



Henvey Inlet Wind LP

Henvey Inlet Wind Transmission Line

Shawanaga First Nation Reserve Land Overview – Determination of Environmental Effects

June, 2017

TABLE OF CONTENTS

1.	INTRODUCTION	
1.1	HIW Project and Transmission Line.....	1
1.2	HIW Transmission Line Environmental Review.....	1
1.3	HIW Environmental Review Conclusions.....	1
2.	REGULATORY FRAMEWORK	
2.1	Environmental Regulatory Requirements for off-Reserve Transmission Line	2
2.2	Environmental Regulatory Requirements for Shawanaga On-Reserve Transmission Line.....	2
3.	TRANSMISSION LINE ON SHAWANAGA RESERVE LAND	
3.1	On-Reserve transmission line	4
	(a) Transmission Poles	4
	(b) Access Roads	4
	(c) Temporary Storage Areas	5
	(d) Switching Station.....	5
3.2	Installation and Operating Activities	5
4.	METHODOLOGY	
4.1	Overview of Methodology.....	7
4.2	Consultation	7
5.	EXISTING ENVIRONMENT ON SHAWANAGA RESERVE LAND	
5.1	Overview.....	9
5.2	Elements of Existing Natural Environment	9
	(a) Physical	9
	(b) Soil Conditions.....	10
	(c) Geological Conditions	10
	(d) Hydrogeological Conditions	11
	(e) Natural.....	11
	(f) Wildlife	13
	(g) Federal Species at Risk (SAR).....	15
5.3	Socio-Economic and Cultural Environment	17
5.4	Archaeology.....	17
6.	POTENTIAL EFFECTS, MITIGATION AND NET EFFECTS ASSESSMENT	
6.1	Overview of the Effects Assessment	18
6.2	Potential Effects and Mitigation Measures on Shawanaga Reserve Land	18
	(a) Key Mitigation Measures.....	18
6.3	Net Effects and Determination of Significance	21
	(a) Net Effects During Construction/Decommissioning	23
	(b) Net Effects during Operations	27
7.	OVERLAPPING AND CUMULATIVE EFFECTS	
7.1	Overlapping Effects	30
7.2	Cumulative Effects On-Reserve	30
8.	CONCLUSION OF ENVIRONMENTAL REVIEW REGARDING SHAWANAGA RESERVE LAND	
8.1	Determination Under Annex F Test.....	31

9. REFERENCES

1. INTRODUCTION

1.1 HIW PROJECT AND TRANSMISSION LINE

In 2011, Nigig Power Corporation (Nigig) received a Feed-in-Tariff (FIT) contract from the Ontario Power Authority (OPA) for a 300 megawatt (MW) wind energy generation centre. Henvey Inlet Wind LP (HIW), a limited partnership between Pattern Renewable Holdings Canada ULC and Nigig is proposing to develop the Henvey Inlet Wind Energy Centre (HIWEC) on Henvey Inlet First Nation (HIFN) Reserve No. 2 (HIFN I.R. #2). A new transmission line is required to deliver the electricity generated by the HIWEC to the Ontario electricity grid.

Such transmission line is proposed to extend south from the eastern boundary of HIFN I.R. #2 adjacent to the proposed Highway 69/400 corridor for approximately 50 km, including the section through Shawanaga Reserve Land (the Transmission Line). The Transmission Line then diverts east from the proposed Highway 69/400 south of Woods Road for approximately 11 km to the existing HONI 500 kV system and then runs parallel to the existing HONI corridor for approximately 25 km before connecting to the HONI 230 kV system south of the Town of Parry Sound (see Figure 1).

1.2 HIW TRANSMISSION LINE ENVIRONMENTAL REVIEW

An environmental review was conducted by HIW to describe the characteristics of the Transmission Line study areas and the overall preliminary design of the Transmission Line, present the findings of the environmental baseline studies, and describe the potential environmental effects of the proposed Transmission Line and associated mitigation measures (the HIW Review). This resulted in the report entitled: Volume B: Henvey Inlet Wind – Transmission Line Environmental Review Report, September 2015 (Environmental Review Report or Volume B). The HIW Review and the Environmental Review Report were undertaken in accordance with the requirements of O. Reg. 116/01 and satisfy requirements under Annex F of Shawanaga First Nation's Individual Agreement under the *First Nations Land Management Act* (FNLMA).

The purpose of the present report is to satisfy environmental requirements of Annex F under Shawanaga First Nation's Individual Agreement under the FNLMA. The requirements arise in relation to Annex F provisions respecting the *Canadian Environmental Assessment Act, 2012* (CEAA 2012) where the project is not a "designated project" but is a "project" under section 67 of CEAA 2012.

1.3 HIW ENVIRONMENTAL REVIEW CONCLUSIONS

Under Annex F and based on the information provided in the HIW Review and the Environmental Review Report, this report determines that, with the application of proposed mitigation measures, the Transmission Line is not likely to result in significant adverse environmental effects.

2. REGULATORY FRAMEWORK

2.1 ENVIRONMENTAL REGULATORY REQUIREMENTS FOR OFF-RESERVE TRANSMISSION LINE

The Ontario *Environmental Assessment Act* (EA Act) sets out a planning and decision-making process so that potential environmental effects are considered before a project begins. The EA Act requirements for off-Reserve components of the Transmission Line on provincial Crown land and private land are set out in O. Reg. 116/01. As such, HIW carried out an Environmental Review and prepared the Environmental Review Report in accordance with O. Reg. 116/01. A Statement of Completion with respect to the EA Act was filed with the Ontario Ministry of Environment and Climate Change (MOECC) in June 2016. An Addendum (#1) to the Environmental Review Report with respect to the off-reserve portion of the Transmission Line was published in August 2016 and was subject to an elevation request in September 2016. This elevation request relates applies to areas of the Transmission Line that are outside any Reserve Lands. HIW is currently in discussions with the Environmental Approval Branch at the MOECC regarding the elevation request.

2.2 ENVIRONMENTAL REGULATORY REQUIREMENTS FOR SHAWANAGA ON-RESERVE TRANSMISSION LINE

The Transmission Line (proposed by HIW to extend from the eastern boundary of the HIFN Reserve Lands) crosses two other Reserve Lands: those of Shawanaga and Magnetawan First Nations. FNLMA gives authority to First Nations to manage Reserve Land, including the authority to pass environmental laws that apply to projects and activities on Reserve Lands. In 2015, Shawanaga First Nation entered into an Individual Agreement with the federal government under the FNLMA. Annex "F" of the Individual Agreement sets out an interim process to be applied until the First Nation enacts environmental assessment laws for any project. This requires Shawanaga First Nation to conduct an assessment process in respect of every project on its Reserve Land that is consistent with either the *Canadian Environmental Assessment Act* (1992) or CEAA 2012. Where a First Nation elects to use a process consistent with CEAA 2012 and a project is not a "designated project" under CEAA 2012, Annex F imposes the following test:

The First Nation shall not carry out the project on First Nation Land, or exercise any power or perform any duty or function conferred on it under the Land Code or a First Nation law that would permit the project to be carried out, in whole or in part, on First Nation Land, unless the Council of the First Nation determines that the carrying out of the project:

- (i) is not likely to cause significant adverse environmental effects as defined in CEAA 2012; or**
- (ii) is likely to cause significant adverse environmental effects and the Council decides that those effects are justified in the circumstances. (The Annex F Test)**

Based on the HIW Review and Environmental Review Report, the present report addresses this Annex F Test.

Transmission Line components that cross Shawanaga Reserve Land also triggered review under the federal *Species at Risk Act, 2002* (SARA) due to the presence of several federally-listed species-at-risk. A SARA application with respect to the portion of the Transmission Line crossing the Shawanaga Reserve Land is currently under review by the Canadian Wildlife Service and a decision is expected in Q3 2017, following the decision on the SARA permit for the HIWEC on HIFN Reserve Land.

3. TRANSMISSION LINE ON SHAWANAGA RESERVE LAND

3.1 ON-RESERVE TRANSMISSION LINE

Described above, the alignment of the Transmission Line through Shawanaga Reserve Land is depicted on **Figure 1**. The specific components and materials that will be used to construct the line are being confirmed through detailed design. The following sections, along with mapping provided in Figures 3A - 3D, provide a conceptual basis of the infrastructure that will likely be located on Shawanaga Reserve Land. All conceptual design information provided herein is subject to change and modification through detailed design.

The Transmission Line preliminary design is proposed as a single circuit, to operate at 230 kV. The conductor used to transmit power along the Transmission Line was planned to be steel reinforced aluminum conductor. Other planned components are as follows:

(a) Transmission Poles

The transmission tower structures were proposed to be 20 to 45 m in height. At the time of the HIW Review, the towers were expected to be steel monopole with options to use alternative structure types such as steel lattice, composite, concrete or wood poles.

It was anticipated that the poles would require a 20 m to 30 m right-of-way (ROW). Since the completion of the Environmental Review Report, the detailed design has revealed that an H-Frame wood pole design will allow for longer distances between tower structures. This design reduces the total number of transmission pole structures required on Reserve Land and also provides greater ability for the pole locations to avoid sensitive environmental features (e.g. wetlands). Thus, HIW expects to use H-Frame poles for the majority of the line.

To construct the H-frame structures, blasting may be required for either 2 or 3 poles (or feet) depending on the structure of the H-frame. To accommodate the H-Frame wood pole design, the transmission ROW will increase from 30 m to 36 m. The HIW Review studied a 50 m wide ROW to allow for flexibility in the design during detailed design.

(b) Access Roads

Construction vehicles will utilize existing roads and access routes as much as possible during construction to gain access to the Transmission Line ROW. Some of the existing access roads may need to be temporarily upgraded (e.g., widened and granular placed) in order to be suitable for use. These access roads will connect to existing local, municipal or provincial roads. All temporary access roads will be designed to minimize the effects on the natural environment, specifically to avoid and mitigate impacts on water resources and wetlands.

Vehicle turn-around areas may be required by the Ministry of Transportation (MTO) at entrances to access roads (for safety reasons, given the hazards associated with live-lane or shoulder turn-around activity of transport and delivery vehicles) from Highway 69 and other roads. Each of these was assumed to require a 15 m by 50 m area adjacent to the access road entrance. Their locations were selected to take advantage of pre-existing

anthropogenic disturbance to avoid additional potential impacts through vegetation removals, to the extent possible. Currently, three (3) temporary access roads and three (3) permanent access roads are being considered on Shawanaga Reserve Land (see Figures 3A - 3D).

(c) Temporary Storage Areas

Temporary storage areas for construction will be established at several locations along the Transmission Line for the temporary storage of construction materials and equipment. It is anticipated that these areas will be areas already disturbed (e.g., previously used commercial land or previously cleared areas near established roads). Currently, five (5) temporary storage areas are being considered on Shawanaga Reserve Land (see Figures 3A - 3D).

(d) Switching Station

A new switching station will be required for the interconnection of the Transmission Line to the existing HONI system. The switching station will be connected to the 230 kV system south of Parry Sound. No switching station infrastructure is proposed on Shawanaga Reserve Land.

