Henvey Inlet Wind LP

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Volume B: Transmission Line Environmental Review Report

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Volume B: Henvey Inlet Wind – Transmission Line Environmental Review Report – Final Draft

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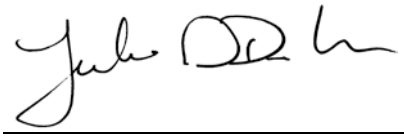

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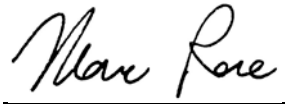

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AA .....Archaeological Assessment
AADT.....Annual Average Daily Traffic
AANDC.....Aboriginal Affairs and Northern Development Canada
AECOM .....AECOM Canada Ltd.
ANSI.....Area of Nature of Scientific Interest
AQI .....Air Quality Index
ATV .....All-terrain vehicle
BMP .....Best Management Practice
CanWEA .....Canadian Wind Energy Association
CEAA .....*Canadian Environmental Assessment Act*
COO.....Chiefs of Ontario
COSSARO .....Committee on the Status of Species at Risk in Ontario
COSEWIC.....Committee on the Status of Endangered Wildlife in Canada
CN .....Canadian National
COS .....Contaminant Overview Study
CSI .....Contaminant Source Inventory
CP .....Canadian Pacific
CWS.....Canadian Wildlife Services
DFO.....Department of Fisheries and Oceans
DO.....Dissolved Oxygen
DSB.....District Services Board
EA ACT .....Ontario *Environmental Assessment Act*
EC .....Environment Canada
EC- CWS.....Environment Canada - Canadian Wildlife Service
ECA.....Environmental Compliance Approval
EcoLog.....EcoLog Environmental Risk Information Services
ELC .....Ecological Land Classification
EMA .....Enhanced Management Area
EMF.....Electromagnetic fields

EPP ..... Environmental Protection Plan
ER ..... Environmental Review
ERR ..... Environmental Review Report
ESA ..... Environmentally Significant Area
ESA ..... *Endangered Species Act*
FIT ..... Feed-in-Tariff
FMP ..... Forest Management Plan
FNLMA ..... *First Nation Land Management Act*
GHG ..... Greenhouse gas
GIS ..... Geographic Information System
GSC ..... Geological Survey of Canada
ha ..... Hectares
HIFN ..... Henvey Inlet First Nation
HIFN I.R.#2 ..... Henvey Inlet First Nation Reserve No. 2
HIW ..... Henvey Inlet Wind LP
HIWEC ..... Henvey Inlet Wind Energy Centre
HONI ..... Hydro One Networks Inc.
IESO ..... Independent Electrical System Operator
km ..... Kilometres
km^2 ..... Squared kilometres
kV ..... Kilovolts
kW ..... Kilowatts
LGL ..... LGL Limited
LIO ..... Land Information Ontario
m ..... Metre
mASL ..... metres Above Sea Level
MBCA ..... *Migratory Birds Convention Act*
MMAH ..... Ontario Ministry of Municipal Affairs and Housing
MNDM ..... Ontario Ministry of Northern Development and Mines
MNO ..... Métis Nation of Ontario
MNRF ..... Ontario Ministry of Natural Resources and Forestry
MOECC ..... Ontario Ministry of the Environment and Climate Change
MSDS ..... Material Safety Data Sheets
MTCS ..... Ontario Ministry of Tourism, Culture and Sport
MTO ..... Ontario Ministry of Transportation
MW ..... megawatt
NHIC ..... Natural Heritage Information Centre
Nigig. ..... Nigig Power Corporation
NRCan ..... Natural Resources Canada
NRVIS ..... Natural Resource Values Information System
OBBA ..... Ontario Breeding Bird Atlas
OEB ..... Ontario Energy Board
ONTLA ..... Legislative Assembly of Ontario
OPA ..... Ontario Power Authority

OPP.....Ontario Provincial Police
O.Reg.....Ontario Regulation
OWES.....Ontario Wetland Evaluation System
PPS.....Provincial Policy Statement
PSDSSAB.....Parry Sound District Social Services Administrative Board
PSW.....Provincially Significant Wetland
PTTW.....Permit to Take Water
PWQMN.....Provincial Water Quality Monitoring Network
ROW.....Right-of-way
SAR.....Species at Risk
SARA.....*Species at Risk Act*
SARO.....Species at Risk in Ontario
SOCC.....Species of Conservation Concern
SPRP.....Spill Prevention and Response Plan
SS.....Switching Station
Stantec.....Stantec Consulting Ltd.
SWH.....Significant Wildlife Habitat
TS.....Transformer Station
TLUS.....Traditional Land Use Study
UOI.....Union of Ontario Indians
UTM.....Universal Transect Mercator
VEC.....Valued Ecosystem Component
ZOI.....Zone of influence

1. Introduction and Overview

Nigig Power Corporation (Nigig) received a Feed-in-Tariff (FIT) Contract from the Ontario Power Authority (OPA) in 2011 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), a 300 MW facility on Henvey Inlet First Nation Reserve No. 2 (HIFN I.R. #2). The HIWEC requires a new off-Reserve Transmission Line to deliver the electricity generated by the HIWEC to the Ontario electricity grid. AECOM Canada Ltd. (AECOM) was retained by HIW to conduct the Environmental Screening Process under Ontario Regulation (O.Reg.) 116/01 for the proposed off-Reserve Transmission Line.

The purpose of this Final Environmental Review Report (ERR) is 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 in accordance with the requirements set out in O. Reg. 116/01. The Environmental Screening Process provides an opportunity for the Henvey Inlet First Nation (HIFN) community, other Aboriginal communities, associations, agencies, and public to review the Environmental Review (ER) findings. The information on the existing environment presented in this report includes the information on the existing environment from the Interim Draft ERR as well as details from the 2015 field studies and the second round of community and public consultation conducted in the summer of 2015.

