed woodpecker (*Melanerpes erythrocephalus*), Canada warbler (*Cardellina canadensis*), olive-sided flycatcher (*Contopus cooperi*) and bobolink (*Dolichonyx oryzivorus*). Effort was made to make sure there are equal numbers of stations along route alternatives to allow for a comparison of bird data for the evaluation of a preferred route.

Given that bobolink habitat is very limited in the LSA, all potential habitat for this species identified during the desktop and aerial reconnaissance will be confirmed and targeted if

deemed suitable and land access is granted. Sensitive avian features identified from provincial mapping will also be targeted for field investigation. Examples include documented nesting sites and element occurrence records that imply nesting habitat of SAR.

Survey stations will be selected based on the percent composition of various ecosites within the LSA. For instance, if mixed forest ecosites compose 40% of the LSA, then 40% of the breeding bird survey stations will be placed within mixed forest ecosites. Efforts will be made to situate survey stations entirely within single plant community polygons to facilitate future evaluation of habitat associations of various species. A subset of survey stations will also be placed in “edge habitat” to target those species, including SAR, which may use these areas. Station locations will be refined if needed in the field based on access and other logistical constraints. Breeding bird survey effort will consist of 100-point count stations in addition to the targeted candidate SAR bird surveys (i.e., bobolink surveys at 46 stations as mentioned above). Effort will be made to distribute the breeding bird point counts stations throughout the LSA. As the objective of the sampling design is to assess breeding bird species distribution and composition throughout the LSA, the rationale for this effort is based on achieving a broad distribution of survey stations throughout the LSA and equal distribution along alternative routes. Another objective to support the study design is to be able to collect sufficient breeding bird data to support the alternative route evaluation and the EA given the single breeding season wherein surveys can be done and meet the Project timelines.

5.7.2 Field Surveys

Breeding bird surveys will be conducted by qualified avian field biologists during the active breeding season. According to the Ontario Breeding Bird Atlas (Cadman et al. 2007), the survey window for breeding bird surveys in northern Ontario is June 1 to July 10.

The surveys will be conducted in accordance with methods outlined in the Canadian Breeding Bird Survey (Downes and Collins 2003) and the Ontario Breeding Bird Atlas (Cadman et al. 2007). The Ontario Breeding Bird Atlas protocol requires five-minute point counts; however, the observation period will be extended to ten minutes to improve detection, consistent with recommendations in other guidelines, including the Forest Bird Monitoring Programs in *Wildlife Monitoring Programs and Inventory Techniques for Ontario* (Konze and McLaren 1997). Each plot will be surveyed once to maximize survey coverage in a manner that is both cost effective and sufficient for an assessment of potential effects of the Project on breeding birds.
Of exception are areas identified as suitable habitat for bobolink, which will be resurveyed in accordance with the provincial guidelines for surveying threatened grassland birds (MNR 2011b).

Breeding bird surveys will be performed using a point count methodology. Survey stations will consist of a 50 m radius circular plot with an additional 50 m radius buffer (i.e., a total 100 m radius surveyed). Any birds observed outside of 100 m will also be noted where possible. Survey stations will be spaced a minimum of 250 m apart to avoid double counting individuals. Breeding bird surveys will begin approximately 30 minutes before sunrise and will end no later than 10:00 a.m. Surveys will not be completed during periods of high winds or inclement

weather. Environmental conditions will be recorded for each survey including time, temperature, and precipitation, as they are known to influence the activity levels of birds and their probability of detection.

5.7.3 Data Analysis

Data collected during the field surveys will be entered into a spreadsheet at the end of the field program for subsequent reporting. Data will be tabulated using various metrics including total number of species per station, total number of individuals per species across stations, percent representation of each species in total observations, and percent of stations in which each species was detected. Observation data will also be linked to habitat types at stations to identify patterns in habitat use among species, with focus on SAR. Observations data from early in the breeding season will be compared with data from late in the breeding season to determine if there are any obvious discrepancies in breeding bird diversity, and abundance based on timing of surveys.

Environment and Climate Change Canada (ECCC) has provided breeding bird data analysis guidance on other recent projects in a similar geographic location and asked for data to be reported by Landbird Priority species (Government of Canada 2017). Birds Canada has identified Landbird Priority bird species for various regions (Bird Conservation Regions [BCR]). These are species that are experiencing population declines, or are highly vulnerable to population declines and future threats, and include species of Continental Concern (Partners in Flight Continental Watch List) with important populations in a particular region (e.g., bay-breasted warbler [*Setophaga castanea*]), species with small global range and populations that are considered vulnerable to future change (e.g., golden-winged warbler [*Vermivora chrysoptera*]), and common widespread species that have experienced population declines and face ongoing threats on their breeding or wintering grounds (e.g., wood thrush [*Hylocichla mustelina*]). The Project is situated within BCR-12ON. Therefore, the breeding bird data will be used to determine the relative abundance of Landbird Priority species across various habitat types in the LSA, which will be useful in the assessment of effects to these vulnerable birds.

5.8 Marsh Bird Surveys

Marsh habitat may provide breeding habitat for SOCC (e.g., Least bittern), and/or a diverse assemblage of marsh breeding species is considered SWH.

5.8.1 Pre-field Mapping

According to the provincial datasets that were acquired for the Project (e.g., LIO, NHIC), these datasets did not contain any previously identified and mapped marsh bird breeding habitat within the LSA for the alternative routes; therefore, these existing secondary source datasets will not be a data source used to inform the selection of survey locations for any of the preliminary Project footprints for the alternative routes.

Desktop wetland mapping has been used to determine those features that have the potential to support marsh bird breeding and a subset has been selected within which marsh bird breeding

surveys and least bittern surveys will be completed. The desktop wetland mapping includes a combination of FRI, LIO wetland data and data from the Lakehead Region Conservation Authority (LRCA) to provide a more complete account of wetland communities. Preliminary survey locations will be selected within the LSA in advance of the field program Features where survey effort will be focused will include mapped wetlands and land cover polygons identified as suitable wetland types (i.e., marsh, shallow open water).

5.8.2 Field Surveys

Marsh bird surveys will be conducted between May 20 and July 5, either at dawn (beginning approximately 30 minutes before sunrise and will end no later than 10:00 a.m.) or dusk (beginning no earlier than four hours before sunset and completed before dark) each evening of survey (Bird Studies Canada 2009). At each identified station, call playback surveys will be conducted to detect secretive marsh birds, using protocols for surveying marsh birds as per the Marsh Monitoring Program (Bird Studies Canada 2009). At a subset of marsh bird breeding surveys, a minimum of three site visits will be completed.

Each survey will be 11 minutes in duration, consisting of 5 minutes of listening followed by 6 minutes of call playback for targeted species. During the call playback period, the calls of six species will be played in sequence, with each call played for 30 seconds, followed by 30 seconds of listening. Calls will be broadcast for the following species:

- Yellow rail (*Coturnicops noveboracensis*);
- Sora (*Porzana carolina*);
- Virginia rail (*Rallus limicola*);
- American bittern (*Botaurus lentiginosus*);
- Pied-billed grebe (*Podilymbus podiceps*); and
- Least bittern.

Observers will record the birds detected within a 100 m radius of the station centre point, including fly-throughs, with the latter recorded as such. Any birds observed outside of 100 m will also be noted where possible.

Note: During consultation of the draft Field Work Plan, great blue heron was identified as a species of interest. The proposed baseline program for birds includes the survey of habitat that has the potential to support great blue herons (e.g., marsh bird breeding program and the candidate SWH program (Section 5.12). The surveys proposed for other purposes will also confirm the sites that have the potential to be used for heronries. The SWH type called Colonially Nesting Bird Breeding: Trees Shrubs and other wetland surveys (e.g., marsh birds surveys, vegetation surveys in wetlands, turtle visual encounter surveys) have the potential to document the presence of great blue heron throughout the study area.

5.8.3 Data Analysis

Data collected during the field surveys will be entered into a spreadsheet at the end of the field program for subsequent reporting. Data will be tabulated using various metrics including total number of species per station, total number of individuals per species across stations, percent representation of each species in total observations, and percent of stations in which each species was detected. Observation data will also be linked to habitat types at stations to identify patterns in habitat use among species.