3.2 INSTALLATION AND OPERATING ACTIVITIES

PRE-CONSTRUCTION PHASE

1. Site Preparation and Land Clearing:

- (i) Geotechnical sampling
- (ii) Delineation of work area
- (iii) Vegetation clearing
- (iv) Delineation and preparation of temporary work areas

CONSTRUCTION PHASE

1. Construction of access roads and laydown areas:

- (i) Construction of access roads as required (including blasting)
- (ii) Installation of temporary facilities including laydown yards, water crossings

2. Transportation of equipment and material:

- (i) On-site delivery of construction vehicles, equipment, and materials

3. Transmission line installation:

- (i) Installation of transmission infrastructure
- (ii) Temporary water crossings, if necessary

4. Construction completion

- (i) Reclamation of temporary construction areas
 - (ii) Demobilization of construction works
- 5. Power connection and commissioning
- 6. Construction phase mitigation measures and monitoring

OPERATIONS AND MAINTENANCE

- 1. Transmission system, road and crossing repair/maintenance:
 - (i) Preventive and unplanned maintenance of T-Line components (includes accessing such components)
 - (ii) Maintenance of the transmission system (includes accessing such components)
 - (iii) Access road maintenance
 - (iv) Vegetation management
- 2. Mitigation measures and monitoring

DECOMMISSIONING

- 1. Power disconnection and decommissioning of service:
 - (i) Disconnection of transmission system
- 2. Transportation of materials:
 - (i) On-site delivery of decommissioning vehicles and equipment
- 3. Disassembly and removal of transmission system components:
 - (i) Disassembly and removal of transmission infrastructure
- 4. Decommissioning completion:
 - (i) Reclamation of disturbed areas (includes reclamation of access roads)
 - (ii) Demobilization of decommissioning works
 - (iii) Mitigation measures and monitoring

4. METHODOLOGY

4.1 OVERVIEW OF METHODOLOGY

As described in Section 2, the present report relies on information in the HIW Review and the Environmental Review Report to meet all requirements under the Annex F Test.

In addressing the requirements of the Annex F Test, the report relies on the following steps taken in the HIW Review and Environmental Review Report:

1. Determine the location and scale of the Transmission Line and all activities;
2. Identify Valued Components (VCs) including valued social or cultural features on Reserve Land;
3. Complete background data collection and baseline field studies to obtain information on VCs;
4. Consult affected Aboriginal communities;
5. Determine the environmental effects of malfunctions or accidents that may occur, the significance of any such effects, and mitigation measures;
6. Determine the cumulative environmental effects that are likely to arise from the combination of (i) the on-reserve HIWEC, (ii) the off-reserve transmission line, and (iii) other projects and activities that have occurred or are reasonably foreseeable and determine appropriate mitigation measures;
7. Predict the environmental effects of the Transmission Line and propose mitigation measures to address these effects;
8. Determine the significance of the environmental effects which are likely, taking into account proposed mitigation measures; and
9. Provide recommendations for monitoring and follow-up programs.

While the environmental requirements set out in O.Reg. 116/01 include additional steps of considering the alternative routes and determining the overall advantages and disadvantages of the Transmission Line, these steps were not reviewed to prepare the present report.

4.2 CONSULTATION

HIFN and Shawanaga First Nation discussed the Transmission Line informally prior to the start of the HIW Review process in an effort to keep the community aware of the development progress for HIWEC and related infrastructure. These discussions occurred between Chief Wayne McQuabbie of HIFN and Chief Wayne Pamajewon of Shawanaga First Nation.

A teleconference was held on May 25, 2015 between an HIW representative and the Shawanaga First Nation Band Manager and Project Co-ordinator. The teleconference was an opportunity to provide an overview of the Transmission Line and the two (2) Transmission Line routes, as well as to request information on traditional land uses along the routes and potential access to Shawanaga Reserve Land for the environmental studies. Due to sensitive community information, the community offered to use Transmission Line maps to consult with Elders to determine if information could be shared.

Shawanaga First Nation was asked to provide information about projects currently underway or expected in the future on Shawanaga Reserve Land. On July 14, 2015 a meeting was held with the Shawanaga First Nation Chief and Council to provide further details on the Transmission Line, and the crossing of Shawanaga Reserve Land. The meeting included an overview of the Transmission Line, the request for archaeology access, employment opportunities and other projects in the area. A possible working group was discussed between HIFN, Shawanaga First Nation and Magnetawan First Nation. During this meeting Chief Pamajewon stated his general support for the HIWEC and use of Shawanaga Reserve Land for the Transmission Line pending further discussions on accommodation / compensation.

5. EXISTING ENVIRONMENT ON SHAWANAGA RESERVE LAND

5.1 OVERVIEW

Generally, the region surrounding Shawanaga Reserve Land is made-up of a mix of wetland, bedrock, forest, lakes and a network of rivers. Further details are provided in the following subsections. A regional study area considered 1 km on either side of the proposed centreline for aspects such as soil, geological, hydrogeological and socio-economic. Terrestrial ecologists considered a study area for desktop review of 0.5 km from either side of the proposed centreline and ground-truthed approximately 25% of the proposed footprint, while aquatic ecologists ground-truthed 50 m upstream and 50 m downstream of the proposed centreline where it crossed watercourses for field investigations.

5.2 ELEMENTS OF EXISTING NATURAL ENVIRONMENT

A background information review of the terrestrial and aquatic natural heritage features and functions was conducted using a variety of available literature, online biodiversity atlases and mapping tools, previous studies conducted by Stantec Consulting Ltd. and LGL, as well as data provided by Ministry of Natural Resources and Forestry (MNR). Targeted field work was undertaken within the study area on Shawanaga Reserve Land in October 2015.

(a) Physical

The study area within the Shawanaga Reserve Land is located within Ecoregion 5E, the Georgian Bay Ecoregion, which is underlain by bedrock of the Precambrian Shield; land cover in this Ecoregion is largely dominated by mixed, deciduous and coniferous forests (Crins, et al., 2009). This Ecoregion is located within the Great Lakes – St. Lawrence Forest Region, which is composed of a number of boreal tree species including black spruce, white spruce (*Picea glauca*), balsam fir (*Abies balsamea*), Jack pine (*Pinus banksiana*), and tamarack (*Larix laricina*) (Rowe, 1972). For further information on Ecosites and Community Series identified, see **Volume B, Appendix B4**.

(i) Physiography and Topography

The portion of the study area within the Shawanaga Reserve Land lies within the Georgian Bay Fringe physiographic region, which is characterized by a gentle plain that slopes up gradually from the shores of Georgian Bay to the Algonquin Highlands region that runs approximately north-south along its eastern boundary. Steep-walled valleys and bedrock-controlled features are observed to trend in a general east – west direction within the study area and are dictated by the fault and fracture network prevalent in the bedrock. The character of the land surface across the region is dictated by the irregular bedrock surface that underlies a thin, discontinuous blanket of overburden. A map depicting the topography within the study area is provided in **Volume B, Figure 4-2**.

(b) Soil Conditions

(i) Agricultural Viability

Natural Resource Canada (NRCAN) classifies the majority of soils intersected by the Transmission Line within the Shawanaga Reserve Land as class seven (7) soils: determined to have no capability for arable culture or permanent pasture (NRCAN, 2015). Further information on agriculture and soils within the study area are presented in **Volume B, Section 4.5.10**.

(ii) Contaminated Land

A Contaminant Source Inventory (CSI) was completed to identify known and/or potential sources of contamination along the Transmission Line study area. A total of five (5) potential records were identified within the Shawanaga Reserve Land through a background information review (Ecolog, 2015). Four (4) of these were MOECC water well records, and are discussed in **Section 5.2(d)** of this report. One relevant record is a diesel fuel spill of 200 L that occurred at a gas station at the intersection of Shebeshekong Road and Highway 69 in 2003. Another relevant record was found for a diesel fuel spill of 513 L, reported at an unknown location along Highway 69 just south of Shawanaga Reserve Land. All contamination land records are available within the EcoLog Database Reports presented in **Volume B, Appendices B1 and B2**.

(c) Geological Conditions

(i) Bedrock Geology

The study area is situated within the western portion of the Central Gneiss Belt, which comprises the southwestern part of the Grenville Province of the Canadian Shield. The portion of the Transmission Line that transects the Shawanaga Reserve Land is located within the southern portion of the Britt Domain and is comprised of rock assemblages of the Nadeau Island association comprised of metasedimentary rocks (grey leucocratic garnet-biotite paragneiss) and migmatitic rocks (grey leucocratic hornblende-biotite orthogneiss of granodioritic to monzodioritic composition) of Precambrian age. Weakly foliated to gneissic felsic intrusive rocks with local occurrences of pink granite and grey granodiorite occur adjacent to a geological thrust boundary trending in a north-south direction just south of the Shawanaga Reserve Land. A map of the bedrock geology within the study area is available in **Volume B, Figure 4-4**.

(ii) Overburden Geology

Very little overburden is present within the study area, including within the Shawanaga Reserve Land. Exposed, polished bedrock accounts for much of the surficial geology, with the remainder being characterized by organic deposits which have accumulated in low-lying areas and bedrock valleys (OGS, 2003). These areas commonly exhibit poor drainage and associated marsh-like characteristics. According to MOECC water well records, where present, the thickness of the overburden generally is less than about 5 m with slightly thicker accumulations of up to 3 m being found in bedrock hollows, topographic lows and on the lee-side of bedrock knobs in relation to the direction of glacial ice-flow. A map of the surficial geology within the study area is available in **Volume B, Figure 4-6**.

(iii) Seismicity

According to the 2010 Seismic Hazard Map, prepared by the Geological Survey of Canada (GSC, 2015), the Transmission Line study area through the Shawanaga Reserve Land is situated within a low relative seismic hazard area.

(iv) Geological Hazard Lands

Soil erosion is the gradual wearing away of the land surface by water, wind, ice and gravity. The transportation, deposition and accumulation of soil are known as sedimentation. In Transmission Line study area, the seasons in which the heaviest erosion occurs are the spring and fall due to the most intensive rainfall and the most unstable ground condition. Due to the absence of overburden material on topographic highs, minor amounts of sediment are expected to be eroded due to topography. Further details of the potential effects due to geological hazards are available in **Volume B, Section 6.2.8.3**.

(d) Hydrogeological Conditions

(i) Hydrostratigraphy

The exposed bedrock of the Central Gneiss Belt across the region is highly fractured within the upper 10 m to 20 m (Sykes *et al.*, 2009; Ecoplans Limited, 2007), making it an aquifer unit. Within the Shawanaga Reserve Land the pattern of fractures in the bedrock aquifer allows for movement of groundwater, however, this secondary permeability generally decreases with depth. The primary aquifer within the Shawanaga Reserve Land is considered to be the upper fractured bedrock.

(ii) Groundwater Use

An inventory of private water wells (i.e., domestic, commercial, industrial, etc.) was performed within 1 km of the Transmission Line within the Shawanaga Reserve Land, by means of searching the MOECC Water Well Database. Results of the private well inventory are shown in **Figure 2**, along with the primary use of each well.

A total of six (6) water well records were identified within the Shawanaga Reserve Land; four (4) domestic supply wells, one (1) public well and one (1) unknown. According to the Shawanaga First Nation website, the community receives water by truck. A review of the water well records indicates that all of the wells are completed in bedrock and range in depth between about 18 m and 152 m. Details of the hydrological conditions and groundwater use within the entire study area are available in **Volume B, Section 4.3.4**.