1.1 Overview

HIFN has broad authority to manage and protect its Reserve lands. This authority comes from the *First Nations Land Management Act* (*FNLMA*), related instruments, and the HIFN Land Code. This authority includes responsibility for environmental protection and the environmental assessment of projects and physical activities on-Reserve lands. Therefore, the HIWEC has undergone a separate environmental assessment in accordance with HIFN requirements for the components of the HIWEC which are on-Reserve.

Off-Reserve, there will be a new Transmission Line to deliver the electricity generated by the HIWEC to the Ontario electricity grid. Two (2) potential routes have been considered. One (1) route (Route A) extends approximately 14 kilometers (km) east from HIFN I.R. #2 connecting to the existing 500 kilovolt (kV) Hydro One Networks Inc. (HONI) Transmission Line. The second (Route B) from HIFN I.R. #2 follows the proposed Highway 69/400 south to Woods Road, then travels east to the east side of the existing HONI 500 kV Transmission Line system, before travelling south to connect to the existing HONI 230 kV Transmission Line system south of the Town of Parry Sound. The length of Route B is approximately 86 km. Both routes may require a switching station (SS) to connect to the existing HONI system. Subject to further review, the voltage of the Route A and Route B are up to 500 kV and 230 kV respectively. The Transmission Line corridors are predominantly located on Crown-owned or managed lands.

The Transmission Line proposed off-Reserve is subject to an Environmental Screening Process under O.Reg 116/01. Specifically, HIW is completing an ER under the Environmental Screening Process for the Transmission Line.

The HIW FIT Contract awarded in 2011 has an approved interconnection point south of Parry Sound to the 230 kV Hydro One system (Route B). In addition to the assessment of interconnection of Route B, HIW in close consultation and discussions with the Independent Electrical System Operator (IESO), Hydro One and expert consultants, conducted a technical and legal assessment of the possibility of amending the FIT Contract to permit interconnection at the Hydro One 500kV circuit (Route A) to reduce the overall length of transmission required for

the HIWEC. The FIT Contract amendment was not approved and the assessment has resulted in the conclusion that the current technically and legally viable interconnection point for the Transmission Line is the connection point south of Parry Sound to the 230kV Hydro One system (Route B). This ERR provides baseline information on the two Transmission Line route alternatives and the rationale for selecting the preferred alternative. Since the FIT contract amendment was not approved to allow for further consideration of Route A, Route A is not carried forward to the effects assessment in **Section 6**.

This ERR describes the proposed off-Reserve Transmission Line. The purpose of this document is to describe the characteristics of the study area, the overall preliminary design of the Transmission Line, and present a review of potential environmental effects associated with the construction, operation and decommissioning of the Transmission Line.

1.2 Purpose

The province of Ontario's Long Term Energy Plan (2013), which is predated by the Integrated Power System Plan (2008), establishes a goal of bringing 20,000 MW of renewable energy online by 2025 (Government of Ontario, 2013). As part of the effort to achieve this goal, Nigig was awarded a FIT contract to develop a 300 MW wind energy generation centre on HIFN I.R. #2. It will be a large-scale renewable energy centre capable of providing substantial economic benefits to HIFN's local economy. It is also expected to provide economic spin-off benefits accruing to communities outside of HIFN related to procurement, construction and operation. Renewable energy contributes to a reduced reliance on fossil fuel based power generation resulting in additional environmental benefits such as reduced greenhouse gas emissions. The Transmission Line described in this report is required to connect the generation facility to the provincial transmission grid.

1.3 Regulatory Framework

Multiple permits, licenses, and authorizations may be required to facilitate the development of the Transmission Line. The ultimate applicability of all permits, licenses, and authorizations will be determined by and based upon the final design. The following section provides a list of potentially applicable regulatory approvals.

1.3.1 Henvey Inlet First Nation

Pursuant to the FNLMA, the Government of Canada and HIFN have entered into agreements regarding the management of HIFN's Reserve lands, namely the Framework Agreement on Management of First Nation Land and an Individual Agreement. In 2009, HIFN adopted a formal Land Code which was amended in 2012 to apply to HIFN I.R. #2. Pursuant to these instruments, HIFN's Band Council is the decision-making authority with respect to the creation and granting of interests in lands within HIFN I.R. #2. These instruments also provide HIFN Band Council with the legislative, regulatory, and executive authority to ensure environmental management of the Reserve. This authority includes responsibility for environmental assessment, permitting, and environmental protection for developments on HIFN lands.

The majority of the Transmission Line will not be constructed on HIFN Reserve lands and HIFN does not have regulatory jurisdiction for off-Reserve components. Since the Transmission Line connects to the HIWEC and occurs within HIFN traditional territory, HIFN has provided input throughout the ER process and has reviewed the potential effects of both off-Reserve Transmission Line routes.

1.3.2 Federal

The Transmission Line is not a Designated Project under the *Canadian Environmental Assessment Act* (*CEAA*) (2012). However, given that portions of Route B may be carried out on Aboriginal lands (i.e., Magnetawan First Nation Reserve No.1 and Shawanaga First Nation Reserve No. 17), federal permits may be required. Any applicable federal permits and approvals required for the Transmission Line will be determined during the design phase. Should any federal permits be required for the Transmission Line the issuing agency may be required to address Section 67 of *CEAA, 2012*.