5.9 Least Bittern Surveys

Least bittern is designated as threatened under the ESA and has the potential to occur within the LSA. Habitat of this species is protected under the ESA. Least bittern is found at the northern edge of its geographical range within northern Ontario, and within the vicinity of the LSA there are only three (3) known records of the species.

Least Bittern's preferred and most detectable breeding habitat are marshes with tall emergent vegetation such as cattail species (*Typha spp*.) surrounded with open waters, known as a hemi-marsh. This species is known to prefer larger marsh sizes greater than (>) 5 hectares (ha) (COSEWIC 2009).

Based on the preferred habitat and low occurrence records of this species within the study area, only marsh habitats that fit the above criteria (i.e., >5 ha) and occur within the LSA will be surveyed for Least Bittern by following the National Least Bittern Survey Protocol (Canadian Wildlife Service, Environment Canada, 2011).

Least bittern is most effectively surveyed during morning hours from 30 minutes before sunrise to 10:00 a.m. and in the evening from 6:00 p.m. to sunset.

5.9.1 Pre-field Mapping

Preliminary survey locations were selected within the LSA in advance of the field program through a desktop analysis of available land cover mapping (e.g., FRI, Land Information Ontario) and the screening of candidate Marsh Bird SWH (Section 5.8). Features where survey effort will be focused will include mapped wetlands and land cover polygons identified as suitable wetland types (i.e., marsh, shallow open water). Given the extreme rarity of the species within the LSA, marsh habitats that are >5 ha will only be surveyed.

According to the provincial datasets that were acquired for the Project (e.g., LIO, NHIC), these datasets did not contain any previously identified and mapped marsh bird breeding habitat within the LSA for the alternative routes; therefore, these existing secondary source datasets will not be a data source used to inform the selection of survey locations for any of the preliminary Project footprints for the alternative routes.

5.9.2 Field Surveys

Least bittern surveys will be conducted between June 1 and July 15, either at dawn (beginning approximately 30 minutes before sunrise and will end no later than 10:00 a.m.) or dusk (beginning no earlier than 6:00 p.m. and completed before sunset) each evening of survey (Canadian Wildlife Service, Environment Canada, 2011). Surveys will be repeated three times, in accordance with the *National Least Bittern Survey Protocol* (Canadian Wildlife Service, Environment Canada, 2011).

A total of 18 least bittern survey stations have been identified and are distributed throughout the LSA in accessible lands. At each identified station, call playback surveys will be conducted to detect Least bittern, using the *National Least Bittern Survey Protocol* for surveying for Least bittern (Canadian Wildlife Service, Environment Canada, 2011).

Each survey will be 13 minutes in duration, consisting of 5 minutes of passive listening, 5 minutes of call broadcasts (each minute is 30 seconds of the Least bittern call, followed by 30 seconds of silence, followed by 3 minutes of passive listening. During the call playback period, the "*coo-coo-coo*" call of the Least bittern.

Observers will record the birds detected within distance intervals (e.g., 0-10 m; 10-25 m; 25-50 m; 50-100 m; >100 m) of the station centre point, including fly-throughs, with the latter recorded as such.

5.9.3 Data Analysis

Data collected during the field surveys will be entered into a spreadsheet at the end of the field program for subsequent reporting. Data will be tabulated using various metrics including total number of individuals across stations, percent representation of each species in total observations, and percent of stations in which each species was detected. Observation data will also be linked to habitat types at stations to identify patterns in habitat use among species.

5.10 Common Nighthawk Surveys

Common nighthawk is designated as special concern under the ESA and threatened under the SARA and has the potential to occur in the LSA. Species designated as threatened under the SARA are considered SOCC, whose habitat is a form of SWH. This species requires large areas of open habitat, such as clearcuts, burns, rock outcrops, bogs, fens, gravel pits, and flat roofs in built-up areas.

5.10.1 Pre-field Mapping

Given the broad range of potential foraging and nesting habitat of this species, no pre-field mapping will be conducted.

5.10.2 Field Surveys

Overlapping with other field programs (e.g., breeding bird point counts and eastern whip-poor-will surveys), crepuscular (around dusk and dawn) point counts will be conducted in the month of June using an unlimited-radius point count sampling design and methods adapted from the Canadian Nightjar Survey Protocol (Knight 2019). Point count surveys will be 10 minutes in duration. When common nighthawks are detected, behaviour (wing-boom, call, visual) will be recorded, and distance and direction at first detection will be estimated. Surveys will not be completed during periods of high winds or inclement weather.

Data on common nighthawk will also be collected opportunistically during other field programs.

5.10.3 Data Analysis

Data collected during point count surveys will be entered into a spreadsheet at the end of the field program for subsequent reporting.

5.11 Eastern Whip-poor-will Surveys

Eastern whip-poor-will is designated as threatened under the ESA and has the potential to occur in the LSA. Habitat of this species is protected under the ESA. This species occupies a combination of open and sparse forested habitat required to meet both nesting and foraging needs. Various forest and open habitats, including utility corridors in the LSA, may be suitable nesting and/or foraging habitat.

Eastern whip-poor-will is a nocturnal species and is not effectively surveyed by diurnal breeding bird surveys.

5.11.1 Pre-field Mapping

A candidate eastern whip-poor-will habitat mapping exercise has been completed. Initially a GIS analysis of ecosites and other habitat attributes was conducted to identify all potential eastern whip-poor-will breeding season habitat. Suitable habitat was assessed based on MECP guidance regarding suitable forest types (i.e., ecosites) and other habitat attributes (e.g., proximity to open foraging habitats). Ecosites are based on Bayne et al, 2009, using numerous FRI datasets to cover the Project study area, including the most recent available FRI data. The GIS exercise focusses on the following habitat characteristics, as provided by the MECP.

- **Suitable nesting habitat if adjacent (within 30 m) of suitable open foraging habitat, as defined below:**
    a. Forested areas suitable for nesting, such as:
        i. Conifer, deciduous, mixedwood forest stands 10 – 40 years
            - Very shallow, dry to fresh ecosites,
            - Dry, sandy ecosites,
            - Fresh sandy or dry to fresh coarse loam ecosites,
            - Dense forest cover (e.g., canopy closure > 75%), and

- Sparse to moderate shrub and herbaceous ground cover (e.g., understory ≤ 50%).

b. Open areas suitable for foraging, such as:
   i. Bedrock and sand barren ecosites;
   ii. Conifer, deciduous, mixedwood forest stands 0-10 years (e.g., recent cutovers and/or burns)
      - Sparse forest cover (e.g., canopy closure ≤ 25%);
   iii. Field and shrub ecosites (e.g., meadow, sparse shrub, shrub, etc.);
   iv. Anthropogenic clearings (e.g., agricultural fields, aggregate pits, etc.);
   v. Linear features (e.g., roads, transmission lines, etc.);
   vi. Wetland ecosites (e.g., marsh, swamp, bog, fen, etc.); and
   vii. Waterbodies (e.g., lakes, rivers, etc.).

■ **Habitat suitable for both nesting and foraging as defined below:**

a. Conifer, deciduous, mixedwood forest stands 10 – 30 years (i.e., young regenerating forests):
   i. Very shallow, dry to fresh ecosites,
   ii. Dry, sandy ecosites,
   iii. Fresh sandy or dry to fresh coarse loam ecosites,
   iv. Sparse to moderate forest cover (e.g., canopy closure ≤ 75%), and
   v. Sparse to moderate shrub and herbaceous ground cover (e.g., understory ≤ 50%).

In addition to this GIS analysis, the most recent available imagery was used, where possible, to verify these ecosites at a desktop level. Ecosite verification was conducted by a qualified senior avian specialist using visual assessment of aerial imagery. The resultant habitat mapping is considered candidate nesting habitat for eastern whip-poor-will. The eastern whip-poor-will candidate habitat mapping is presented in Appendix E.

However, there are several known records of eastern whip-poor-will in the LSA that do not overlap with this habitat criteria provided by the MECP. Therefore, to ensure suitable coverage of all potential habitat types, the candidate nesting habitat, along with the results of the 2020 aerial reconnaissance and locations of element occurrence records, will be used in combination to select suitable field survey locations for eastern whip-poor-will. Since eastern whip-poor-will surveys are primarily roadside for safety concerns (i.e., avoid traversing difficult terrain at night), land access will not be a limiting factor for most of these surveys. However, the project footprint of all alternative routes will be required to select the field survey locations.