(e) Natural

(i) Ecological Land Classification

Ecological Land Classification (ELC) was undertaken to characterize vegetation communities along with a vascular plant inventory. Previous work of this nature was completed by Stantec in 2013; however, it was limited to the east side of Highway 69 along the northern

stretch, which did not fall within the revised alignment of the proposed Transmission Line. This work was undertaken using the MNRFP protocols (Lee, et al., 1998). Aerial photography was first used to delineate the vegetation communities, which were then ground-truthed in the field by AECOM ecologists in October of 2015 within 25% of the study area within the Shawanaga Reserve Land. The vegetation communities identified are presented in **Table 1** and maps of the ELC communities are available in **Volume B, Appendix B4, Figures 3-1.48 through 3-1.51**.

Table 1: Vegetation Communities Within Shawanaga Reserve Land

ELC Code	ELC Name
RBO	Open Rock Barren
RBO3	Blueberry Acidic Shrub Rock Barren
RBT	Treed Rock Barren
FOC	Coniferous Forest
FOM	Mixed Forest
FOM2	Dry – Fresh White Pine-Maple-Oak Mixed Forest
FOM5-2	Dry – Fresh Poplar Mixed Forest
CUM	Cultural Meadow
SWC	Coniferous Swamp
SWD	Deciduous Swamp
SWT	Treed Swamp
FEO1	Open Fen
FES	Shrub Fen
BOT	Treed Bog
MAS	Shallow Marsh
SA	Shallow Aquatic
OAQ	Open Aquatic
SA/MAS	Shallow Aquatic/Shallow Marsh
A	Anthropogenic (human-disturbed)

RES	Residences
-----	------------

(f) Wildlife

(i) Mammals

A review of various wildlife atlases indicated records of the following wildlife for the whole of the Transmission Line study area. These species are also likely to occur within the Shawanaga Reserve Land. Review of the Atlas of the Mammals of Ontario (Dobbyn, 1994) indicated records of 18 mammal species (the full list of mammal species records is available in **Volume B, Appendix B4, section 3.2.1**). Most of these species are common to the area. Four (4) of these species are bats listed as Endangered, which receive protection both provincially and federally, with the exception of the Eastern Small-footed Myotis which only receives provincial protection:

- Northern Myotis (*Myotis septentrionalis*);
- Eastern Small-footed Myotis (*Myotis leibii*);
- Tri-colored Myotis (*Perimyotis subflavus*); and,
- Little Brown Myotis (*Myotis lucifugus*).

Based on this information, HIW carried forward the Northern Myotis, Tri-colored Myotis and Little Brown Bat for permitting under the federal SARA.

A bat cavity tree, suitable for use as a bat hibernaculum, was recorded in October 2015 within the Shawanaga Reserve Land.

(ii) Birds

Review of the Ontario Breeding Bird Atlas (OBBA) indicated that Shawanaga Reserve Land falls within the two (2) 10 km by 10 km mapping squares labelled 17NL53 and 17NL54 (BSC, 2006). Within those squares, 119 bird species have been recorded across a variety of habitats. Some receive protection either provincially, federally, or both, and are further discussed below.

Stantec conducted breeding bird surveys in 2013, locating two (2) point count stations within the Shawanaga Reserve Land; two point counts were conducted at each station and survey dates were generally 18 to 20 days apart, between June 10 and July 4, 2013. Early morning breeding bird surveys consisted of 10-minute point counts and/or transects, depending on the habitat and species being surveyed as well as accessibility of each habitat.

Waterfowl surveys via helicopter were undertaken by AECOM in April and May of 2015, which included flying over the study area within the Shawanaga Reserve Land. Throughout the whole of the Transmission Line study area, observations included:

- Canada Goose (*Branta Canadensis*);
- Mallard (*Anas platyrhynchos*);

- American Black Duck (*Anas rubripes*);
- Wood Duck (*Aix sponsa*);
- Bufflehead (*Bucephala albeola*);
- Ring-necked Duck (*Aythya collaris*);
- Common Merganser (*Mergus merganser*);
- Hooded Merganser (*Lophodytes cucullatus*);
- Great Blue Heron (*Ardea Herodias*);
- Osprey (*Pandion haliaetus*); and,
- Bald Eagle (*Haliaeetus leucocephalus*).

There were no waterfowl observed during the helicopter surveys within the Shawanaga Reserve Land. For more information pertaining to Avifauna within the study area see **Volume B, Appendix B4, Section 3.2.2.**

(iii) Fish

The proposed alignment of the Transmission Line will cross a number of waterbodies of various types including wetlands, ponds, lakes, rivers and streams within the Shawanaga Reserve Land. At any point where the proposed alignment crossed or came in close proximity to any type of waterbody or potential waterbody, that location was assessed by the AECOM Aquatic Ecology team within the Shawanaga Reserve Land. The purpose of the assessments was to identify waterbodies that were or were not suitable fish habitat, and where fish habitat was identified the conditions of the waterbody were documented and described in order to characterize the aquatic environment including fish habitat.

Prior to in-field assessments, a search was conducted to collect and analyse any existing fishery and habitat that exists for the study area. A field crew was dispatched to each location to document the fish habitat features within 100 m of the Transmission Line alignment as well as any construction access road crossings. Field crews documented habitat information for each location, such as:

- Waterbody dimensions;
- Aquatic vegetation;
- Substrate;
- Potential critical fish habitat such as suitable spawning areas for game fish or Species at Risk;
- Evidence of erosion and/or sources of pollution;
- Fish passage barriers; and,
- Photographic record.

Within the boundaries of the Shawanaga Reserve Land, the Transmission Line crosses the Shawanaga River in two places, and crosses three tributaries to the Shawanaga River (**Figures 3A-3D**). One potential construction access trail along the Shawanaga River adjacent to Highway 69 is proposed. The Shawanaga River and its tributaries are known to support a rich community of both bait fish and predatory game fish species such as Walleye (*Sander vitreus*). No recent records of Lake Sturgeon (*Acipenser flvescens*) or other Species at Risk were noted.

Suitable Northern Pike (*Esox lucius*) spawning habitat was observed in a wetland tributary to the Shawanaga River, just south of the Shawanaga River and immediately on the east side of Highway 69. For more information on fish habitat and field investigations within the Shawanaga River watershed see **Volume B, Appendix B6**.

(g) Federal Species at Risk (SAR)

An SARA permit application was submitted to Environment and Climate Change Canada-Canadian Wildlife Service (ECCC-CWS) for the portion of the proposed Transmission Line that falls within the Shawanaga Reserve Land. A total of 17 federally-protected SAR were identified as having suitable habitat within Shawanaga Reserve Land that may be affected by the proposed Transmission Line (NRSI, 2016). These species are summarized below (**Table 2**) and details regarding SAR species records both during previous studies, as well as 2015 field studies see **Volume B, Appendix B4, Section 3.3**.

Table 2: Federal Species At Risk Potentially Occurring Within Shawanaga Reserve Land

Species	Species Observations	Suitable Habitat Present
BIRDS		
Eastern Whip-poor-will (<i>Caprimulgus vociferus</i>)	Not observed during field surveys in 2013 or 2015	Yes (Foraging Habitat; Nesting Habitat; Nesting and Foraging Habitat)
Canada Warbler (<i>Cardellina Canadensis</i>)	One (1) observations in 2013 by Stantec	Yes
Common Nighthawk (<i>Chordeiles minor</i>)	Not observed during field surveys in 2013 or 2015	Yes
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	Not observed during field surveys in 2013 or 2015	Yes
Least Bittern (<i>Ixobrychus exilis</i>)	Not observed during field surveys in 2013 or 2015	Yes
Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	Not observed during field surveys in 2013 or 2015	Yes
Golden-winged Warbler (<i>Vermivora chrysoptera</i>)	Not observed during field surveys in 2013 or 2015	Yes

REPTILES		
Restricted Species	One (1) dead observed in 2013 by Stantec	Yes
Blanding's Turtle (<i>Emydoidea blandingii</i>)	Not observed during field surveys in 2013 or 2015	Yes
Eastern Musk Turtle (<i>Sternotherus odoratus</i>)	Not observed during field surveys in 2013 or 2015	Yes
Eastern Hog-nosed Snake (<i>Heterodon platirhinos</i>)	Not observed during field surveys in 2013 or 2015	Yes (Basking Habitat; Foraging Habitat; Hibernation and Foraging Habitat)
Eastern Foxsnake (Georgian Bay population) (<i>Pantherophis gloydi</i>)	Not observed during field surveys in 2013 or 2015	Yes (Basking and Nesting Habitat; Hibernation Habitat; Hibernation, Mating and Foraging Habitat; Hibernation and Nesting Habitat)
Massasauga Rattlesnake (Great Lakes/St. Lawrence population) (<i>Sistrurus catenatus</i>)	Not observed during field surveys in 2013 or 2015	Yes (Basking Habitat; Basking and Gestation Habitat; Foraging Habitat; Hibernation Habitat)
MAMMALS		
Little Brown Myotis (bat) (<i>Myotis lucifugus</i>)	Not observed during field surveys in 2013 or 2015	Yes (Foraging Habitat; Foraging and Roosting Habitat; Overwintering Habitat; Roosting and Overwintering Habitat)
Northern Myotis (bat) (<i>Myotis septentrionalis</i>)	Not observed during field surveys in 2013 or 2015	Yes (Foraging Habitat; Foraging and Roosting Habitat; Overwintering Habitat; Roosting and Overwintering Habitat)
Tri-colored Bat (<i>Perimyotis subflavus</i>)	Not observed during field surveys in 2013 or 2015	Yes (Foraging Habitat; Foraging and Roosting Habitat; Overwintering Habitat; Roosting and Overwintering Habitat)

PLANTS		
Branched Bartonia (<i>Bartonia paniculata</i>)	Not observed during field surveys in 2013 or 2015	Yes

5.3 SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

Shawanaga First Nation Reserve No. 17 is approximately 30 km northwest of Parry Sound and approximately 150 km southeast of Sudbury (see **Figure 1**). The traditional territory is bordered by the Seguin River to the south, the Magnetawan River to the north and extending to Georgian Bay, and east to the Ottawa valley (Shawanaga First Nation, 2014).

The Statistics Canada Census data for 2006 and 2011 reveal that the reported population grew from 190 on-Reserve members in 2006 to 215 on-Reserve members in 2011. Other details regarding the community population and age characteristics are included in **Volume B, Table 4-19**. Shawanaga First Nation has a village located to the west of the existing Highway 69 with housing supporting an on-Reserve population of 188 (AANDC, 2015). Housing data are provided from the National Housing Survey specifically for the Shawanaga Reserve No. 17 and are shown in **Volume B, Table 4-25**.

The Shawanaga Reserve Land was formed as a result of the Robinson Huron Treaty and a list of existing and concluded claims presented by Shawanaga First Nation within the Transmission Line socio-economic study area is shown in **Volume B, Table 4-27**. Shawanaga First Nation is an Anishinabek community and has Aboriginal and Treaty Rights associated with traditional land uses in the area. Under the Robinson-Huron Treaty, signatory communities were allowed to continue hunting and fishing within the territory, and these rights still extend to lands both on-Reserve and off-Reserve (Crown lands).

5.4 ARCHAEOLOGY

A Stage 1 and a Stage 2 archaeological assessment was undertaken for the Transmission Line, including the portion of which falls within the Shawanaga Reserve Land. The Stage 1 background research found that there was high potential for pre-contact First Nation and Euro-Canadian archaeological resources to be present based on the proximity of watercourses, well-drained soil suitable for agriculture, and historic transportation routes. The Stage 1 archaeological assessment recommended that Stage 2 field investigation be conducted within the Shawanaga Reserve Land. The Stage 1 archaeological assessment report is part of the Environmental Review Report and was submitted to the Ministry of Transportation, Culture and Sport (MTCS) and was accepted into the provincial register of archaeological reports. It is available in **Volume B, Appendix B8**.