Additional federal permits may apply and will be confirmed during the design phase. Some of the potential permits and authorizations are listed in **Table 1-1.**

Table 1-1: Potentially Applicable Federal Permits and Approvals

Permit / Authorization	Approval Authority	Rationale
Aeronautical Obstruction Clearance (Lighting scheme)	Transport Canada- Aviation Division	▸ Required for marking and lighting. May apply to Transmission Line and Towers.
***Navigable Waters Protection Act* Application for Approval**	Transport Canada- Marine Division	▸ Required if crossing navigable watercourse.
Explosives In Transit Permit (*Explosives Act, 2013)*	Natural Resources Canada (NRCan) -Explosives Regulatory Division	▸ Required to transport explosives.
Temporary Magazine License (section 7(1) of the *Explosives Act*)	NRCan- Explosives Regulatory Division	▸ Required to acquire and store certain explosives and equipment over specified quantities.
Permit or Approvals under *Species at Risk Act* (*SARA*)	Environment Canada (EC)	▸ Required if the Transmission Line will destroy or remove species at risk (SAR) or critical habitat for SAR.
Permit to Collect Bird Carcasses of Species Listed as Endangered or Threatened (*SARA*)	EC	▸ Required to collect carcasses of endangered or threatened bird species during bird mortality surveys.
Permit under *Migratory Birds Convention Act* (*MBCA*) to Collect Bird Carcasses	EC - Canadian Wildlife Service (CWS)	▸ Required to collect carcasses of bird species protected by the *MBCA* during bird mortality surveys.
Authorization for Watercourse Crossing (*Fisheries Act* subsection 35(2))	Department of Fisheries and Oceans Canada (DFO)	▸ A self-assessment of the potential to impact fish to determine if any work requires DFO review and authorization.
Aviation Safety Land Use Proposal	Navigation Canada	▸ Required for all land use proposals near airports and air navigation infrastructure.
Review of Proposal by the RCMP Mobile Communications Services	Royal Canadian Mounted Police (RCMP)	▸ Recommended review for potential signal disruptions from towers etc.
Land Designation, Lease or Permit (*Indian Act* Section 35)	Aboriginal Affairs and Northern Development Canada (AANDC)	▸ Required for use or lease of First Nation's Reserve land.

1.3.3 Provincial

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 Ontario *EA Act* defines environment in a broad sense that includes natural, social, cultural, economic and built environments. The *EA Act* requirements are set out in O. Reg. 116/01. The Transmission Line is subject to O. Reg. 116/01 and has undergone a Category B ER as described in the Ontario Ministry of the Environment and Climate Change (MOECC) Guide to Environmental Assessment Requirements for Electricity Projects (January, 2011). The ER is now complete and this ERR will be made available for a 30-day review and comment period.

Additional provincial permits may apply and will be confirmed during the design phase. Some of the potential permits and authorizations are listed in **Table 1-2.**

Table 1-2: Potentially Applicable Provincial Permits and Approvals

Permit / Authorization	Approval Authority	Rationale
Environmental Compliance Approval for Air & Noise (Section 9 of the *Environmental Protection Act*);	MOECC	▸ Required for the operation or use of any apparatus (e.g., transformers, concrete batch plant, crushing plant) to allow the regulated discharge of air contaminants (including noise) into the natural environment.
Permit to Take Water (Section 34, *Ontario Water Resources Act*)	MOECC	▸ Required if construction of any Transmission Line components requires taking greater than 50,000 litres of water in a day from the environment (e.g., dewatering).
License of Occupation *(Public Lands Act)*and Lease Option Agreement with the Crown	Ontario Ministry of Natural Resources and Forestry (MNRF)	▸ The Minister may issue a License of Occupation, Easement and / or Lease Option Agreement for the use of provincially owned Crown lands from MNRF.
***Public Lands Act* Work Permit**	MNRF	▸ Required to authorize works on public lands, construction / upgrade of access roads and trails, culverts / bridges and Transmission Line construction.
Section 17 – impact to provincially listed species under the *Endangered Species Act (ESA)*	MNRF	▸ A permit is required if a listed species is killed, harmed or harassed or if their habitat is affected.
License to Collect Fish for Scientific Purposes	MNRF	▸ License is required to collect any fish for scientific purposes in Ontario.
Clearance Regarding Completion of Archaeological and Heritage Investigations	Ontario Ministry of Tourism, Sport and Culture (MTCS)	▸ Required to confirm that any resources have been identified and mitigated.
Facility Registration	IESO	▸ Registration for a physical generation facility that is connecting to the IESO-controlled grid, will participate in the IESO-administered markets or programs, or is required by a Connection Assessment to register with the IESO.
Connection Application	HONI / IESO	▸ The customer completes the System Impact Assessment/ Customer Impact Assessment application for a generation facility and submits to both HONI and the IESO.
Connection and Cost Recovery Agreement	HONI	▸ An agreement between HIW and HONI which includes the recovery of costs to the grid operator for changes to allow connection, scope of work, costs, payment schedule etc.
Notice of Proposal Prohibition, Transmission or Distribution by Generators (Section 80 of the *Ontario Energy Board Act*).	Ontario Energy Board (OEB)	▸ Notification to the OEB is required to construct a generation facility.
Leave to Construct (Section 92 of the *Ontario Energy Board Act*)	OEB	▸ Required for the development of a high-voltage transmission facility.
License to Generate Electricity (Section 57 of the *Ontario Energy Board Act*)	OEB	▸ Required to generate electricity or provide ancillary services for sale through the IESO-administered markets or directly to another person without a license.
Certificate of Inspection and Authorization to Connect	Electrical Safety Authority	▸ Ensure work complies with Ontario Electrical Safety Code.
Building and Land Use permit / Entrance Permit	Ontario Ministry of Transportation (MTO)	▸ Required for any transmission line located within 800 metres of a highway, such as Highway 69 or 522.
Encroachment Permit	MTO	▸ Required for the installation of any utilities within the MTO ROW, such as Highway 69.

Permit / Authorization	Approval Authority	Rationale
Oversize/overweight permit	MTO	▸ Required for moving a heavy vehicle, load, object or structure.