The final eastern whip-poor-locations will be confirmed in the field based on habitat assessment and accessibility. Eighty (80) survey stations will be selected throughout the LSA within candidate nesting habitats. Survey stations will be selected to achieve an equal number of stations along alternate routes (i.e., spatial coverage across the entire project as well as equal coverage across alternative routes). Where potentially suitable habitat overlaps with a road, stations will be selected. This approach is to allow for roadside access for health and safety reasons as these are nighttime surveys.

5.11.2 Field Surveys

Eastern whip-poor-will surveys will be based on the Draft Survey Protocol for Eastern Whip-Poor-Will (*Caprimulgus vociferus*) in Ontario (MNRF 2014). The surveys will be completed by qualified biologists. Eastern whip-poor-will surveys are ideally completed between June and the end of July during the appropriate lunar phases (i.e., one week on either side of the full moon) as identified in the MNRF DRAFT Survey Protocols for Eastern Whip-poor-will (Caprimulgus vociferus) in Ontario (2014). Two rounds of surveys will take place between June 7 and 21 and a third round of surveys will take place from July 6 to 13. Eastern whip-poor-will detectability has been shown to double on nights when the moon is at least half illuminated, above the horizon, and not obscured by clouds (Wilson and Watts 2006).

Each survey will be completed by two surveyors. The surveyors will adjust their separation depending on background noise, and terrain simultaneously listening for eastern whip-poor-wills for a duration of five minutes. Surveyors will record the time of each detection, as well as a compass bearing to each individual bird identified, where possible. The environmental conditions (e.g., cloud cover, precipitation, percentage of moon illuminated, wind noise [Beaufort scale], and temperature) will also be reported during the surveys.

5.11.3 Data Analysis

Using data collected during field surveys, post-field triangulation will be applied to calculate approximate locations of individual eastern whip-poor-will. Triangulation methods will be based on protocols prepared by the New Hampshire Audubon Society (Hunt 2009). These approximate locations, along with a desktop habitat assessment, will then be used to determine an approximate centre of territory for each individual bird, where possible. This approximate centre of territory will then be used to apply habitat mapping criteria, as defined in the Eastern Whip-poor-will General Habitat Description (MECP 2021).

5.12 Gray Fox Survey

Gray fox is designated as threatened under the ESA and has the potential to occur in the LSA for each alternative route. While breeding has not been fully confirmed in northwestern Ontario, there has been evidence of family groups near Thunder Bay from the last decade and there are recent occurrence records from Thunder Bay west to the Fort Frances/Rainy River area (MECP 2019b).

Gray foxes are habitat generalists and have been known to use a variety of habitats ranging from forests to agricultural lands to urban areas. This species uses dens within a wide variety of features in which to rear pups and to rest. The diversity of features where dens have been reported include hollow trees, hollow logs, wood piles, brush piles, rocky outcrops, rock piles, cavities under rocks, and abandoned buildings (MECP 2019b).

The denning surveys for gray fox could lead to the observation of den sites for other furbearing species (e.g., red fox).

5.12.1 Pre-field Mapping

Den Survey

Most potential den features are small, not visible on imagery, not related to specific ecosites, and not well surveyed during aerial surveys. Given the potential for thousands or even hundreds of thousands of potential features in the LSA for the alternative routes, no pre-field mapping will be conducted for gray fox.

Where possible, known records and sightings of gray fox will be used to help identify potential habitats and locations of dens/individuals. A request was made to the Thunder Bay Field Naturalist for gray fox occurrence data from their Gray fox Monitoring Project. The MECP SARB has also provided some recent occurrence records for this SAR that are being considered in the preparation of the gray fox assessment and field studies program. INaturalist records of Gray fox have also been exported and considered in the study design for this species.

Presence Survey

MECP's SARB feedback on the draft Terrestrial Field Work Plan indicated that little is known about the distribution of Gray Fox between the area surrounding the City of Thunder Bay and Atikokan, and there has been little to no survey effort across this area for Gray Fox. The federal recovery strategy, as adopted by the province of Ontario, also sets a main objective in their Schedule of Studies to Identify Critical Habitat: *To improve understanding of the distribution and habitat use of Gray Foxes in northwestern Ontario to determine biophysical attributes required for recovery and survival.*

Therefore, to inform the presence and distribution in the LSA, and appropriately characterize baseline conditions in the EA, a survey will be completed to detect presence of Gray fox.

To determine survey locations, the following stepwise process was performed:

- Existing occurrence records acquired from MECP and from iNaturalist were plotted and a home range average of 294 ha was identified surrounding each occurrence record (MECP 2019).
- Gaps in the distribution of gray fox records in the LSA were identified and stations were plotted, spaced every 5-10 km in the LSA associated with Alternative Routes 1, 1A, 1B-1, 1B-2, 1C, 2A, 2B, and 2C.
- Stations were manually screened to identify land where access permission is allowed (Crown lands) or has been obtained and to avoid putting scent lure stations that attract predators near to residences, cabins, campgrounds, etc.

The rationale for the study design above is taken from the Recovery Strategy for the Gray Fox in Ontario (MECP 2019) that indicates that home ranges for Gray Fox are variable, depending on access to the resources needed to complete their life stages. However, an average home range size of 274 ha has been adopted in the Recovery Strategy to be used to map the extent of suitable habitat from an occurrence record of Gray fox. In addition to suitable habitats, the definition of critical habitat for Gray fox includes habitat occupancy which is defined as follows:

Excerpt from the Recovery Strategy (MECP 2019):

Habitat is considered occupied when:

- A record from the breeding season (February 15-August 31) is in close proximity to at least one other record of a Grey Fox (from any time of year) AND
- the breeding season record and at least one other record in close proximity occur at least one year apart.
- Following NatureServe (2009) guidelines for Grey Fox element occurrence separation distances, records are considered in close proximity when:
- They occur within 5 km of one another; OR
- They occur within 15 km of one another, but are linked by continuous suitable habitat

Therefore, the presence surveys target areas with a lack of occurrence records and proposed survey locations are spaced 5-10 km apart.

5.12.2 Field Surveys

Den Survey

Gray fox habitat surveys will primarily be conducted opportunistically during the other field surveys. Habitats or features with gray fox denning potential identified in the field will be assessed for evidence of gray fox use. Examples include rock piles and other rocky areas, brush/slash piles, shrubby shorelines, buildings, and other structures. Areas of recent harvest and blowdown will also be targeted, provided land access permission is granted. If a potential den is found, a trail camera will be set up, if feasible, to monitor and help identify the occupant (e.g., red fox vs gray fox).

Presence Survey

Survey stations will be set up within the LSA. Stations will consist of a trail camera mounted to a tree and scent lure applied to another tree to lure Gray fox. Stations will be set up in mid to late June through September which will cover a portion of the denning period and dispersal period following independence of the pups, as well as provide time for the analysis of data prior to the alternative route evaluation.

5.12.3 Data Analysis

Digital data collected during the field surveys will be downloaded into a spreadsheet at the end of the field program to be used in reporting. Trail camera photos will be analyzed by a qualified biologist to identify whether gray fox are using the potential feature.

Home Range Identification and Habitat Mapping

Critical habitat from the Recovery Strategy is identified as the extent of suitable habitat where the habitat occupancy criteria is met (i.e., need both habitat occupancy and habitat suitability) (MECP 2019).

All Gray Fox records (new and existing records) will be plotted and used to identify home ranges. The average based on the best available information regarding home range size indicated in the Recovery Strategy is 274 ha or a radial distance of 934 m from an occurrence record (MECP 2019).

Within each home range, suitable habitats will be mapped using the Recovery Strategy guidance. The ELC community series designations that contain the biophysical attributes known to be used by Gray fox to meet their biological needs are Deciduous Forest (FOD); Coniferous Forest (FOC); Mixed Forest (FOM); Plantation (CUP); Tallgrass Savanna (TPS); Tallgrass Woodland (TPW); Cultural Meadow (CUM); Cultural Thicket (CUT); Cultural Savanna (CUS); and Cultural Woodland (CUW) (MECP 2019). If a suitable habitat patch extends beyond the home range boundary (discussed above) it will be mapped and included as suitable habitat.