The Stage 2 archaeological assessment was conducted by the standard archaeological test pit survey method. The assessment did not result in the identification of any archaeological sites or material. No further archaeological work was recommended and the area that was assessed is considered free of archaeological concerns. The Stage 2 archaeological assessment report was submitted to the MTCS and was accepted into the provincial register of archaeological reports.

6. POTENTIAL EFFECTS, MITIGATION AND NET EFFECTS ASSESSMENT

6.1 OVERVIEW OF THE EFFECTS ASSESSMENT

The assessment of environmental effects was conducted using steps detailed in the table below (**Table 3**).

Table 3: Effects Assessment Steps and Volume B References

Effects Assessment Steps	Section in Volume B for More Information
1. Identification of the potential environmental effects and the cause of the effects	Section 6.2 (pages 128 to 159)
2. Recommendation of mitigation measures to avoid or reduce the potential environmental effects	Section 6.3 (pages 159 to 182)
3. Prediction of net environmental effects	Section 6.3 (pages 159 to 182)
4. Characterization of the net environmental effects	Section 6.4 (pages 183 to 191)
5. Evaluation of the significance of the net environmental effects	Section 6.4 (pages 183 to 191)
6. Recommendations for monitoring to ensure the effectiveness of mitigation	Section 8 (pages 198 to 201)

6.2 POTENTIAL EFFECTS AND MITIGATION MEASURES ON SHAWANAGA RESERVE LAND

The potential effects and proposed mitigation measures associated with the Transmission Line are described in **Volume B, Table 6-2** (construction and decommissioning) and **Table 6-3** (operations) of the Environmental Review Report. The results of the potential effects assessment, as presented in **Volume B**, are provided below for the VCs considered to be most relevant to Shawanaga First Nation. **Figures 3A to 3D** indicate where Transmission Line components may interact with the existing environment.

(a) Key Mitigation Measures

HIW is committed to implementing mitigation measures to address the potential adverse effects as a result of construction, operations and decommissioning of the Transmission Line. Key mitigation measures¹ that will be implemented are listed below. For more information about mitigation measures, refer to **Volume B, Table 6-2** and **Table 6-3** of the Environmental Review Report.

¹ The mitigation measures presented were proposed in the Environmental Review Report; however these represent minimum mitigation measures: additional mitigation measures for wildlife species at risk are being developed during the permitting process

- Follow Best Management Practices (BMPs) for the following:
 - The prevention of erosion, sedimentation and soil compaction;
 - The avoidance of soil contamination;
 - The avoidance of disturbance and possible mortality to wildlife due to vegetation clearing;
 - Equipment use;
 - Dewatering and discharge water to prevent changes to groundwater and surface water; and,
 - The maintenance of current drainage patterns;
- Undertake waste management in accordance with relevant provincial guidelines and standards;
- Ensure that concrete in construction is used in accordance with relevant provincial guidelines and standards;
- Notify land owners in the event contaminated properties are encountered;
- Reduce blasting footprint to the extent possible and undertake blasting operations in accordance with relevant federal guidelines and standards on land under federal jurisdiction;
- Avoid blasting to the extent possible within SAR habitat and ensure it does not occur until all vegetation has been removed;
- Ensure qualified environmental monitors are present during construction activities (e.g., vegetation clearing) to search areas prior to construction activities proceeding and ensure no SAR are present (e.g., prior to vegetation clearing, blasting, etc.);
- Limit vegetation removal to the Construction Footprint, which will be clearly defined, and minimize vegetation removal as much as possible;
- Ensure that vegetation removal occurs outside of sensitive wildlife and SAR timing windows with their associated habitats;
- Develop and implement a Sighting Response Protocol which will include an immediate stop in construction activity within 10m of a SAR sighting until a qualified biologist can confirm the species has left the area;
- For animals in immediate danger, implement handling protocols for the proper personnel (i.e., construction monitor, qualified biologist) to move the animal to a safe location. All SAR handling permits will be acquired prior to handling SAR;
- If active bird or turtle nests or active bat maternity roosts are found, implement a buffer area and ensure that no activity will occur therein until the nest/roost is cleared;
- Install and maintain construction fencing to clearly define the construction disturbance area and prevent accidental damage to vegetation and mortality to wildlife;
- Avoid vegetation removal within sensitive timing windows to the extent possible;
- Initiate rehabilitation within all temporary construction / decommissioning areas as appropriate to the type of habitat that was removed;
- Ensure that Environmental Monitors are present during all construction activities;
- Provide Wildlife Awareness training to all maintenance/operations, site inspection and monitoring staff;
- Design water crossings and culverts to support fish habitat and fish passage, and to accommodate high and low flows of the waterbody;
- Time in-water work to avoid sensitive life stages of fish species for waterbodies, as per timing windows according to thermal regimes;
- Limit duration of dewatering to as short a time frame as possible;
- Ensure that no direct discharge to any surface water feature will occur without acquiring applicable approvals;

- If dewatering of tower foundations is required, and expected to exceed 50,000L/day, develop and implement a construction Dewatering Discharge Plan describing appropriate areas and methods for discharge in consultation with MOECC and prescribed in any provincially approved permits;
- Implement groundwater infiltration techniques to the maximum extent possible;
- Complete a pre-blast survey for all water wells likely to be affected by ground vibration and those within a minimum of 100 m of the location where such activities (i.e. blasting) will occur;
- In the event an impact to a private water well due to blasting is detected provide the well owner with a potable supply of water and maintain the supply until water quality conditions are comparable to baseline conditions. In the event water quality does not recover to baseline conditions, modify the impacted well (i.e. deepened) or construct a new well that is sufficient to provide the resident with a potable supply of water similar in quantity and quality of baseline conditions;
- Avoid construction within hazard lands to the extent possible;
- If noise or air quality complaints arise, develop and maintain a reporting log, respond to complaint in a timely fashion and mitigate accordingly;
- Ensure that noise emissions from construction equipment do not exceed guidelines specified in MOECC publication NPC-115;
- Minimize clearing widths for access roads, infrastructure and storage and laydown areas;
- Communicate with First Nations regulatory authority when maintenance activities are scheduled to occur on Reserve Land;
- Ensure that maintenance, inspection and monitoring personnel work within Transmission Line ROW and appropriate access roads only, as to limit the working footprint to the existing disturbance;
- Should artifacts be encountered, halt all work in the vicinity of the discovery until the site can be reviewed and cleared by a licensed archaeologist;
- If human remains are found, notify police immediately and halt all work in the vicinity of the remains. The archaeologists will assist by determining if the remains are in fact human, and will work with the police to determine if the area is a forensic or archaeological situation. If it is considered forensic the police will have control of the area, if it is considered archaeological the Cemeteries Registrar at the Ontario Ministry of Consumer Services will be contacted and the standard procedure for dealing with human remains will be followed; and
- Excavate and document any archaeological features or artifacts that are found as per the MTCS' 2011 Standards and Guidelines for Consultant Archaeologists.

In addition, an Environmental Protection Plan (EPP) will be prepared and implemented for the Transmission Line. The EPP will outline mitigation measures that will be implemented to avoid or reduce potential environmental effects during construction/decommissioning of the Transmission Line as detailed in the Environmental Review Report. Among other plans, it includes the following management plans:

- Traffic Management Plan;
- Spill Prevention and Response Plan;
- Blasting Plan;
- Rehabilitation Plan;
- Erosion and Sediment Control Plan;

- Construction Dewatering and Discharge Plan (if required);
- Wildlife Management Plan;
- SAR Management Plan; and,
- Archaeology and Cultural Resources Management Plan.

The contractor's environmental manager/inspector will be responsible for implementing the EPP and will work with other resource specialists (e.g., licensed archaeologists, qualified biologists) where needed during construction/decommissioning environmental protection programs (i.e., construction and post-construction monitoring and reclamation).

6.3 NET EFFECTS AND DETERMINATION OF SIGNIFICANCE

Net effects are those environmental effects that are likely to occur, even after proposed mitigation measures are in place. The following criteria were used to assess the significance of net adverse environmental effects:

- Magnitude: is the effect inconsequential, minor, moderate, or major?
- Spatial Extent: is the effect confined to a small area around a physical work or activity, a larger area within property boundaries, an area beyond property boundaries but confined to Crown land, or a larger area?
- Duration and Frequency: is the effect short-term, medium-term, or long-term? Infrequent, frequent, or continuous?
- Permanence: is the effect reversible?
- Context: is the effect upon a common feature or a sensitive feature?

Significance is determined by professionals/specialists with extensive experience in their respective fields (e.g. SAR). Disciplinary specialists rely on experience from similar projects and utilize a combination of professional judgement and the quantitative results of studies conducted through the review process to reach a conclusion of significance for each net effect. Specialists first define for the degree of effect under each criterion (i.e. minor, moderate or major) that will be used to reach a conclusion for each criterion (**Table 4**). Specialists then determine the overall significance of each net effect by weighing the five criteria using professional judgement to assess the importance of each criterion. Specialists consider the likelihood of the effect occurring to reach a final determination of significance. Only likely net adverse effects are advanced for an assessment of significance, whereas positive effects are not carried forward for further consideration.

Table 4: Net Effects Significance Criteria and Levels

Net Effects Criteria	Effects Level Definition		
	<i>Minor</i>	<i>Moderate</i>	<i>Major</i>
Magnitude	Effect is inconsequential or is a minor change	Effect exceeds existing conditions, but is less than federal or provincial	Effect exceeds federal or provincial regulatory criteria

Table 4: Net Effects Significance Criteria and Levels

Net Effects Criteria	Effects Level Definition		
	<i>Minor</i>	<i>Moderate</i>	<i>Major</i>
	compared to existing conditions.	regulatory criteria or published guideline values.	or published guideline values.
Spatial Extent	Effect is within the study area.	Effect is outside of the Transmission Line study area as defined for each VC.	Regional effect.
Duration and Frequency	Effect is evident only during one project phase and occurs infrequently for short durations.	Effect is evident during more than one project phase and occurs infrequently or frequently for short durations.	Effect is evident during more than one project phase and occurs frequently for long durations or continuously.
Permanence	Effect is readily reversible over a short period of time (e.g., one (1) growing season).	Effect is not readily reversible during the life of the Transmission Line.	Effect is permanent.
Context	Effect is on a common feature.	Effect is on a moderately common feature.	Effect is on a feature that is not common.

Based on the criteria in **Table 4**, the HIW Review must identify one (1) of the following conclusions for each adverse environmental effect:

1. Without any mitigation, the effect is not significant;
2. After applying identified mitigation, the effect is not significant;
3. After applying identified mitigation, the effect is significant; or
4. The significance of the effect is uncertain.

In addressing conclusions (1) to (3), the standard is not certainty, but likelihood. The Environmental Review Report addresses the uncertainty of any adverse effect consistent with the

precautionary principle². The MOECC's Guide to Environmental Assessment Requirements for Electricity Projects defines net effects as negative environmental effects of a project and related activities that will remain after mitigation and impact management measures have been applied. Likely adverse net effects were evaluated against criteria outlined in **Table 3-2** (page 20) in the Environmental Review Report. An assessed determination of low, moderate or high for each criterion is included in **Table 6-4** (pages 184-188) and **Table 6-5** (pages 189-191) in the Environmental Review Report, along with an overall statement of significance for each potential adverse net effect.