1.3.4 Municipal

Municipal permits and approvals may be required for activities on municipal lands or if access from a municipal road is needed. Additional municipal permits may apply and will be confirmed with each municipality during the design phase. The Route B Transmission Line is within the Municipality of McDougall, Seguin Township, Township of The Archipelago, and Carling Township. Route B Transmission Line also traverses the Unorganized Centre of Parry Sound District which consists of many unincorporated townships that are not part of an organized municipality and do not have their own governing body (MMAH, 2013). Route B Transmission Line travels through three (3) of these Unincorporated Townships including Henvey, Wallbridge and Harrison, which are under the jurisdiction of the Archipelago planning board and one (1) unincorporated township, Shawanaga, which is under the jurisdiction of the Parry Sound Area Planning Board (MMAH, 2013). The Route A Transmission Line also lies within the Unorganized Centre of Parry Sound, travelling through two (2) unincorporated townships: Mowat, and Blair. These two (2) unincorporated townships are both under the jurisdiction of the Archipelago Planning board (MMAH, 2013). Some of the potential municipal permits and authorizations are listed in **Table 1-3.**

Table 1-3: Potentially Applicable Municipal Permits and Approvals

Permit / Authorization	Administering Agency	Rationale
Road User Agreement	Municipality	▸ Required to specify details regarding proposed road access, infrastructure and route management, and road restoration.
Municipal Drain Crossing Permit	Municipality	▸ Required for construction of infrastructure which crosses a municipal drain.
Traffic Management Plan	Municipality	▸ Required to specify details regarding traffic control in work zones, often required to comply with Ontario Traffic Manual Book 7.
Entrance Permit	Municipality	▸ Required for proposed entrances on Municipal roads.
Building Permit	Municipality	▸ Required for the construction of any planned operations and maintenance building.
Stormwater Management Plan	Municipality	▸ Required to detail the ways in which stormwater will be dealt with for buildings and infrastructure.
Oversize / Overweight Permit	Municipality	▸ Required to provide details on oversized and/or overweight loads being moved through an identified route using municipal roads.
Utility Consent Permit	Municipality	▸ Required for and utilities that may be installed of moved within a municipal road right-of-way (ROW).
Noise By-law Exemption Permit	Municipality	▸ Required for most municipalities or townships for construction work at various times. For example: - Township of The Archipelago: - Municipality of McDougall: Exemption required for all Construction work, at any time.

2. Transmission Line Description

2.1 Location and Study Area

The Transmission Line study area accommodates two (2) proposed routes (as outlined in **Section 1.1**). Both Route A and B Transmission Line study areas are identified in **Figure 2-1**.

Route A:

Route A Transmission Line (approximately 14 km) extends east from the eastern edge of HIFN I.R. #2 where it travels for approximately 4 km to Highway 522. It then travels adjacent to Highway 522 for approximately 10 km before connecting to the existing 500 kV HONI system near its intersection with Highway 522. From east of HIFN I.R.#2, Route A is located within the District of Parry Sound and extends east through two (2) Unincorporated Townships: Mowat and Blair (under jurisdiction by the Archipelago Planning Board), paralleling the Highway 522 corridor and connecting to the existing HONI system.

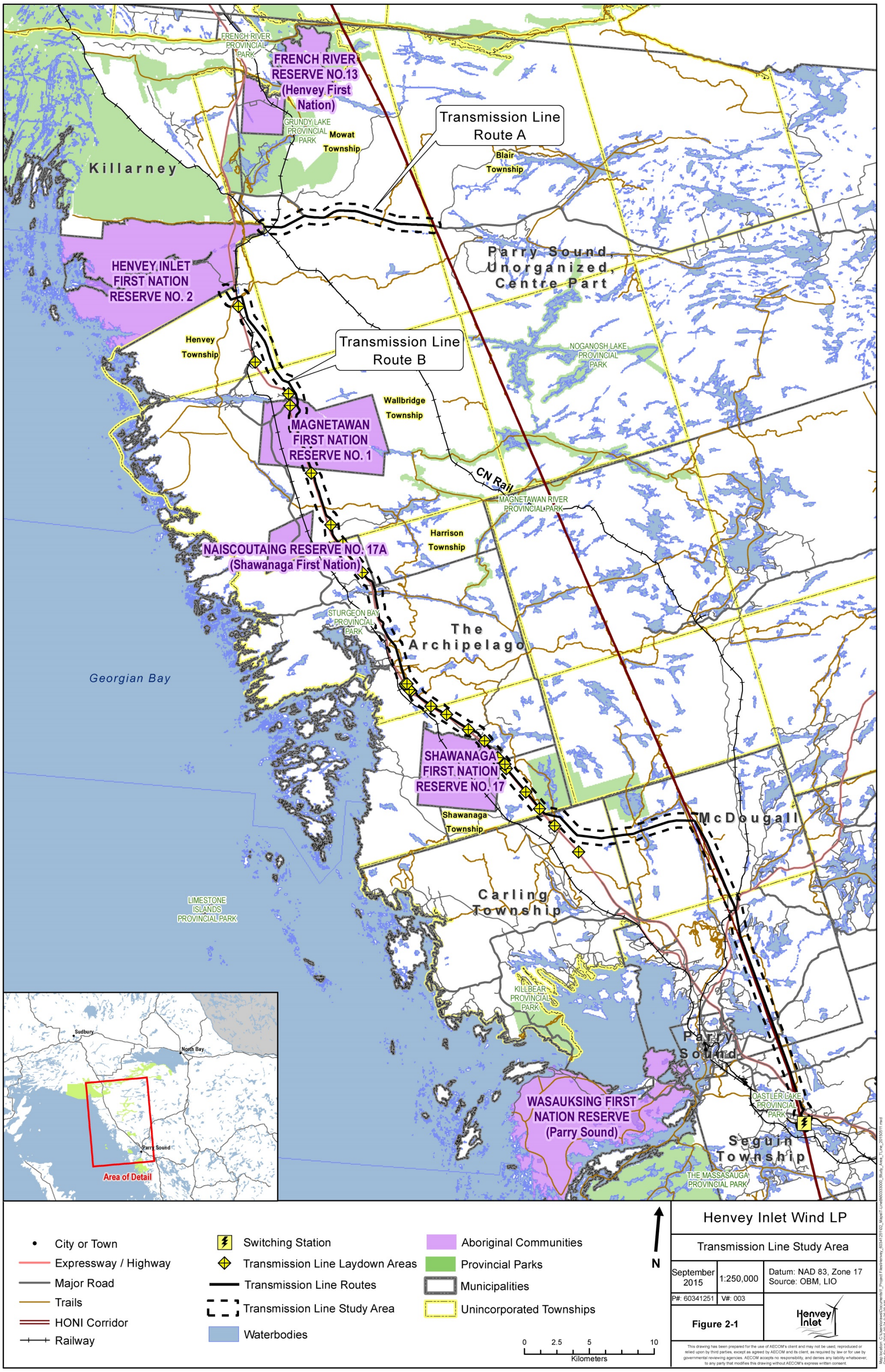
The Route A study area is mostly located within the Canadian Shield. The Shield is part of a vast horseshoe shaped area around Hudson Bay covering eastern and central Canada, characterised by exposed bedrock formations, bedrock barrens and bedrock plains with shallow soils and organic soil accumulations in low lying areas (Ecoplans, 2006). Much of the Canadian Shield rock has been carved and arranged by the last ice age, to form millions of lakes, ponds and wetlands (Wilkem, et al.). The Route A Transmission line study area is a combination of upland rock barrens scattered by wetland drainages between the rocky ridges and includes the waterbodies of the Key River, Henvey Inlet and Portage Lake. These larger waterbodies are located at the northwestern limit of the Route A Transmission Line study area near HIFN I.R. #2.