All den sites identified during other field surveys will be mapped and a buffer of 100 m applied

5.13 Amphibian (Anuran - Frog and Toad) Call Counts

No known amphibian SAR occur in northwestern Ontario; however, amphibian breeding habitat is a form of SWH. Amphibians are dependent on aquatic habitats for breeding, and are thereby valuable indicators of wetlands, riparian areas, and water quality. The objective of this program is to determine the diversity and abundance of breeding anurans (frogs and toads). This baseline data can then be the basis for which one can predict changes due to the Project. Breeding amphibians can be used as an indicator group to monitor long-term environmental changes.

5.13.1 Pre-field Mapping

Preliminary survey locations will be selected in advance of the field program through a desktop analysis of available land cover mapping (e.g., FRI, Land Information Ontario, conservation authority mapping) and the screening of candidate Amphibian Breeding SWH (Section 5.13). Features where survey effort will be focused will include mapped wetlands and land cover polygons identified as suitable wetland types (i.e., marsh, bog, fen, swamp, shallow open water).

The Anuran Call Count stations will be distributed throughout the LSA with a random distribution while screening for:

- Wetland in proximity to roads for health, safety, security and environment (HSSE) reasons due to nighttime surveys;
- Selected wetland stations according to proportional representation in the LSA (e.g., 50% marsh, 30% swamp, 10% fen, 5% bog, 5% unknown); and
- Aim to achieve equal number of stations along alternate route groupings (e.g., 2A / 2B / 2C).

No provincially mapped amphibian breeding habitat is present within the LSA for alternative routes identified for the Project and, therefore, will not be a data source used to inform the selection of survey locations for the Project.

5.13.2 Field Surveys

Surveys will be conducted in suitable breeding habitats in the LSA. Three rounds of anuran call-count surveys will be conducted at each station during spring and early summer to capture early and mid-season calling anurans. The surveys will follow the call count methodology outlined in the Marsh Monitoring Program (Bird Studies Canada 2008). The survey timing is temperature dependent however the three rounds of surveys will take place roughly between May 1-15 (round 1), June 1-15 (round 2), and July 1-15 (round 3). Surveys will be three minutes in duration. The survey period will begin 30 minutes after sunset and end by midnight. Anuran species will be identified based on their distinctive calls and a rough estimate of breeding chorus size will be made by rating the chorus on a call index scale.

Eighty (80) anuran call count stations will be distributed across suitable breeding habitat within the LSA, with focus on habitats that intersect the preliminary Project footprints, with roadside access. Stations will be spaced a minimum of 500 m apart to avoid double counting individuals.

5.13.3 Data Analysis

Digital data collected during the field surveys will be downloaded into a spreadsheet at the end of the field program to be used in reporting.

5.14 Turtle Surveys

The Project area is known to be inhabited by two species of turtles: western painted turtle (*Chrysemys picta*) and the Snapping turtle (*Chelydra serpentina*) which is listed as a species of “Special Concern” in Ontario. In Ontario, Snapping turtle uses a wide range of waterbodies, but shows preference for areas with shallow, slow-moving water, soft substrates and dense aquatic vegetation. Hibernation takes place in soft substrates under water. Nesting sites consist of sand or gravel banks along waterways or roadways (COSEWIC 2008).

Golder has expanded the approach for turtles after receiving information from Indigenous communities indicating that turtles are a culturally significant species.

As such, our approach for surveying turtles has expanded to include a turtle visual encounter survey as well as turtle nesting surveys. A turtle visual encounter program will be completed this spring/early summer 2022 in which crews will visit wetlands and waterbodies that have potential to support overwintering turtles and visually assess them to determine the abundance and diversity of turtles using these features for basking. The presence of basking turtles early in the spring gives an indication that they use the wetlands/waterbodies for overwintering.

5.14.1 Pre-field Mapping

To get comprehensive base mapping for wetlands in the study area, the wetland communities contained within the following spatial files were combined FRI wetlands, LIO wetlands layer and the LRCA wetland mapping.

Turtle Visual Encounter Surveys

Turtle visual encounter surveys are performed in wetlands and waterbodies that have the potential to support overwintering turtles. Survey locations will be selected based on suitable aquatic features (e.g., ponds, wetlands with open water) that occur in the LSA. These locations were pre-selected using GIS base maps. The main considerations when choosing survey locations were access, area coverage, and habitat suitability. Each survey stations was also selected based on land access and a clear line of sight from a publicly accessible roads or trail. Note that survey stations selected through pre-field mapping may be adjusted in the field by up to 50 m from the target sampling point, provided the station remains in the same wetland and within the appropriate boundary (i.e., LSA).

Turtle Nesting Surveys

Candidate turtle nesting habitat have been screened according to the guidance provided in the draft criteria schedules for Ecoregion 3W (MNRF 2017a) as well as the Significant Wildlife Habitat Technical Guide (MNR 2000), for this type of specialized wildlife habitat as discussed in detail in section 5.13.

5.14.2 Field Surveys

Turtle Visual Encounter Surveys

The purpose of turtle visual encounter survey is to determine presence/absence and habitat use of various turtle species that bask out of the water. Turtle visual encounter surveys are performed by searching favorable habitats during the spring and early summer when turtles are actively basking to increase their body temperatures following the hibernation period.

Surveys will occur after the ice cover has melted up to the time at which the water temperature becoming warmer than the air temperature.

When wetland vegetation does not obstruct the view of the shoreline and other available basking sites (such as floating logs or hummocks), use binoculars with a minimum magnification of 10x from a distance to scan the entire perimeter of the shoreline and all potential basking sites (a high-power spotting scope may be required to accurately identify the species in some situations). Care should be taken when approaching wetlands and ponds so as not to disturb any basking turtles. This will usually require the surveyor to access the wetland or pond from several different locations or walk part of the shoreline. Basking sites, including hummocks, should be accessed, and viewed from the sunlit side where possible so the sun is behind the surveyor when trying to locate turtles.

Turtles generally bask close to the water on logs, rocks, vegetation hummocks, sedge/grass tussocks, floating mats of aquatic vegetation, muskrat mounds and lodges. Crews will look for dark shapes (edge of shell) against the vegetation; shiny areas among vegetation could indicate

a recently emerged wet turtle. Snapping turtles rarely bask on land and will float on the water surface or bury itself in soft substrate.

In addition to recording any turtles observed, all potential basking sites, nesting sites and suitable summer and winter habitat should be described and mapped. This information, particularly potential nesting sites, can help inform subsequent survey effort (i.e., nesting survey locations).

Turtle Nesting Surveys

Turtle nesting surveys will consist of crews performing visual encounter surveys in habitats identified during the pre-field mapping as potentially suitable for turtle nesting. Techniques include looking in potentially suitable nesting areas for sightings of nesting female turtles or sign of recent nesting activity (e.g., dug soils, presence of egg shells indicating a predated nest).

5.14.3 Data Analysis

Digital data collected during the field surveys will be downloaded into a spreadsheet at the end of the field program to be used in reporting.

5.15 Candidate Significant Wildlife Habitat

SWH includes a broad range of habitats known to be key to sustaining populations of wildlife and plants and thus by including field assessment of SWH in the study area, consideration for the maintenance and protection of these key habitats and the species that rely on them will be provided (e.g., SWH includes the key habitat types for sustaining moose).

The Provincial Policy Statement, 2020 (PPS) protects SWH in Ontario. SWH is defined in the Natural Heritage Reference Manual (MNR 2010) as the following:

- Habitats of seasonal concentrations of animals
  - Areas where animals occur in relatively high densities for the species at specific periods in their life cycles and/or in particular seasons (e.g., moose late winter habitat and colonial bird nesting sites).
  - Seasonal concentration areas, which tend to be localized and relatively small in relation to the area of habitat used at other times of the year (e.g., reptile hibernacula and bat hibernacula).
- Rare vegetation communities
  - Areas that contain a provincially rare vegetation community.
  - Areas that contain a vegetation community that is rare within the planning area.
- Specialized wildlife habitats
  - Areas that support wildlife species that have highly specific habitat requirements (e.g., amphibian woodland breeding ponds and turtle nesting habitat).
  - Areas with exceptionally high species diversity or community diversity.

  - Areas that provide habitat that greatly enhances species' survival (e.g., moose calving areas, mink, otter, marten and fisher denning sites).
  - Habitat of SOCC.
- Animal movement corridors.