Consistent with the findings set out in the Environmental Review Report, the present report confirms that, with the application of proposed mitigation measures, there are no likely significant adverse (net) environmental effects as a result of the Transmission Line (including with respect to federal SAR).

The results of the net effects assessment, as presented in the Environmental Review Report, are provided below for the VCs considered to be relevant to Shawanaga First Nation. For more information about the mitigation measures, the characterization of the net effects and the monitoring, refer to **Table 6-4** and **Table 6-5** in the Environmental Review Report.

(a) Net Effects During Construction/Decommissioning

(i) Soils, Sedimentation and Erosion

Reduction and disturbance of soil due to erosion, mixing of topsoil and subsoil, the accidental release of contaminants (if it occurs), compaction and removal will be confined to designated construction areas. Affected areas will be restored through the application of imported clean topsoil or the effective application of stockpiled topsoil.

After applying identified mitigation, the effects are not significant.

(ii) Contaminated Lands

Reduction in soil quality due to accidental release of contaminants would be minimized following effective mitigation; however, a minor reduction in soil quality may remain should all of the contaminant not be able to be physically removed. Remediation of existing contaminated land will have a positive net effect on contaminated lands following effective remediation.

After applying identified mitigation, the effect is not significant.

². "Precautionary principle" means where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

(iii) Wildlife (including Birds) and Wildlife Habitat

An estimated 7.5 ha of previously undisturbed wildlife habitat will be removed from within the Shawanaga Reserve Land for the Transmission Line development. There is no critical habitat within the study area or regionally, and permanent habitat removal and fragmentation will be localized to the Transmission Line footprint. A number of areas will be rehabilitated after decommissioning. Some permanent loss of habitat is not anticipated to reduce habitat availability beyond a level capable of sustaining wildlife populations, including Species of Conservation Concern (SOCC), in the study area and regionally.

Given the proposed mitigation, mortality risk to wildlife will not likely affect the viability and sustainability of populations of SOCC or other wildlife within the study area and regionally.

Change in wildlife behaviour is also anticipated to be of a short duration given the proposed mitigation, which will not likely affect the viability and sustainability of populations of SOCC or other wildlife within the study area and regionally.

After applying identified mitigation, monitoring and follow-up, the effect is not significant.

(iv) Vegetation and Ecological Communities, Wetlands and Protected Areas

An estimated 7.5 ha of previously undisturbed vegetation will be removed from within the Shawanaga Reserve Land for the Transmission Line development. Vegetation covers the entire study area and permanent vegetation removal and fragmentation will be localized to the Transmission Line footprint (7.2 ha). A number of areas will be rehabilitated after decommissioning. However, vegetation loss will result in some permanent loss of vegetation which is not anticipated to reduce community diversity beyond the construction footprint.

Changes in species diversity are anticipated to be minimal during construction and decommissioning, and limited to the footprint. Some change in species diversity is reversible over time, although changes it will likely continue into the operation phase.

After applying identified mitigation, the effect is not significant.

(v) Species at Risk (SAR)

Some SAR habitat will be removed during construction and there is an increased risk of mortality to SAR. However, any SAR habitat within the study area is not critical habitat and disturbance effects to SAR will be minimized by implementing mitigation measures.

As determined through the SARA permit application process completed to date, SAR and their habitats are anticipated to be sufficiently and conservatively protected from adverse effects provided that the mitigation measures recommended are implemented. Adverse effects on habitat and residences will be avoided, reduced or controlled, such that the proposed activities are not anticipated to jeopardize the survival or recovery of any SAR.

Through development of the SARA permit application, commitments to monitoring efforts during construction activities have been identified, such as monitoring during vegetation removal to avoid SAR mortality, restricting public access, and maintaining a SAR observation log, etc. These will be confirmed through ongoing consultation with ECCC-CWS.

After applying identified mitigation, the effect is not significant.

(vi) Fish and Fish Habitat and Aquatic Species

Effects related to water crossing installation and erosion and sedimentation will be temporary and minor. There is a low probability of spills of contaminants and limited magnitude of effects on surface water quality. Minor leaks or spills may occur but are unlikely to affect fish and fish habitat. The application of mitigation and spill response measures is expected to avoid most of the net effects.

With the implementation of mitigation and spill response measures, effects on fish and aquatic species mortality and habitat can be minimized. Effects will be short term and localized provided in-water work is completed outside of sensitive fish timing windows.

The development and implementation of a flood and high water monitoring and contingency response plan as part of the Erosion and Sedimentation Control Plan will also minimize effects.

After applying identified mitigation, the effect is not significant.

(vii) Surface Water

There is a low probability of spills and erosion and limited magnitude of effects on surface water quality. Minor leaks or spills may occur but are highly unlikely to affect surface water quality. The application of mitigation and spill response measures are expected to avoid most net effects.

After applying identified mitigation, the effect is not significant.

(viii) Groundwater

Effects to groundwater and private water wells due to blasting will be confined to an area around blasting locations, which is predicted to be a small area relative to the Transmission Line study area. The effects of blasting will occur for a short duration or until contingency measures are applied (i.e. provide well owner with alternative source of water).

A reduction in groundwater quality due to the accidental release of contaminants would be localized and is highly unlikely to occur during the construction and decommissioning period. Effects to groundwater quality may extend beyond the Transmission Line study area and the extent of contamination is dependent on local groundwater flow patterns.

After applying identified mitigation, the effect is not significant.

(ix) Hazard Lands

Slope and rock instability resulting in rock falls is common within the Transmission Line study area. The effects from blasting will be localized and occur for short durations intermittently throughout the construction period. Slope instability can be mitigated through the application of slope stability techniques.

After applying identified mitigation, the effect is not significant.

(x) Air Quality

Effects on air quality will be temporary in nature and minor in duration, frequency and geographic extent.

After applying identified mitigation, the effect is not significant.

(xi) Traffic

After mitigation measures are applied it is anticipated that there will be some traffic delays on highways and regional roads intermittently throughout construction and decommissioning phases.

After applying identified mitigation, the effect is not significant.

(xii) Forestry Resources

Mitigation measures will minimize effects on forestry resources; however, loss of some harvestable forest resources will remain.

After applying identified mitigation, the effect is not significant.

(xiii) Game and Fishery Resources

Mitigation measures will minimize effects on game and fishery resources; however, a decline in available game resources may remain.

After applying identified mitigation, the effect is not significant.

(xiv) Aboriginal Land Use and Resources; Neighbourhood and Community Character

Disturbance to current residents and land users can be partially mitigated through standard mitigation measures for construction noise effects; however some intermittent disturbance will remain through the construction and decommissioning phases, and a small decline in available lands used for Aboriginal traditional activities may remain.

After applying identified mitigation, the effect is not significant.

(xv) Archaeological Resources

No effects on archaeological resources are anticipated.

(b) Net Effects during Operations

(i) Contaminated Lands

A reduction in soil quality due to the accidental release of contaminants would be localized and occur infrequently during the operation period. Effects to soil quality would be confined to designated work areas and localized to a small area where the spill occurred. Effects to soil quality can be easily remediated and soil quality restored to conditions similar to baseline.

After applying identified mitigation, the effect is not significant.

(ii) Wildlife and Wildlife Habitat

Existing wildlife (including common wildlife and SOCC) is abundant within the study area. Given the proposed mitigation, mortality risk is anticipated to be low and will not likely affect the viability and sustainability of populations of SOCC or other wildlife species within the study area, including within the Shawanaga Reserve Land, and regionally.

After applying identified mitigation, the effect is not significant.

(iii) Vegetation and Ecological Communities

Changes in species diversity are anticipated to be minor during operations given the mitigation measures to be implemented. The net effect is limited to the footprint and is reversible as species assemblages will likely re-establish for some communities over time through natural succession of vegetation. Changes in community diversity during operations are anticipated to occur on common features; however, they are readily reversible upon decommissioning.

After applying identified mitigation, the effect is not significant.

(iv) Species at Risk (SAR)

There is potential for some mortality during infrequent Transmission Line maintenance activities, including on portions of the Transmission Line through Shawanaga Reserve Land. Disturbance effects to SAR and SAR habitat alteration are not anticipated to affect the viability and sustainability of populations within the study area or regionally.

As determined through the SARA permit application process completed to date, SAR and their habitats are anticipated to be sufficiently and conservatively protected from adverse effects provided that the mitigation measures recommended are implemented. Adverse effects on habitat and residences will be avoided, reduced or controlled, such that the proposed activities are not anticipated to jeopardize the survival or recovery of any SAR.

Through development of the SARA permit application, commitments to monitoring efforts during operational activities have been identified, such as monitoring during vegetation trimming to avoid SAR mortality, restricting public access, and maintaining a SAR observation log, etc. These will be confirmed through ongoing consultation with ECCC-CWS.

After applying identified mitigation,² the effect is not significant.

(v) Groundwater

The reduction in groundwater quality due to the accidental release of contaminants is unlikely to occur during the operation period. Effects will be temporary in nature and minor in duration and frequency and geographic extent.

After applying identified mitigation, the effect is not significant.

(vi) Fish and Fish Habitat, and Aquatic Species

There is a low probability of spills of contaminants and limited magnitude of effects on surface water quality. Minor leaks or spills may occur; however, the application of mitigation and spill response measures are expected to prevent most effects. Obstruction of fish passage through blocked water crossings on access roads, and during crossing structure replacement or repair will be minimized by proper culvert sizing and regular maintenance. The effects on fish and fish habitat, and rare aquatic species will be limited in magnitude, geographic extent and duration, and are reversible.

After applying the identified mitigation, the effect is not significant.

(vii) Surface Water

There is a low probability of spills of contaminants and limited magnitude of effects on surface water quality. Minor leaks or spills may occur. The application of mitigation and spill response measures are expected to prevent most effects.

After applying the identified mitigation, the effect is not significant.

(viii) Forestry Resources

After mitigation is applied, sustainable forest license holders may experience access restrictions to their silviculture plots due to the presence of Transmission Line infrastructure.

After applying identified mitigation, the effect is not significant.

² Mitigation is the elimination, reduction, or control of any adverse environmental effect which can also include restitution for any damage caused by such effects through replacement, restoration, compensation, or other means (AECOM, 2015).

(ix) Aboriginal Land Use and Resources

Disturbance to users of Traditional Lands can be partially mitigated through standard mitigation measures for operation noise effects; however, some intermittent disturbance will remain through the operation phase. Change in the available lands used for Aboriginal traditional activities and cultural sites will be minimized through mitigation measures; however, some loss of lands will remain.

After applying identified mitigation, the effect is not significant.

7. OVERLAPPING AND CUMULATIVE EFFECTS

7.1 OVERLAPPING EFFECTS

Overlapping effects are effects that could result from the HIWEC and Transmission Line together. Overlapping effects are defined as the combined residual environmental effects of both the HIWEC and Transmission Line.

The proposed mitigation measures for the HIWEC and Transmission Line were reviewed to determine their suitability, and where required, additional mitigation to address potential adverse overlapping environmental effects were proposed.

After applying identified mitigation, monitoring and follow-up, it has been determined that the overlapping effects are not significant.

7.2 CUMULATIVE EFFECTS ON-RESERVE

Cumulative effects are changes to the environment caused by the residual effects from a project, combined with residual effects from other past, present and future projects. The cumulative effects for this assessment included those from the HIWEC and Transmission Line along with those from forest management activities within the French-Severn Forest (Forest License Holder) and the widening and improvement of Highway 69 (MTO). There are no other projects proposed on the Shawanaga Reserve Land. Therefore, all potential effects are off-Reserve.