Route B:

Route B Transmission Line (approximately 86 km) travels south from HIFN I.R. #2 adjacent to the proposed Highway 69/400 corridor for approximately 50 km until diverting east from the proposed Highway 69/400 south of Woods Road for approximately 11 km to the existing HONI 500 kV system where it 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 and the Parry Sound TS. Route B travels south through the Unincorporated Townships of Henvey, Wallbridge and Harrison (under jurisdiction by the Archipelago Planning Board), before entering the Township of The Archipelago, Unincorporated Township of Shawanaga (under jurisdiction of the Parry Sound Area Planning Board), Carling Township, Municipality of McDougall, and the Seguin Township. Route B also passes through the Reserve lands of Shawanaga Reserve No. 17 and the Magnetawan Reserve No. 1, of which Shawanaga First Nation and Magnetawan First Nation have the right to exclusive use and occupation (AADNC, 2013a).

The Route B Transmission Line study area is mostly located within the Canadian Shield. The Shield is part of a vast horseshoe shaped area around Hudson Bay covering eastern and central Canada, characterised by exposed bedrock formations, bedrock barrens and bedrock plains with shallow soils and organic soil accumulations in low lying areas (Ecoplans, 2006). Much of the Canadian Shield rock has been carved and arranged by the last ice age, to form millions of lakes, ponds and wetlands (Wilkem, et al.). The Route B Transmission Line study area also includes many waterbodies, the larger of these being the Giroux River, the Magnetawan River, Straight Lake, Still River as well as an unnamed tributary to the Still River, three (3) unnamed streams and an unnamed wetland.

Figure 2-1: Transmission Line Study Areas



2.2 Components

The following provides a general description of the permanent and temporary Transmission Line components.

2.2.1 Transmission Lines and Towers

There are two (2) Transmission Line routes being proposed to connect the HIWEC to the provincial transmission system. Route A runs due east of the HIWEC to two (2) existing parallel HONI 500 kV system. Connecting to these 500kV lines will require a Transmission Line operating up to 500kV, with one or two (1 or 2) circuits. Route B runs south from the HIWEC to connect to the 230 kV lines south of Parry Sound. This line is expected to be a single circuit and operate at 230kV.

The conductor used to transmit power along either of these lines will be steel reinforced aluminum conductor. The conductor is secured to insulators that are attached to the transmission structures. These structures are 20 to 45 metres (m) in height. An optical ground wire will be installed on the Transmission Line to facilitate communications with various components of the HIWEC.

The towers will be steel monopole, steel lattice, composite, concrete or wood poles. These structures will have foundations that could include: concrete foundations, rock bolted, rock augured, blasted rock, pipe foundations backfilled with self-compacting aggregate, direct embedment in native soil, swamp mats or cribbing, as appropriate for the tower location and design. On average, the structures will be spaced approximately 170 to 230 m apart except where site specific conditions require shorter or longer tower spans (e.g., significant changes in line direction, large waterbody crossings, or in compliance with design codes and laws). These towers will be located throughout the Transmission Line ROW, which will be up to 30 m in width.

2.2.2 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. New temporary access roads will be constructed to access areas where existing roads do not reach the proposed Transmission Line ROW and in areas where the ROW crosses an impassable feature (e.g., waterbody, wetland, cliff face). 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. All access roads are needed during construction to deliver materials and equipment in order to install tower foundations, assemble towers and string conductors, etc.; however, following construction, temporary access roads will be decommissioned and any widened existing access roads will be returned to their current widths.

The area cleared for access roads (approximately 6-10 m) will be minimized as much as possible and will be reduced where natural constraints exist such as wetlands or waterbodies. In all cases, the construction area will be confined to the area required to support safe construction activities.

2.2.3 Temporary Storage Areas

Temporary storage areas for construction will be established at several locations along both Routes for the temporary storage of construction materials and equipment. Temporary storage of materials will conform to applicable standards, codes and best management practices. It is anticipated that these areas will be areas already

disturbed (e.g., previously used commercial land or previously cleared areas near established roads). Construction trailers, temporary material storage and portable washroom facilities will also be located at some of these areas.