The draft criteria schedules for Ecoregion 3W (MNRF 2017a) will be consulted to define specific SWH types contained under the four broad categories defined above. Criteria schedules have not been prepared for the ecoregions that the Project overlaps. In the absence of criteria schedules for these ecoregions, the draft criteria schedules for Ecoregion 3W, as well as the Significant Wildlife Habitat Technical Guide (MNR 2000), have been consulted.

5.15.1 Pre-field Mapping

At the request of the NDMNRF (MNRF 2020a), a desktop screening of SWH was completed to identify candidate seasonal concentration areas, rare vegetation communities, and specialized habitat for wildlife. The desktop screening was conducted by overlaying the LSA on the FRI land cover layer (LIO 2020).

The full suite of SWH and applicable ecosites was informed by MNRF's technical guide (MNR 2000) and the criteria for Ecoregion 3W (MNRF 2017a). Of those SWH that can be screened for at the desktop level, 22 types, identified in Table 5-3, occur along the alternative routes. Other SWH may be challenging to screen at the desktop level (e.g., mineral licks and seeps/springs) and others have a number of features mapped but survey coverage of the LSA is incomplete (e.g., moose aquatic feeding areas); therefore, these features will be searched for and documented during all field surveys.

The desktop screening identified over 56,000 ecosite polygons categorized as one or multiple types of candidate SWH in the LSA. Based on the desktop screening, the most commonly occurring type of candidate SWH in the study area is Diverse and Sensitive Orchid Communities. Colonially nesting bird breeding areas in trees and shrubs was the most frequently occurring seasonal concentration area in the study area. In addition to Diverse and Sensitive Orchid Communities, Sand Dunes was a commonly occurring rare vegetation community, and Milkweed Patch was the commonly occurring specialized habitat for wildlife.

At the request of NDMNRF, a field program has been planned to field truth a portion of the candidate SWH identified during the pre-field mapping exercise. This will confirm the presence of candidate SWH identified in the desktop screening results, given the FRI base mapping (LIO 2020) and ecosite types in the SWH criteria report (MNRF 2017a) only identify potential habitats where SWH features may be located.

For the candidate SWH field surveys, to address the accessibility issues (i.e., high number of candidate SWH polygons located remotely, land access permission not acquired) along the LSA, site selection for the candidate SWH field surveys will be limited to the permissible parcels and areas within 250 m from existing roads and trails. This approach reduces the number of

ecosite polygons categorized as one or multiple types of SWH from over 56,000 to a more reasonable number of approximately 28,318 to consider for the candidate SWH field program.

Seven types of candidate SWH had less than 30 occurrences in the area within 250 m of existing trails and roads, consisting of Cliff and Cliff Rim, Colonially Nesting Bird Breeding on Banks and Cliffs, Rare Tree – Elm, Rare Tree – Red and Sugar Maple, Rock Barren, Sharp Tailed Grouse Leks and Shorebird Migratory Stopover habitat. All of these candidate SWH polygons were included in site selection for the field surveys to confirm desktop screening results (see Appendix F). Targeting all the rarer types of SWH in the LSA will allow for adequate surveys within rare habitats as discussed during previous reviews of the work plan.

Of those candidate SWH types that had greater than 30 occurrences (more common types of candidate SWH as all rarer types of SWH will be targets for field investigations), a random selection of approximately 2% of the total number of occurrences of each SWH type across all route alternatives will be selected once the alternative route footprints become available. Given the objective of the field survey to ground-truth the desktop screening of the ecosite types in the SWH criteria reports (MNRF 2017a), not to confirm the sites are significant habitat, a random selection of sites allows for an unbiased approach to ground-truthing. However, sites will be reviewed and slightly modified to have spatial coverage across the routes (see Appendix F). As details of the Project footprint are currently being finalized, the candidate SWH sites will be selected once details are acquired and further desktop analysis is completed.

Candidate SWH ecosites/features not field assessed will remain as candidate SWH for the purposes of the alternative route evaluation. Those candidate SWH ecosites/features that are looked at in the field and verified to retain their candidacy will also be considered as candidate SWH for the purposes of the alternative route evaluation; however, those candidate SWH ecosites/features that are determined through ground-truthing and characterization of the habitat to not hold potential as candidate SWH will be removed from of the candidate SWH data layers.

Table 5-3: Desktop Screening of Candidate Significant Wildlife Habitat in LSA

Significant Wildlife Habitat Type[(a)]	Frequency of candidate SWH screened within the LSA	Frequency of candidate SWH screened within 250 m from existing roads and trails	Rationale (including summary of additional desktop screening and consultation with local experts)
Amphibian Breeding	7217	3417	Additional desktop screening completed to confirm ecosites greater than 0.05 ha. Field surveys in spring/summer 2022 will confirm candidate breeding habitat is present. Note: Anuran call count data has the potential to verify amphibian breeding SWH, and Golder will use NDMNRF guidance for confirmation of SWH of this type.
Cliff and Cliff Rim	4	2	Desktop screening determined this type of SWH is rare in the study area, only occurring on routes 2A, 2A/2C (common section), and 2C. Additional desktop screening was completed using topography mapping to supplement desktop ecosite screening.
Colonially Nesting Bird Breeding: Ground	1470	718	A subset of this SWH will be included in the field survey, with a focus on sites that occur on peninsulas and land access permission is granted.
Colonially Nesting Bird Breeding: Bank and Cliff	4	2	Desktop screening determined this type of SWH is rare in the study area, only occurring on route 2A and 2C. Both sites will be ground-truthed to search for nest holes. Additional consultation with local birders, birding associations and Ontario Breeding Bird Atlas (OBBA) will be conducted to identify known breeding areas for rough winged and cliff swallows, if any.

Significant Wildlife Habitat Type[(a)]	Frequency of candidate SWH screened within the LSA	Frequency of candidate SWH screened within 250 m from existing roads and trails	Rationale (including summary of additional desktop screening and consultation with local experts)
Colonially Nesting Bird Breeding: Trees Shrubs	16879	9488	This type of candidate SWH is common along all route alternatives; as such, only a subset of this SWH will be included in the field survey. Focus will be for large heron rookeries. Additional desktop review of aerial imagery was conducted to interpret for heron rookeries, and consultation with local birders, birding associations and OBBA will be conducted to identify known breeding areas for herons, if any.
Diverse and Sensitive Orchid Communities	5062	2405	As sensitive orchid communities may be found in a wide range of ecosites, it is not possible to target areas where they may be found, or to target specific time periods for each species. For this reason, opportunistic searches for orchids will be conducted during field surveys at appropriate ecosites for this type of SWH during verification of other candidate SWH types and during other wildlife and vegetation surveys. This approach will confirm presence but will not confirm absence.
Marsh Bird Breeding	3989	1838	A subset of wetlands will be included in the field survey. Any wetlands with shallow water and emergent vegetation will be considered suitable candidate marsh bird breeding habitat. Note: Marsh Bird Call Playback data has the potential to verify this type of SWH.
Milkweed Patch	6893	3229	Opportunistic searches for milkweed will be conducted during field surveys at appropriate ecosites for this type of SWH during verification of other candidate SWH types and during other wildlife and vegetation surveys.

Significant Wildlife Habitat Type[a]	Frequency of candidate SWH screened within the LSA	Frequency of candidate SWH screened within 250 m from existing roads and trails	Rationale (including summary of additional desktop screening and consultation with local experts)
Open Country Bird Breeding	1384	598	Additional desktop screening was conducted to refine the number of polygons classified as candidate open country bird breeding based on the ecosite being greater than 30 ha of field meadow areas. A subset of these polygons will be included in the field survey.
Rare Tree: Elm	16	6	Elm can be identified in ecosite during field survey. As such, a subset of these polygons will be included in the field survey.
Rare Tree: Red and Sugar Maple	56	29	Red and sugar maple can be identified in ecosite during field survey. As such, a subset of these polygons will be included in the field survey.
Rare Tree: Red and White Pine	611	343	Additional desktop screening was conducted to refine the number of polygons classified as candidate rare tree based on the ecosite being greater than 2 ha in size. A subset of these polygons will be included in the field survey.
Rock Barren	14	11	Rock barrens can be identified during the field survey. As such, a subset of these polygons will be included in the field survey. Surveyors will look for exposed bedrock areas (mostly exposed rock with <5 cm mineral or <10 cm organic material) and <25% vascular vegetation.
Sand Dunes	N/A	N/A	Sand dunes are visible from aerial imagery and from aerial reconnaissance. This habitat type has not been observed in the LSA and as such is not considered any further in the assessment.