The cumulative effects assessment was based on residual / net effects to VECs as identified in the environmental assessment conducted for HIWEC on HIFN and in **Volume B**, considering heritage resources and other components related to the Transmission Line combined with residual / net effects of other projects and activities (as mentioned above) that have occurred or are reasonably foreseeable. The significance of these residual and cumulative effects was determined based on project phases including pre-construction, construction, operation and decommissioning.

The proposed mitigation measures for the Transmission Line in **Volume B** were reviewed to determine their suitability, and where required, additional mitigation to address potential adverse cumulative environmental effects were proposed.

After applying the identified mitigation measures for the Transmission Line, HIWEC and other projects / activities, it has been determined that the cumulative effects are not significant.

For a more detailed understanding of how cumulative effects were assessed, which effects were determined, which mitigation measures were proposed and the residual cumulative effects, see Section 3 of *Volume C: Overlapping and Cumulative Effects Assessment* (**Volume C**).

8. CONCLUSION OF ENVIRONMENTAL REVIEW REGARDING SHAWANAGA RESERVE LAND

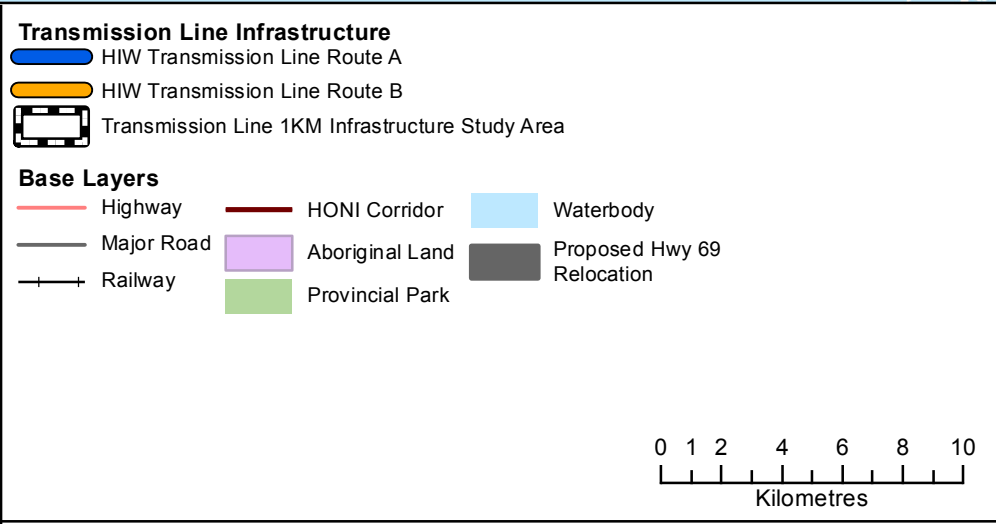
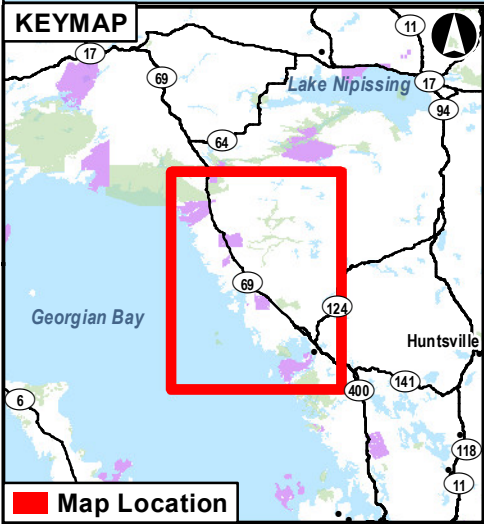
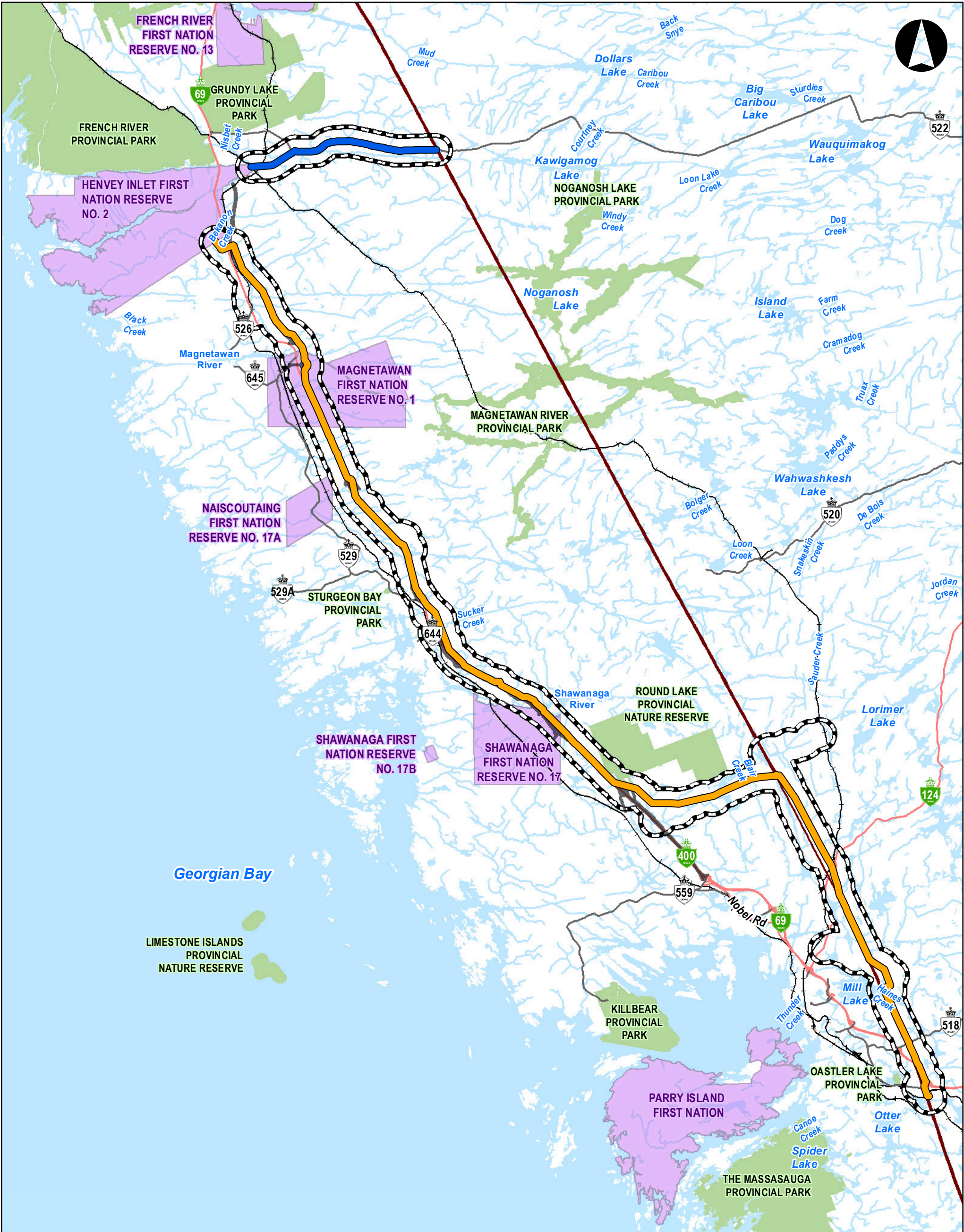
8.1 DETERMINATION UNDER ANNEX F TEST

Based on the requirements of Annex F, the information provided in the Environmental Review Report, and the additional review described in this report regarding the Transmission Line to be located on Shawanaga Reserve Land, it is concluded that this on-Reserve Transmission Line is not likely to cause significant adverse environmental effects on Shawanaga Reserve Land provided the identified mitigation measures are implemented during the pre-construction, construction, operations and decommissioning phases. The environmental effects related to cumulative effects and accidents and malfunctions were also found not likely to cause significant adverse environmental effects (as defined in CEAA 2012), both on and off Shawanaga Reserve Land.

9. REFERENCES


- Aboriginal Affairs and Northern Development Canada (AANDC), 2013:
Land Management. Accessed March, 2015. Available: <https://www.aadnc-aandc.gc.ca/eng/1100100034737/1100100034738>.
- Aboriginal Affairs and Northern Development Canada (AANDC), 2015:
Shawanaga First Nation Profile. http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/FNMain.aspx?BAND_NUMBER=137&lang=eng.
- AECOM, 2015:
Volume B: Henvey Inlet Wind – Transmission Line Environmental Review Report.
Available at: <http://henveyinletwind.com/documents/>.
- Bird Studies Canada (BSC), 2006:
Ontario Breeding Bird Atlas. Environment Canada's Canadian Wildlife Service, Ontario Nature, Ontario Field Ornithologists and Ontario Ministry of Natural Resources.
Available: <http://www.birdsontario.org/atlas/index.jsp>. [Accessed January 26, 2015].
- Crins, W.J., P. A. Gray, P.W.C. Uhlig, and M. C. Wester, 2009:
The Ecosystems of Ontario, Part I: Ecozones and Ecoregions. Ontario Ministry of Natural Resources, Peterborough Ontario, Inventory, Monitoring and Assessment, SIB TER IMA TR- 01, 71pp.
- Dobbyn, J.S., 1994:
Atlas of the Mammals of Ontario. Federation of Ontario Naturalists.
- Ecolog ERIS Ltd. 2015:
Environmental Risk Information. Transmission Line B. Order #20150428065.
http://henveyinletwind.com/files/8914/4358/7647/B-Appendix_B2_Route_B_Contaminated_Land.pdf .
- Ecoplans Limited, 2007:
Groundwater Study: Highway 69 Four-Laning From North of Nobel to Highway 522.G.W.P.5377-02-00 (North Section), 21 pp.
- Geological Survey of Canada (GSC), 2015:
2010 National Building Code of Canada Seismic Hazard Calculator. Natural Resources Canada. http://www.earthquakescanada.nrcan.gc.ca/hazard-alea/interpolat/index_2010-eng.php. Accessed February 3, 2015.
- Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles and M. Puddister, et al., 1998:
Ecological Land Classification for Southern Ontario: First Approximation and Its Application. Ontario Ministry of Natural Resources, Southern Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.
- Natural Resources Canada (NRCAN), 2015:
Accessed September 2015. Available: <http://geogratis.gc.ca/api/en/nrcan-rncan/ess-sst/47757a3e-9eb6-5279-a0b8-faff7a87c759.html>.

- Natural Resource Solutions Inc. (NRSI), 2017:
Henvey Inlet Transmission Line Species at Risk Report (Confidential).
- Ontario Breeding Bird Atlas / auth. BSC. - Ontario : Environment Canada's Canadian Wildlife Service, Ontario Nature Field Ornithologists and Ontario Ministry of Natural Resources, 2006.
- Ontario Geological Survey (OGS), 2003:
Surficial Geology of Southern Ontario. Ontario Geological Survey, MRD128.
- Ontario Ministry of Natural Resources and Forestry (MNRF), 2000:
Significant Wildlife Habitat Technical Guide. 151p.
- Riebeek, H., 2007:
Global Warming. NASA Earth Observatory. Accessed September 2015. Available:
https://earthobservatory.nasa.gov/Features/GlobalWarming/global_warming_2007.pdf
- Rowe, J.S., 1972:
Forest Regions of Canada. Department of the Environment, Canadian Forestry Service. Publication No. 1300. Significant Wildlife Habitat Technical Guide [Book] / auth. MNRF. - Peterborough : Ontario Ministry of Natural Resources and Forestry, 2000.
- Sykes, J.F., S.D. Normani, M.R. Jensen and E.A. Sudicky, 2009:
An Assessment of the Groundwater Resources of Northern Ontario; Areas draining into Hudson Regional Scale Groundwater Flow in a Canadian Shield Setting. *Canadian Geotechnical Journal*, vol. 46, P. 813-827.