2.2.4 Switching Station

A new SS will be required for the interconnection of the Transmission Line to the existing HONI system regardless of the route selected. The approximate footprint of the SS is 100 m x 100 m. The SS will be connected to the HONI 500 kV system (Route A), or to the 230 kV system just south of the Town of Parry Sound (Route B). The SS components may include circuit breakers and disconnect switches, surge arrestors, meters, ancillary equipment, structural steel, along with associated concrete foundations to mount the aforementioned equipment.

The SS will be located on a graded area and will be fenced and secured to prevent unauthorized entry and maintain public safety. All non-current carrying and conducting metal components within the fenced area of the station will be connected to a grounding grid installed below finished grade.

2.3 Proposed Schedule

The schedule in **Table 2-1** outlines the anticipated timelines for Transmission Line development:

Table 2-1: Key Milestones

Milestone	Anticipated Date
Notice of Commencement	January, 2015
Host Public Information Centre #1	February, 2015
Complete Baseline ER	June, 2015
Host Public Information Centre #2	August, 2015
Final ERR for Public Review	September, 2015
Notice of Completion	September, 2015
Obtain Pre-Construction Permits	March, 2016
Start Construction	May, 2016
Commence Operation Phase	February, 2018
Decommissioning Phase	January 2048 to September 2049

The specific schedule for decommissioning will be determined at the time it is undertaken. The wind turbines used for the HIWEC can be expected to be in service for the term of the 20 year FIT contract, and as such the Transmission Line is expected to be in service for at least this duration.

2.4 Construction Phase

Activities that may occur during the pre-construction phase include: planning and resource management, pre-construction surveys, geotechnical investigations, permitting and detailed design. Pre-construction activities are not included within the scope of the ERR.

The construction phase will consist of the following key activities:

- **Site preparation**
  - Delineation of work area and important natural features, and installation of erosion and runoff controls
  - Road ROW clearing and widening as required

  - Vegetation clearing and site grading
  - Delineation and preparation of temporary work, storage and laydown areas
- **Construction of access roads**
  - Access road construction as required
- **Installation of watercourse crossings**
- **Delivery of equipment and materials**
  - On-site delivery of construction vehicles and equipment
  - Removal of construction refuse
- **Installation**
  - Tower foundations (may include blasting)
  - Tower erection
  - Transmission lines
- **Installation of Interconnect Station (Switching Station)**
- **Construction Completion**
  - Reclamation of temporary construction areas and access roads
  - Demobilization of construction works
  - Seeding or planting of vegetation, if necessary and in accordance with property owner agreements (for sections on private property) at pole or access locations; and
  - Implementation of required restoration or enhancement measures.

2.4.1 Site Preparation (Vegetation Clearing and Site Grading)

Site preparation activities include selective clearing, and if necessary, grading (leveling the ground) of the Transmission Line ROW to allow construction equipment to access structures and to establish the safe operating distance of conductors from adjacent vegetation. Depending on type, density and tree species present, the clearing activities would typically be achieved through combination of chainsaws, hand operated tree felling and use of feller bunchers, bulldozers and skidders. Trees outside of the Transmission Line ROW that are tall enough to come within limits of approach, or could fall into the Transmission Line ROW within the next few years, will be cut. The long-term goal would be to establish and maintain vegetation cover that is compatible with the overhead conductors and allows for safe operation of the Transmission Line. Outside of the Transmission Line ROW corridor limits, only those trees considered diseased, leaning towards the Transmission Line or poorly rooted and have that have the risk of falling into the Transmission Line ROW would be cut.

Merchantable timber would be made available to HIFN members, local businesses or individuals. Brush and non-marketable wood would be chipped and burned on ROW to help with fire management.

Temporary construction laydown areas for the storage of construction material will consist of up to 24 sites, each approximately 1 ha in size (see **Figure 2-1**).

2.4.2 Temporary Access Road Construction

Temporary access roads will be required to enable vehicles, construction equipment and materials to gain access to the tower sites. Access roads will be approximately 6 - 10 m wide and capable of supporting heavy machinery used to deliver equipment, materials, and string conductors. Existing roads will be reviewed to determine requirements for trimming of overgrowth to allow vehicles or equipment to travel on the road safely. Any minor repairs to existing drainage, road surface, culverts, or crossings would be updated for safe travelling of vehicles or

equipment. The use of low impact (less than 6 per square inch) rubber tracked equipment will reduce maintenance requirements on access roads.

Typically, access roads are constructed with aggregate placed over geotextile. Some access roads only need to be accessible by track vehicle and therefore would not require aggregate.

2.4.3 Watercourse Crossings

Wherever possible, access roads will be located to avoid watercourse crossings. For example, access roads would terminate at the tower locations on either side of larger watercourses, or off-corridor access roads can be constructed to tower locations to avoid sensitive watercourses and associated riparian habitat. Where necessary, an appropriate stream crossing technique will be implemented, i.e. temporary bridges, culverts, ford culverts and fords. Swamp mats may be used to cross watercourses that are not frozen. During winter, streams and rivers will typically freeze and can create a crossing strong enough for track vehicles to cross with minimal damage to surrounding environment.

Where culverts are needed, the culverts will be sized accordingly and the appropriate approvals will be obtained. Installation of culverts will follow applicable standards to protect the water feature.

2.4.4 Delivery of Materials

Construction materials and Transmission Line components will be delivered to work sites using existing roads, highways and temporary access roads. Materials will also be delivered to the temporary storage areas. Trucks, flatdeck tracked units and other tracked units are among the equipment used to transport materials to the temporary storage areas and Transmission Line ROW.

2.4.5 Installation of Tower Foundations

Types of foundation designs that may be used and a description of the construction activities include:

- **Direct buried** – structures can be direct buried and backfilled with native soil.
- **Pipe foundations** – holes are augured, pipes are inserted into the holes, poles are placed and then the holes are backfilled with either crushed gravel or native soils depending upon foundation design.
- **Concrete caisson** – holes are augured, the engineered steel rebar cage is inserted into the hole, then concrete is poured to the level of anchor bolts. The steel pole is placed onto the anchor bolts and fastened to the caisson foundation.
- **Rock drilled** – rock hole is drilled larger than size of pole butt, pole is inserted and backfilled with the filings from the drilling.
- **Rock anchored** – rock hole is drilled. Rock anchors are drilled in open hole. Anchors are installed and a surface collar is cemented in place to ensure anchor bolts are secured. Pole is placed on the anchor bolts and secured.