Significant Wildlife Habitat Type[a]	Frequency of candidate SWH screened within the LSA	Frequency of candidate SWH screened within 250 m from existing roads and trails	Rationale (including summary of additional desktop screening and consultation with local experts)
Sharp Tailed Grouse Lek	3	2	Additional desktop modelling was conducted to refine the number of polygons classified as candidate sharp tailed grouse lek habitat based on a combination of grassy fields/meadows or peatlands (fens, bogs) separated by greater than 15 ha from adjacent shrubland and greater than 30 ha from adjacent treed areas.
Shorebird Migratory Stopover	3	3	A subset of wetlands will be surveyed. Additional consultation with local birders, birding associations and OBBA will be conducted to identify known shorebird migratory stopovers, if any.
Turtle Nesting	147	132	Verification of areas identified during the desktop assessment as potential turtle nesting areas will be verified during field surveys at appropriate ecosites for this type of SWH during verification of other candidate SWH types and during other wildlife and vegetation surveys.

Significant Wildlife Habitat Type[(a)]	Frequency of candidate SWH screened within the LSA	Frequency of candidate SWH screened within 250 m from existing roads and trails	Rationale (including summary of additional desktop screening and consultation with local experts)
Turtle Wintering Areas	6589	3074	Verification of areas identified during the desktop assessment as potential turtle over-wintering areas will be verified during field surveys at appropriate ecosites for this type of SWH during verification of other candidate SWH types and during other wildlife and vegetation surveys. NOTE: a turtle visual encounter program has been developed for the Project in response to Indigenous community consultation. A turtle visual encounter program will be completed this spring/early summer 2022 in which crews will visit wetlands and waterbodies that have potential to support overwintering turtles and visually assess them to determine the abundance and diversity of turtles using these features for basking. The presence of basking turtles early in the spring gives an indication that they use the wetlands/waterbodies for overwintering.
Waterfowl Nesting Area	3197	1547	Additional desktop screening was conducted to refine the number of polygons classified as candidate waterfowl nesting areas based on the ecosite being greater than 0.5 ha in size and with 120 m adjacent natural upland area. A subset of these polygons will be included in the field survey.
Waterfowl Stopover Staging Areas Aquatic	1728	771	Ecoregion 3W criteria schedule notes that “sites with wild rice have a high likelihood of being a waterbird stopover and staging area”. As such, a subset of wetlands with wild rice stands will be included in the field survey.

Significant Wildlife Habitat Type[(a)]	Frequency of candidate SWH screened within the LSA	Frequency of candidate SWH screened within 250 m from existing roads and trails	Rationale (including summary of additional desktop screening and consultation with local experts)
Waterfowl Stopover Staging Areas Terrestrial	103	N86	Ecoregion 3W criteria schedule notes that “sites with wild rice have a high likelihood of being a waterbird stopover and staging area”. As such, a subset of wetlands with wild rice stands will be included in the field survey.
Wild Rice Stand	1352	617	Additional desktop screening was conducted to refine the number of polygons classified as candidate wild rice stands based on the ecosite being greater than 0.5 ha in size. A subset of these polygons will be included in the field survey.

(a) Reference for SWH: MNR 2000; MNRF 2017a

(b) Proposed field survey stations will be selected from within 250 m of existing trails and roads. Final number and location of polygons to be field verified will be refined following a review of project footprint, access limitations and landowner permission along all alternative routes.

5.15.2 Field Surveys

A subset of SWH polygons (see Table 4.3) will be surveyed. The field surveys are intended to confirm the presence of candidate SWH habitat (i.e., habitat conditions that may be used by SOCC, or where rare vegetation communities, seasonal concentration areas, animal movement corridors and specialized wildlife habitats are more likely to occur) identified via desktop analysis, but not to confirm that the habitat is being used by SOCC (i.e., SWH). If there is a significant amount of discrepancy detected during the field program between the subset of sites that are ground-truthed from the desktop analysis, additional desktop work may be necessary to determine if the specific type of SWH for which significant discrepancies are observed should be included further in the assessment.

The field survey methods will involve surveying a subset of the mapped candidate SWH categorized as seasonal concentration areas, rare plant communities, and specialized habitat for wildlife. Sites will be selected in a desktop exercise using GIS once the project footprint s of all alternative routes have been developed. Each feature will be screened to confirm access and if any special equipment (e.g., all-terrain vehicle) or permissions (e.g., private land access) will be required to conduct the surveys.

Field maps will be downloaded onto tablets for use in the field. Characteristics of ecosites will be documented, using the technical guide (MNR 2000) and 3W criteria schedule (MNRF 2017a) to confirm whether candidate SWH meets the criteria. Additionally, habitat characterization of the survey sites will be verified in the field using the FRI base mapping as a starting point[3], along with noting areas of recent logging or other disturbance.

During the visual assessment and characterization surveys noted above, field crews will also document any other potential SWH features (e.g., stick nests, seeps/springs, mineral licks) within habitats being investigated.

Additional SWH features that are of cultural importance (e.g., moose habitats, great blue heron rookeries) already confirmed by the province and available in provincial datasets will be verified in the field where possible, but not re-evaluated under provincial SWH guidelines and protocols.

5.15.3 Data Analysis

Data collected during the field surveys will be entered into a spreadsheet at the end of the field program for subsequent reporting.

[3] As noted in section 6.3.1, it is acknowledged that there are limitations with the FRI data. The ELC program has been designed to confirm the accuracy of the FRI ecosite classification data in the Project study area.

5.16 General Wildlife Surveys and Habitat Assessment

General wildlife surveys and habitat assessment will be conducted concurrent with the other field investigations. These surveys will gather data for various species, including species groups and SAR not specifically targeted through the surveys described above.

While not specifically targeted for species-specific programs, data on other mammals will be documented through various field work programs, including the candidate SWH program (Section 5.15) which details important habitats for furbearers such as den sites through incidental observations. A presence survey program will be completed targeting gray fox that includes setting up trail cameras at stations with scent lure attractant and records of a variety of furbearer predators (e.g., bears, wolves, marten, fisher) are anticipated through this program.

5.16.1 Pre-field Mapping

Provincial mapping layers will be reviewed to identify mapped features warranting further investigation in the field, such as forms of SWH not captured in the targeted surveys described above. In addition, suitable habitats for SAR not surveyed for through the above-mentioned methods, which have moderate or high potential to occur in the LSA based on the desktop SAR screening, will be targeted for field investigation. Element occurrence records of SAR available from provincial mapping will also be identified for field investigation.

5.16.2 Field Surveys

General wildlife surveys will include a visual encounter survey (including observations of track and sign), an area search in selected habitats, and documentation of incidental wildlife observations. Various habitats in the LSA will be searched with special attention paid to edge habitats and other areas where mammals might be active, potential wildlife movement corridors, and wetlands where turtles may be basking. Areas of exposed substrate, such as sand or mud, will be examined for any visible wildlife tracks. Logs will be flipped and piles of rocks will be observed for herpetofauna. Tree canopies will be scanned for stick nests.

The species of wildlife will be identified and recorded on first observation and SAR will be recorded on each observation and georeferenced. Additionally, observations of species of concern to Indigenous communities will be recorded on each observation and georeferenced, including moose, deer, game birds (e.g., grouse), ducks, eagles, and furbearers. The location, condition, and approximate size (i.e., area) of any potential SWH (e.g., moose winter habitat and waterfowl nesting areas), or SAR habitat will also be recorded.