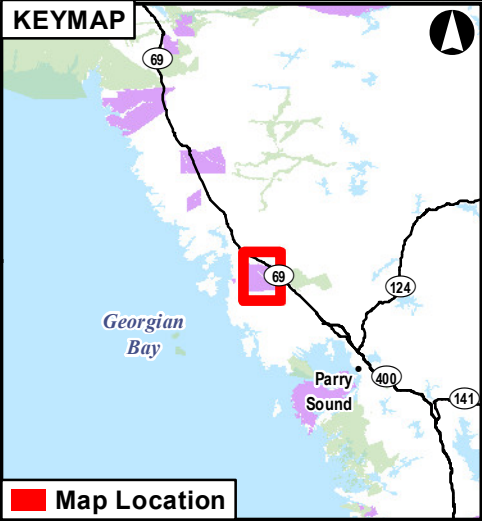
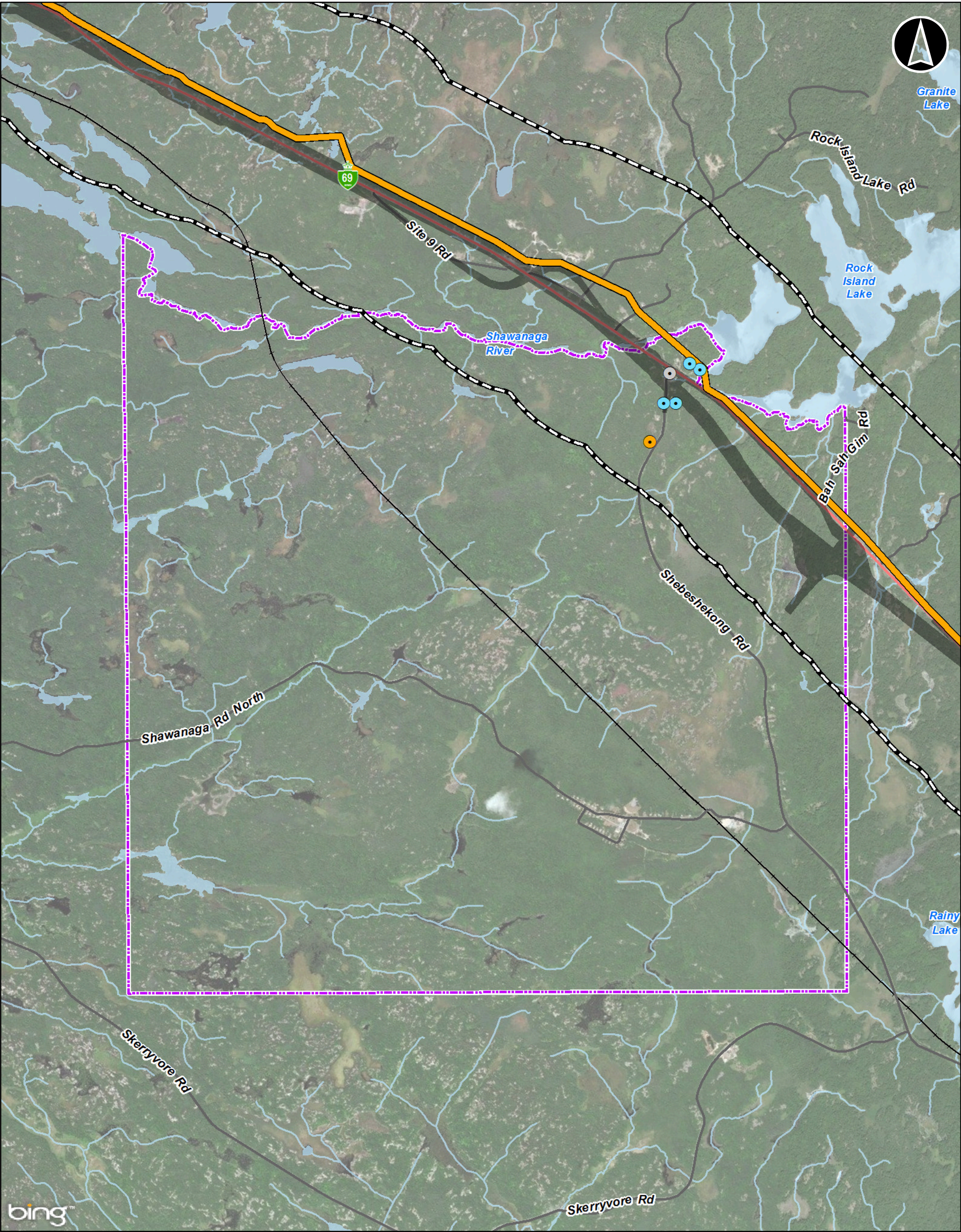


Henvey Inlet Wind Transmission Line on Shawanaga and Magnetawan First Nation Overview Determination of Environmental Effects

Henvey Inlet Wind Transmission Line Overview

Jun, 2017	1:250,000	Datum: NAD 83, Zone 17 Source: AECOM, MMAH, MNRF
P#: 60341251	V#: 01	
Figure 1		

This drawing has been prepared for the use of AECOM's client and may not be used, reproduced or relied upon by third parties, except as agreed by AECOM and its client, as required by law or for use by governmental reviewing agencies. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that modifies this drawing without AECOM's express written consent.



Legend

- HIW Transmission Line Route B
- HIW Transmission Line Route B 1 KM Infrastructure Study Area

Base Layers

- Proposed Hwy 69 Relocation
- Highway
- Road
- Railway
- Shawanaga First Nation Reserve No. 17
- Provincial Park
- Waterbody

Water Wells within First Nations Territory

- Unknown
- Public
- Domestic

Aerial Imagery Source: © 2017 DigitalGlobe Image courtesy of USGS Earthstar Geographics SIO © 2017 Microsoft Corporation

0 250 500 1,000 1,500
Metres

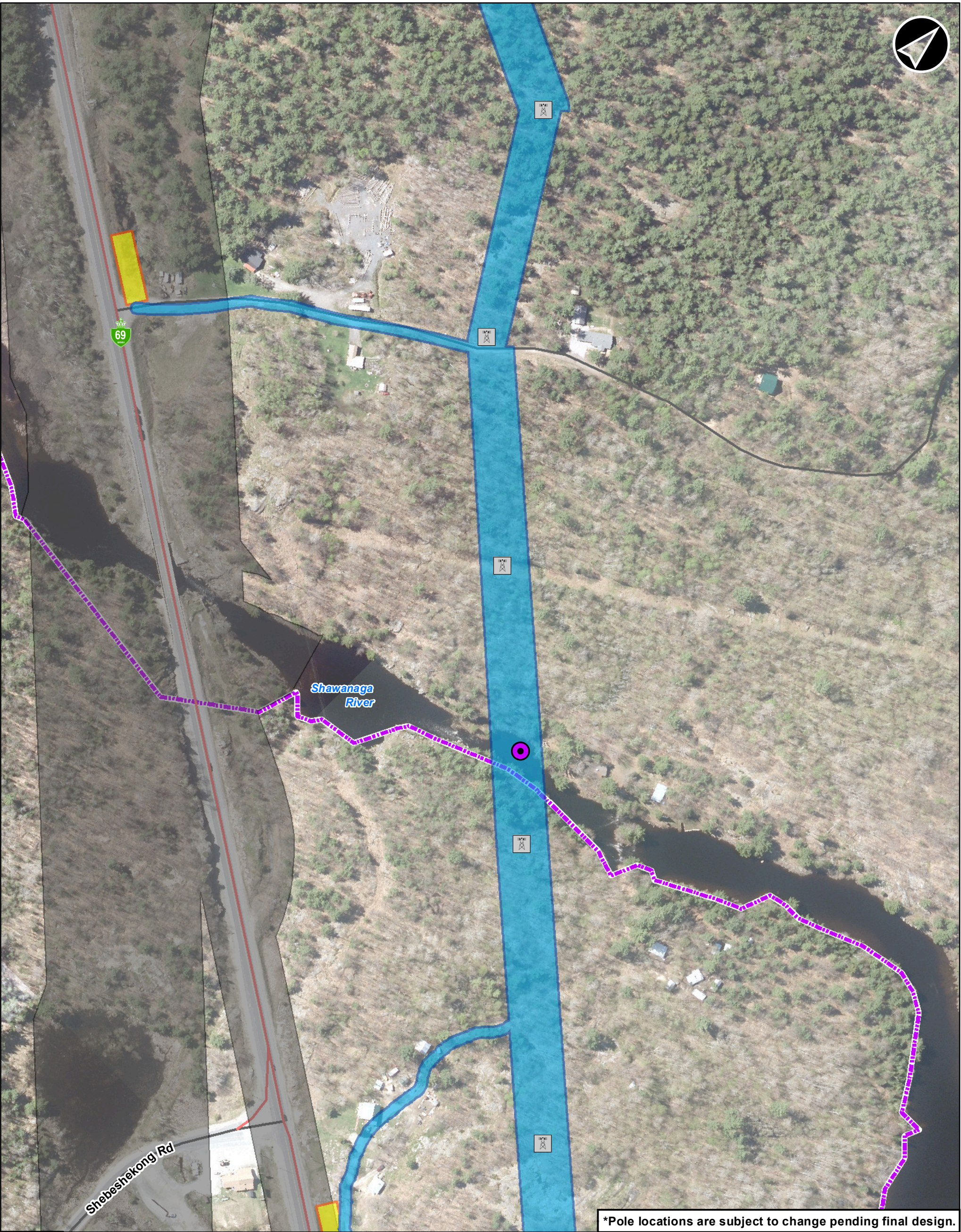
Henvey Inlet Wind Transmission Line on Shawanaga First Nation Overview

Determination of Environmental Effects

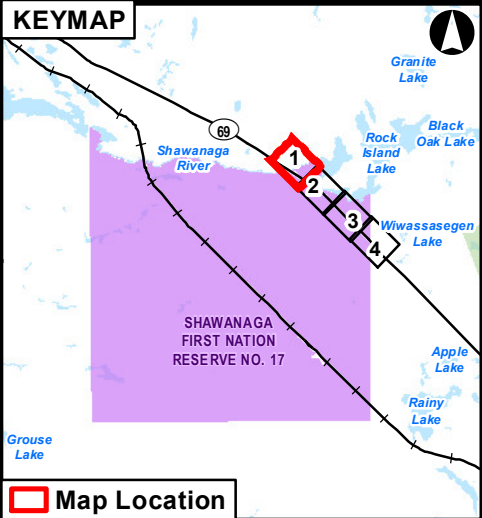
Henvey Inlet Wind Transmission Line Potential Impacts to Shawanaga First Nation Reserve Water Wells

Jun, 2017	1:30,000	Datum: NAD 83, Zone 17 Source: AECOM, MMAH, MNRF
P#: 60341251	V#: 01	
Figure 2		

This drawing has been prepared for the use of AECOM's client and may not be used, reproduced or relied upon by third parties, except as agreed by AECOM and its client, as required by law or for use by governmental reviewing agencies. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that modifies this drawing without AECOM's express written consent.