During the detailed design phase of the Transmission Line and after the completion the geotechnical studies, the most appropriate type(s) of foundations will be chosen. Depending on the foundation type and condition of the bedrock, drilling will be used as the primary installation method. Blasting would only be used as a last resort if drilling is not possible due to geotechnical conditions and is considered highly unlikely as a foundation installation activity.

The preferred method for tower foundation and pole installation is to displace water with washed gravel prior to setting a pole. As a last resort, dewatering may be required at a rate anticipated to be considerably less than 50,000 L/day. If dewatering of tower foundations is required, and expected to exceed 50,000 L/day, a construction Dewatering Discharge Plan will be developed and implemented and will include appropriate areas and methods for discharge as prescribed in any provincially approved permits.

It is expected that the construction for each tower will take no longer than one (1) week to complete.

2.4.6 Tower Erection

Depending on the type of foundation the tower components will be assembled at the tower site and lifted into place. Towers are expected to be erected with cranes on wheels or on tracks. If necessary, towers can also be erected with helicopters.

2.4.7 Installation of Transmission Lines

The conductors for the Transmission Lines are generally installed utilizing tension stringing methods through pulleys to control the conductors from touching the ground and avoid potentially getting damaged. Stringing equipment may require small clearings outside the ROW to facilitate installation. Rope is strung along the line from pole to pole. The conductor is attached and the rope is pulled back pulling the conductor into place in a controlled fashion. The wire is adjusted to the appropriate tension through sagging to design criteria then compression dead end assemblies are applied to secure the conductor in place.

At road, rail and other infrastructure crossings, temporary rider poles will be installed on each side of crossing. These temporary structures have cross arms designed to keep conductors clear of the infrastructure, should the conductor sag as a result of a malfunction. These structures are removed after the wire is secured to the permanent structures. Pole holes are backfilled and the area of disturbance is restored.

2.4.8 Construction Completion

Following completion of construction, the Transmission Line ROW and temporary access roads will be restored. Activities will include:

- Removal of construction refuse, temporary access roads and water crossings;
- Replacement of fences (if applicable);
- Stabilization of soils and erosion prone areas;
- Removal from the ROW or proper levelling of spoils from pole excavations;
  - Seeding or planting of vegetation, if necessary and in accordance with property owner agreements (for sections on private property) at pole or access locations; and
  - Implementation of required restoration or enhancement measures

2.5 Operation Phase

The operation phase involves ongoing maintenance of the Transmission Line. Maintenance activities typically include:

- Preventative and routine inspections of the Transmission Line components and the SS;
- Unplanned maintenance of the access roads and of the ROW; and,
- Vegetation management.

Vegetation management is required around the transmission line to prevent any damage to the lines and ensure safe operation. The vegetation will be cleared by mechanized equipment (e.g., chainsaw / hydro axe).

It is anticipated that routine maintenance will be carried out every few months for the first five (5) years of operation; from then on, routine maintenance where inspection and maintenance crews may need to access the Route B Transmission Line will occur every 5-15 years.

2.6 Decommissioning Phase

The decommissioning phase, similar to the construction phase, will include the following key activities should there be no other use for the Transmission Line and towers:

- Power disconnection and decommissioning of service
- Transportation of equipment and materials
  - On-site delivery of decommissioning vehicles and equipment
- Installation of temporary access roads
- Disassembly and removal of Transmission Line components
  - Tower foundation disassembly and removal
  - Disassembly and removal of Interconnect Station (Switching Station)
  - Disassembly and removal of Transmission Lines
- Decommissioning Completion
  - Reclamation of disturbed areas (includes reclamation of temporary access roads)
  - Grading of concrete foundations
  - Demobilization of decommissioning works
- ROW restoration
  - Seeding or planting of vegetation, if necessary and in accordance with property owner agreements (for sections on private property) at pole or access locations; and
  - Implementation of required restoration or enhancement measures

Construction and decommissioning activities are expected to create approximately 85-115 jobs at the peak of construction activities.

3. Environmental Review Methodology

Based on the Environmental Screening Process under O. Reg. 116/01, the following steps outline the ER methodology that was applied to the Transmission Line:

1. Determine the location and scale of the Transmission Line and all related undertakings and activities;
2. Determine spatial and temporal boundaries (revise, if necessary, as the ER progresses);
3. Identify valued social or cultural features identified by HIFN on I.R. #2 (hereinafter referred to as "Nishshing Aki")[1], and Valued Ecosystem Components (VECs) based O. Reg. 116/01 Environmental Screening Criteria that have potential to be affected;
4. Complete background data collection and baseline field studies to obtain information on the Nishshing Aki and VECs;
5. Conduct analysis of Transmission Line route alternatives;
6. Predict the potential environmental effects of the Transmission Line on the Nishshing Aki and VECs and propose mitigation measures to address these effects;
7. Determine the net effects of the Transmission Line on the Nishshing Aki and VECs;
8. Determine the significance of net effects of the Transmission Line on the Nishshing Aki and VECs;
9. Predict the cumulative effects on Nishshing Aki and VECs that are likely to arise from the overlapping effects of the Transmission Line and the HIWEC combined with other past, present or reasonably foreseeable future projects and activities;
10. Determine the significance of the cumulative effects on Nishshing Aki and VECs;
11. Propose monitoring and follow-up plans;
12. Determine the overall advantages and disadvantages of the Transmission Line;
13. Complete and document the Aboriginal community, public and agency consultation, including how issues were resolved and addressed; and
14. Determine and describe how environmental effects or issues may be addressed by other required approvals.