In addition to investigating the recorded element occurrences of SAR in the LSA, the following approaches to survey will be taken for SAR designated as threatened or endangered under the ESA and identified in the Project's Amended ToR (Hydro One 2021) as having potential to occur in the LSA:

- American badger (*Taxidea taxus*) – Suitable grassland habitats identified from pre-field mapping (aerial imagery and FRI data) will be surveyed for evidence of badger use (burrows).
- Gray fox – See Section 5.11.
- Little brown myotis (*Myotis lucifugus*) – See Sections 5.3 and 5.4.
- Northern myotis (*Myotis septentrionalis*) – See Sections 5.3 and 5.4.
- American white pelican (*Pelecanus erythrorhynchos*) – Suitable nesting habitats (barren or sparsely treed islands located in lakes, reservoirs, or on large rivers) for this species are unlikely to be encountered in the LSA; however, an attempt will be made to survey these features opportunistically, if encountered or easily observed from shore. A focus will be on these potential features that overlap with, or are close to, the preliminary Project footprints for the alternative routes.
- Least bittern (*Ixobrychus exilis*) – See Section 5.9.
- Barn swallow (*Hirundo rustica*) – See Section 5.5.
- Bank swallow (*Riparia riparia*) – See Section 5.6.
- Chimney swift (*Chaetura pelagica*) – Although this species historically nested in hollow trees and tree cavities, current selection is almost exclusively for anthropogenic structures, and particularly chimneys (Graves 2004; Finity and Nocera 2012). Accordingly, this species is most commonly associated with towns and cities (COSEWIC 2018), and in Ontario over 60% of reported nests are concentrated in the Golden Horseshoe (MECP 2019a). Suitable anthropogenic structures will be investigated for evidence of chimney swift nesting during barn swallow surveys (see Section 5.5). As a precaution, areas of old growth forest will also be investigated for suitable nest trees (trees greater than 50 cm diameter at breast height that are hollow or contain cavities; Zanchetta et al. 2014).
- Eastern whip-poor-will (*Antrostomus vociferus*) – See Section 5.11.
- Bobolink (*Dolichonyx oryzivorus*) – See Section 5.7.

Although wolverine (*Gulo gulo*) has been identified as a SAR concern for the Project in agency correspondence, the Project lies approximately 75 km south of the current Ontario distribution of wolverine at its closest point (COSEWIC 2014). Wolverines are known to inhabit intact ecosystems and avoid anthropogenic areas. With the majority of the Project located between two main highways (Highway 11 and Highway 17) and in close proximity to three towns/cities (Dryden, Atikokan and Thunder Bay), it is unlikely that wolverines will inhabit the LSA. However, incidental observations will be included in the field surveys.

Targeted surveys for cougar (*Puma concolor*) have not been proposed as part of the Project. The following text provides background context of the cougars recorded in northern Ontario, as well as rationale for not targeting this species during our surveys.

Although cougar has been identified as a SAR concern for the Project in agency correspondence, the population status of this species in Ontario is unknown. Available evidence suggests observations of cougar in Ontario may not represent an established population, with possible origins including escaped pets and immigrants from the west, though some native individuals may exist (Rosatte 2011). In the absence of an established population, detection is unlikely due to the large range and elusiveness of this species; despite 17,000 camera-nights of monitoring at locations across Ontario by the Ministry of Natural Resources (MNR) between 2008 and 2010, no confirmed observations of cougar were made (Rosatte 2011). In the unlikely event of an incidental sighting during field investigations, details will be recorded.

Although king rail (*Rallus elegans*) is identified in the Project's Amended ToR as potentially occurring in the Project area, this species reaches its northern limit in southern Ontario (MECP 2019c) and is not anticipated in the LSA.

Incidental sightings of wildlife, including tracks, nests, roosting sites, feeding sites, etc. will be recorded when a species is observed on site. The species or their sign (e.g., tracks, scat, residence) will be recorded upon each observation and their GPS location marked. For each observation, the species, number of individuals, date and time, sex and age (if possible), location, and habitat in which the observation occurred will be recorded.

Targeted surveys of key habitats for moose will also be performed (e.g., moose aquatic feeding areas, moose winter habitats, mineral licks) and incidental sign and sightings of moose will be recorded.

Data Analysis

Data collected during the field surveys will be entered into a spreadsheet at the end of the field program for subsequent reporting.

5.17 Quality Assurance and Quality Control

Wildlife data collected during baseline field programs will undergo a QA/QC process for consistency and accuracy. The specific tasks for post-field data management and QA/QC include:

- Complete a field summary report after each field shift;
- Complete office review and QA/QC of the field data collected;
- Download photographs and Global Positioning System (GPS) locations to the file server;

- Review GPS coordinates for accuracy;
- Scan the data forms and field notebooks;
- Enter important data from field notebooks into spreadsheet or database; Rename photographs according to site identification and photographer;
- Enter relevant data into database; and
- Submit species inventory data to the NHIC.

The following tasks will be completed to maintain quality assurance for field data, data manipulation, and data summary calculations.

- **Data integrity -** After each field program is complete, the data collected will be transferred to a designated secure network, which includes nightly back-ups. The data forms will be checked for accuracy before leaving each site in the field. Data forms will also be reviewed prior to data entry to check for errors such as inaccurate spelling and dates. A QA/QC process will also be in place as part of the data entry task so that data are entered accurately into the wildlife and wildlife habitat database.
- **Downloading -** At the end of each day, GPS coordinates and photos will be downloaded to a laptop for safe storage. After the field program is complete, these data will be transferred to Golder's secure network, which includes nightly back-ups.
- **Survey locations -** The survey locations that have been uploaded to the Project base map will be cross-checked against plot locations marked on field maps to confirm they are accurately projected.

5.18 Reporting

A wildlife baseline report for the EA will be prepared that describes the wildlife species potential of the LSA at the present time, including species composition, habitat use and availability, and movement throughout the LSA. The report will also document the presence and distribution of wildlife SAR (and their habitats) and SWH. Sensitive information such as SAR, SOCC, rare species (S1-S3, SH) or Indigenous Knowledge data will be protected where that information cannot be shared publicly (e.g., generalizing locations or data types). The report will summarize and discuss the methods and results from both the desktop analysis and field surveys. A final SAR screening, revised as needed based on field results, will be appended to the baseline report. The report will be used to characterize existing conditions for wildlife as part of the EA, as well as identify potential permitting requirements for SAR, if applicable.

5.19 Schedule

Desktop analysis and the aerial reconnaissance, to support the alternative route evaluation for the Project, started in fall 2020 and focused on the alternative routes. Additional desktop

analysis has since been ongoing and will continue through to the design of the full Project footprint for the preferred route.

Based on the current Project schedule, spring 2022 field surveys will focus on the preliminary Project footprint for each of the alternative routes. Field surveys are expected to take place between May and September in 2022. The following describes the proposed field program schedule based on the current Project schedule:

- Amphibian call counts - three rounds of surveys to be completed: May 1-15; June 1-15; July 1-15
- Marsh bird surveys - one round of surveys: May 20 to July 5
- Bat maternity roost habitat assessment and acoustic monitoring: June 1 to June 30
- Bat hibernacula swarming acoustic monitoring - one round of surveys: August 1 to late September
- Breeding songbird point count surveys - each station will be surveyed once to maximize coverage of the routes: June 1 to July 10
- Bobolink surveys - three sets of point counts in candidate habitats: June 1 to July 10
- Barn and bank swallow surveys - visual assessment of candidate habitats: late May to early July
- Common nighthawk surveys - crepuscular point counts: June 1 to July 10
- Eastern whip-poor-will surveys - three rounds of surveys: to coincide with the appropriate lunar phases (Ontario protocol; MNRF 2014)
- Candidate SWH surveys - to be conducted in conjunction with other planned wildlife surveys
- General wildlife surveys that will result in incidental observations of wildlife and wildlife sign, wildlife habitats including SWH that are encountered while performing all other surveys

6.0 Vegetation and Wetlands

6.1 Purpose

The purpose of the vegetation and wetlands field survey for the Project is to characterize the existing environment for vegetation and wetlands to support the EA for the Project. Baseline characterization will consist of combining and summarizing existing available information (i.e., desktop analysis, imagery interpretation and FRI classification) with data gathered from field surveys within the LSA.

Vegetation community mapping is required to identify potential habitat for SAR (e.g., black ash [*Fraxinus nigra*]), rare plants and rare vegetation communities, and traditionally used/culturally significant plants identified through IK/TLRU studies received from Indigenous communities and communicated through engagement with Indigenous communities, and to estimate the likelihood of their presence in the LSA. Results from the field surveys will be used to refine desktop vegetation community mapping.

The main objectives of the vegetation and wetlands field surveys are to:

- Survey and confirm upland, wetland, and riparian plant community types in the LSA;
- Collect a detailed botanical inventory of the plant communities sampled, including traditionally used and culturally significant plants and vegetation communities identified by Indigenous communities (e.g., blueberries and wild rice);
- Characterize plant communities and associated wildlife habitat in the LSA; and
- Identify plant SAR (e.g. black ash) and rare plants within unique plant communities in the LSA.