*Pole locations are subject to change pending final design.



Permanent Disturbance Areas

Permanent Disturbance Areas Include:

Transmission Line Right-of-Way

Pole Footings

Permanent Access Routes

Base Layers

Permanent Watercourse Crossing

Temporary Watercourse Crossing

E. Massassauga Rattlesnake Observation

Bat Hibernacula

Colonially-Nesting Bird Breeding Habitat (Trees/Shrubs)

Highway

Road

Trail

Railway

Proposed Hwy 69 Relocation

Shawanaga First Nation Reserve No. 17

Temporary Disturbance Areas

Temporary Disturbance Areas Include:

Vehicle Turn-around Areas

Temporary Access Routes

Construction Laydown Areas

Transmission Line Pole Types*

H-Frame 2 Pole

H-Frame 3 Pole

Steel Monopole

0

25

50

100

Metres

Henvey Inlet Wind Transmission Line on Shawanaga First Nation Overview

Determination of Environmental Effects

Henvey Inlet Wind Transmission Line on Shawanaga First Nation Reserve

Jun, 2017

1:2,500

Datum: NAD 83, Zone 17

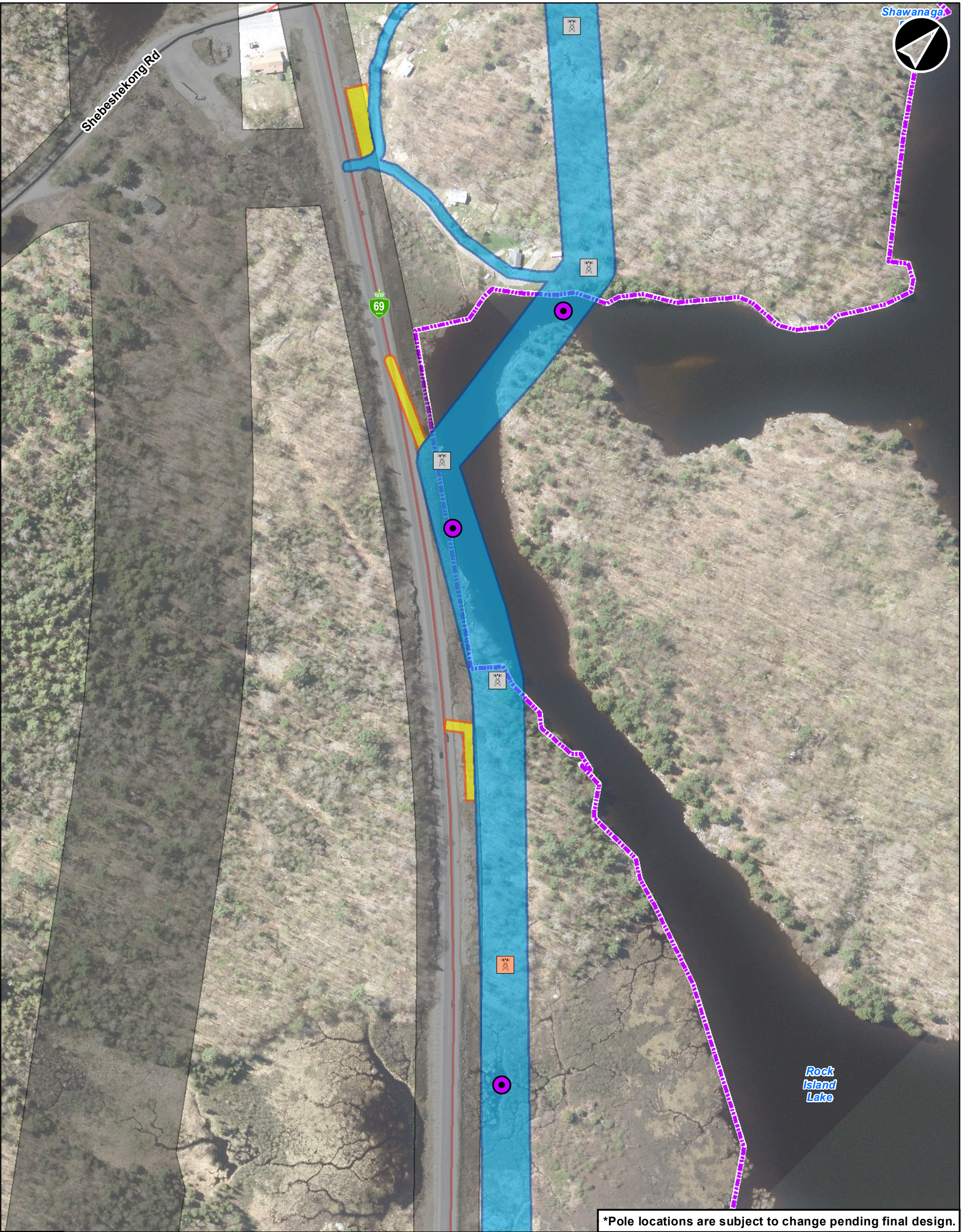
Source: AECOM, MMAH, MNRF, Tulloch

Figure 3A

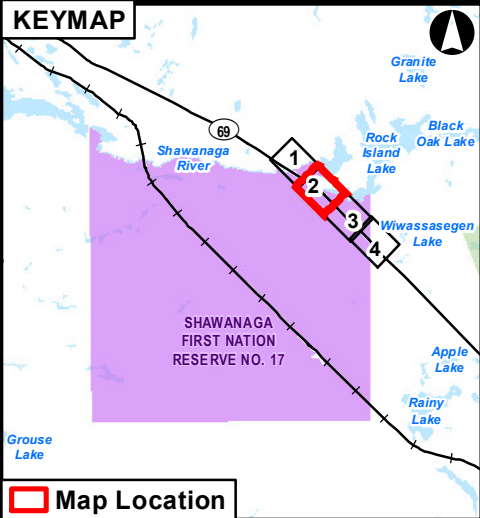
Henvey Inlet

This drawing has been prepared for the use of AECOM's client and may not be used, reproduced or relied upon by third parties, except as agreed by AECOM and its client, as required by law or for use by governmental reviewing agencies. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that modifies this drawing without AECOM's express written consent.

Path: \\CAHAM1FP001\Projects\60341251\900-Work\920-929 (GIS-Graphics)\02_Maps\TL\FN CoverMaps\MXD_6034121_FN CoverMaps_Infrastructure Closeups_Shawanaga.mxd

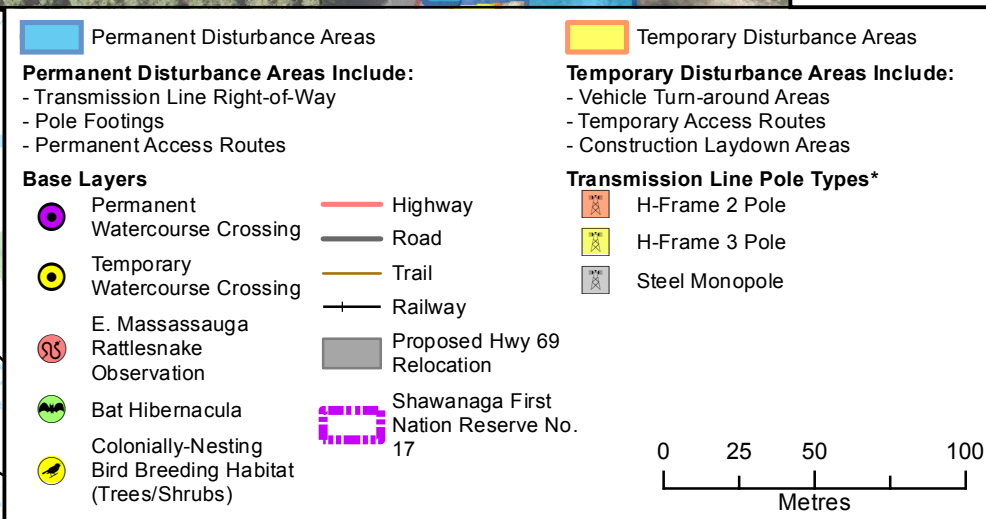
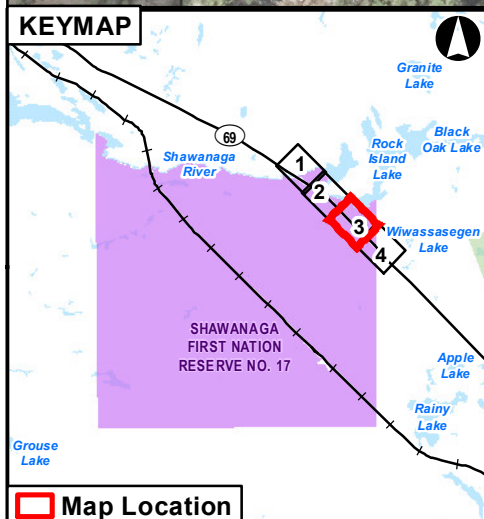



*Pole locations are subject to change pending final design.



Permanent Disturbance Areas	Temporary Disturbance Areas
Permanent Disturbance Areas Include: <ul style="list-style-type: none">- Transmission Line Right-of-Way- Pole Footings- Permanent Access Routes	Temporary Disturbance Areas Include: <ul style="list-style-type: none">- Vehicle Turn-around Areas- Temporary Access Routes- Construction Laydown Areas
Base Layers <ul style="list-style-type: none"> Permanent Watercourse Crossing Temporary Watercourse Crossing E. Massassauga Rattlesnake Observation Bat Hibernacula Colonially-Nesting Bird Breeding Habitat (Trees/Shrubs)	Transmission Line Pole Types* <ul style="list-style-type: none"> H-Frame 2 Pole H-Frame 3 Pole Steel Monopole
Highway	
Road	
Trail	
Railway	
Proposed Hwy 69 Relocation	
Shawanaga First Nation Reserve No. 17	
	0 25 50 100 Metres

Henvey Inlet Wind Transmission Line on Shawanaga First Nation Overview Determination of Environmental Effects		
Henvey Inlet Wind Transmission Line on Shawanaga First Nation Reserve		
Jun, 2017	1:2,500	Datum: NAD 83, Zone 17 Source: AECOM, MMAH, MNRF, Tulloch
P#: 60341251	V#: 01	
Figure 3B		
<small>This drawing has been prepared for the use of AECOM's client and may not be used, reproduced or relied upon by third parties, except as agreed by AECOM and its client, as required by law or for use by governmental reviewing agencies. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that modifies this drawing without AECOM's express written consent.</small>		



<h1 style="text-align: center;">Henvey Inlet Wind Transmission Line on Shawanaga First Nation Overview Determination of Environmental Effects</h1>		
<h2 style="text-align: center;">Henvey Inlet Wind Transmission Line on Shawanaga First Nation Reserve</h2>		
Jun, 2017	1:2,500	Datum: NAD 83, Zone 17 Source: AECOM, MMAH, MNRF, Tulloch
P#: 60341251	V#: 01	
<h3 style="text-align: center;">Figure 3C</h3>		
<p>This drawing has been prepared for the use of AECOM's client and may not be used, reproduced or relied upon by third parties, except as agreed by AECOM and its client, as required by law or for use by governmental reviewing agencies. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that modifies this drawing without AECOM's express written consent.</p>		