Data collected in the field will also be used to inform the selection of appropriate vegetation and wetlands criteria and indicators upon which the vegetation and wetlands EA will focus. The data will also be used to support future permitting requirements, where feasible.

6.2 Desktop Analysis and Field Planning

Existing literature and digital data provided by Hydro One, available in-house at Golder, and obtained through published reports and grey literature, as well as publicly available provincial data (e.g., NHIC and LIO), and IK/TLRU studies received from Indigenous communities, will be reviewed and compiled to determine which data are available to support the requirements for the vegetation and wetlands baseline. Much of this data compilation and review has already been completed to support the alternative route evaluation process.

A SAR screening will also be completed as part of the desktop analysis to identify SAR with moderate to high potential to occur in the LSA based on range overlap, documented occurrences and presence of suitable habitat determined from available land cover mapping (e.g., FRI data, LIO wetland data and data from the LRCA to provide a more complete account

of wetland communities). For the purposes of the SAR screening, SAR are considered those species listed under the ESA and/or SARA, as well as species with provincial conservation ranks of SH or S1 to S3 as determined by the NHIC. The desktop SAR screening will be used to inform preliminary site selection.

6.2.1 Site Selection

Outcomes of the desktop analysis will support the preparation of the sampling plan, including field maps, and facilitate logistical arrangements. The objectives of the sampling design will be to provide adequate survey coverage of the preliminary Project footprint for each of the alternative routes and LSA, across the range of land cover/ecosite types. Survey intensity will be highest in the preliminary Project footprints for the alternative routes and in undisturbed areas.

Vegetation survey locations will be selected in advance of the field program to reflect proportional representation of the plant community types in available FRI mapping. Survey locations will be spaced along the length of the LSA to obtain adequate spatial distribution. The following variables will be factored into survey location selection:

- Size and distribution of each plant community type;
- Unique plant communities;
- Surveys for rare plants and critical landform/vegetation associations; and
- Access constraints.

Survey locations will be interspersed among forest stands with different canopy compositions and in different landscape locations to estimate the variability in species and plant community types. Efforts will be made to establish at least one survey location in as many of the plant community types as possible. Survey locations will target undisturbed and representative plant communities, though some disturbed locations will also be selected for invasive plant surveys. Sensitive vegetation features identified in provincial mapping will also be targeted for field investigation. Examples include significant ecological area (e.g., old growth forest and rare vegetation communities) and element occurrence records of SAR plants.

6.2.2 Access and Field Maps

Data gathered during the aerial reconnaissance and aerial imagery will be reviewed to determine the preferred mode of access for the ground-based field surveys. Survey sites are expected to be physically accessible by truck, foot, all-terrain vehicle, and/or helicopter, though land-owner permission to access the survey locations will need to be obtained on a case-by-case basis.

A map book of proposed survey locations will be created once the preliminary Project footprint for each alternative route is available (i.e., after the access roads and supporting infrastructure are designed). As such, maps of proposed survey locations are not currently available to accompany this field work plan.

6.3 Field Surveys

Surveys to characterize baseline conditions for vegetation and wetlands will be completed in the LSA. The following surveys are planned:

- Field verification surveys to confirm plant community classifications available from desktop mapping;
- Meanders for plant SAR, rare plants and traditional use/culturally significant plants between field verification plots;
- Re-visitation of historical occurrences of plant SAR to confirm population and collect population level data if extant; and
- Surveys for noxious weeds and invasive plants in disturbed areas within the preliminary Project footprints.

Survey intensity will be highest in the preliminary Project footprints for the alternative routes and in areas with the highest potential to support plant SAR, rare plants, and rare vegetation communities.

6.3.1 Ecological Land Classification

Plant communities will be classified using the Ecosites of Ontario (Banton et al. 2009). At each survey location, plant species will be inventoried, and the percent cover of each vegetation stratum will be estimated. The stratum refers to a layer of vegetation (e.g., tree stratum, shrub stratum). Plant communities will be characterized based on species composition, abundance, and cover within the various strata.

Uncommon plant species will be documented during the plant community surveys and, where required, samples collected for taxonomical identification. General site conditions (e.g., slope, aspect, percent surface substrate, and surface expression) will also be recorded at each survey location.

6.3.2 Botanical Survey

The botanical survey will include area searches in naturally occurring habitats in the LSA. The searches will be conducted by systematically walking through the habitats in a meandering fashion, generally paralleling the principal (long) axis of the natural area, where feasible, and ensuring that the full width of the area is examined. Lists of the plant species identified during the botanical survey will be compiled.

The botanical survey will focus on SAR, rare species, invasive plants, and traditional use plants. Accordingly, habitats with higher potential to support these species will be targeted. This may include multiple visits to the same vegetation community to capture early and late season flowering plants of concern (rare plants, SAR, traditional use plants), if warranted.

Traditional use plants include berries, edible mushrooms, Labrador tea (*Rhododendron groenlandicum*), paper birch (*Betula papyrifera*), sugar maple (*Acer saccharum*), white cedar

(*Thuja occidentalis*), and various grasses including wild rice (*Zizania palustris*) and sweet grass (*Hierochloe odorata*). Additional traditional use plants and species of importance to Indigenous communities, as identified through IK/TLRU studies and community engagement, will be included.

6.4 Quality Assurance and Quality Control

Vegetation and wetlands data collected during baseline field programs will undergo a QA/QC process for consistency and accuracy. The specific tasks for post-field data management and QA/QC include:

- Complete field summary report after each field shift;
- Complete office review and QA/QC of the field data collected;
- Download the photographs and GPS locations to file server;
- Review GPS coordinates for accuracy;
- Scan the data forms and field notebooks;
- Enter important data from field notebooks into spreadsheet or database;
- Rename photographs according to site identification and photographer;
- Enter the relevant data into database; and
- Submit species inventory data to the NHIC.

The following tasks will be completed to maintain quality assurance for field data, data manipulation, and data summary calculations.

- **Data integrity –** After each field program is complete, the data collected will be transferred to a designated secure network, which includes nightly back-ups. The data forms will be checked for accuracy before leaving each site in the field. Data forms will also be reviewed prior to data entry to check for errors such as inaccurate spelling and dates. A QA/QC process will also be in place as part of the data entry task so that data are entered accurately into the vegetation and wetlands database.
- **Downloading –** At the end of each day, GPS coordinates and photos will be downloaded to a laptop for safe storage. After the field program is complete, these data will be transferred to Golder's secure network, which includes nightly back-ups.
- **Survey locations –** The survey locations that have been uploaded to the Project base map will be cross-checked against plot locations marked on field maps to confirm they are accurately projected.

6.5 Data Analysis and Reporting

Data collected through field surveys will be tabulated and entered to spreadsheets as each field program is completed. Data from field surveys will be used, as appropriate, to refine the pre-field vegetation mapping layers. As well, the ELC program has been designed to confirm the accuracy of the FRI ecosite classification data in the Project study area; thus, this verification program will help to understand the level of error in the FRI data being used.

A vegetation and wetlands baseline report will be prepared that describes the vegetation communities (including wetlands) that occur in the LSA, including rare vegetation communities. The report will also document the presence and distribution of plant SAR, rare plants, noxious weeds and invasive plants, and traditional use plants. Sensitive information, such as SAR or Indigenous Knowledge data, will be protected where that information cannot be shared publicly (e.g., generalizing locations or data types). The report will summarize and discuss the methods and results from both the desktop analysis and field surveys. A vegetation (land cover) map for the LSA will be prepared and included in the report. A final SAR screening, revised as needed, based on field results will be appended to the baseline report. The report will be used to characterize existing conditions for plants and vegetation communities as part of the EA.

6.6 Schedule

Desktop analysis to support the alternative route evaluation for the Project started in fall 2020 and focused on the alternative routes. Additional desktop analysis has since been ongoing and will continue through the preparation of the preliminary Project footprint for the alternative routes.

Field surveys are expected to take place between May and August in 2022. The following describes the proposed field program schedule based on the current Project schedule.

- Ecological Land Classification (ELC)
  - Plots to confirm the accuracy of FRI ecosite classification data in the Project study area.
  - Flexible in itself but completed in tandem with botanical surveys.
- Botanical surveys
  - Focus on relevant SAR species, rare species, invasive plants, and traditional use plants.
  - Two rounds of survey for early and late blooming species: early season (late May to June) and late season (August) surveys.

7.0 Closure

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

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