In addition to the steps outlined above, an analysis of the trade-offs between the two (2) routes was conducted to identify the potential environmental advantages and disadvantages of each, despite the results of the environmental analysis.

3.1 Factors of Assessment

The focus of this ER is to assess and design the Transmission Line to avoid, minimize, or mitigate potential adverse effects on the environment. To address this focus, this ER considers the following factors that are included in MOECC's Guide to Environmental Assessment Requirements for Electricity Projects (MOECC, 2011) and section references are provided to identify where these factors are addressed in the ERR:

1. *Nishshing Aki are defined as existing social or cultural features or conditions that have been (i) identified as valued by HIFN, or (ii) designated as valued by HIFN with Community Input as provided in the Land Code. Nishshing Aki includes sacred sites, burial grounds and old settlements.*

1. a description of all the Transmission Line components, activities and phases, as well as any plans for future expansions (**Section 2.0**);
2. the screening criteria and how it is applies to the Transmission Line to identify the potential for any negative effects on the environment (**Section 6.1**);
3. the potential negative environmental effects or concerns of the Transmission Line on the screening criteria (**Section 6.2**);
4. comments from the HIFN community, the public, other Aboriginal communities, stakeholders and agencies (**Section 9.0**);
5. standard environmental mitigation or impact management measures that will be used to avoid, reduce, or minimize the environmental effects, concerns or issues (**Section 6.3**);
6. any remaining "net effects" (net effects are those negative environmental effects caused by the Transmission Line and related activities that will remain after mitigation and impact management measures have been applied) (**Section 6.3**);
7. the significance of any net effects or concerns (**Section 6.4**); and
8. overall advantages and disadvantages of the Transmission Line (**Section 10.0**).

In addition to the above mentioned factors, we will also be assessing to address any potential requirements under *CEAA* should Section 67 apply in the federal permit and approval process that may apply where the route crosses lands under federal jurisdiction:

1. the environmental effects of malfunctions or accidents that may occur in connection with the off-Reserve electricity transmission (**Section 6.5**);
2. measures that are technically and economically feasible that would mitigate adverse environmental effects of malfunctions or accidents (**Section 6.5**);
3. in reference to the effects considered in items 1 and 2, the significance of the effects which are likely, taking into account proposed mitigation measures (**Section 6.5**);
4. recommendations for monitoring and follow-up programs to verify the accuracy of the ER and determine the effectiveness of any mitigation measures (**Section 8.0**);
5. potential environmental effects of the on-Reserve HIWEC that may overlap with potential environmental effects of the off-Reserve electricity transmission (refer to **Volume C - Overlapping and Cumulative Effects Assessment**);
6. cumulative environmental effects that are likely to arise from the combination of (i) the on-Reserve HIWEC, the off-Reserve electricity transmission, and (ii) other projects and activities that have occurred or are reasonably foreseeable (refer to **Volume C - Overlapping and Cumulative Effects Assessment**);
7. measures that are technically and economically feasible that would mitigate adverse cumulative environmental effects, and, in particular, any adverse cumulative environmental effects that may be significant (**Section 6.2**);
8. in reference to the effects considered in items 5-7, the significance of the cumulative effects which are likely, taking into account proposed mitigation measures (**Section 6.3**); and
9. comments from the HIFN community, the public, other Aboriginal communities, stakeholders and agencies (**Section 9.0**).

To focus the ER on what is most relevant in the environment, Nishshing Aki and VECs have been identified. VECs are environmental components that have recognized ecological, social or cultural value to Aboriginal and non-Aboriginal communities, science, law, or policy including the Environmental Screening Criteria under O. Reg. 116/01.

The VECs that were examined and assessed in the ER process are linked to the VECs that were examined in **Volume A: Henvey Inlet Wind Energy Centre Environmental Assessment** to facilitate the assessment of overlapping effects in **Volume C**. The link between the VECs and the Environmental Screening Criteria under O. Reg. 116/01 and are listed in **Table 3-1**. . A description of how the VECs were selected is provided in **Section 3.4**. A full list of VECs, as well as their interactions with Transmission Line components and activities, is provided in **Section 6.1**.

Table 3-1: O.Reg 116/01 Screening Criteria Connection to Valued Ecosystem Components

O.Reg. 116/01 Screening Criteria Category	O.Reg. 116/01 Screening Criteria	Reference to VECs Presented in Section 4.0 – Existing Environment	Reference to VECs Presented in Section 6.0 – Effects Assessment
Surface and Groundwater	– Surface water quality, quantity or flow – Groundwater quality, quantity or movement	– Sections 4.3.3 and 4.3.4	– Sections 6.2.1; 6.2.8.1; 6.2.8.2
Land Use	– Residential, commercial or institutional land uses – Provincial land use or resource management plans – Municipal land use policies, plans and zoning by-laws – Traditional land use – Hazard lands or unstable lands that are subject to erosion – Contaminated land	– Sections 4.1.4; 4.3.5; and 4.5.3 through 4.5.12	– Sections 6.2.20; 6.2.21; 6.2.22; 6.2.8.3; 6.2.2
Air and Noise	– Air quality – Noise	– Section 4.4	– Sections 6.2.9; 6.2.10
Natural Environment	– Rare, threatened or endangered terrestrial or aquatic species or their habitat – Protected natural areas such as Area or Nature of Scientific Interest (ANSIs), Environmentally Significant Areas (ESAs) or other significant natural areas – Wetlands – Wildlife habitat, populations, corridors or movement – Wildlife habitat, spawning, movement or environmental conditions (e.g., water temperature, turbidity, etc.) – Migratory birds, including effects on their habitat or staging areas – Locally important or valued ecosystems or vegetation	– Section 4.2 and 4.3	– Sections 6.2.3 through 6.2.7
Resources	– Non-renewable resources – Canada Land Inventory Class 1-3, specialty crop or locally significant agricultural lands – Existing agricultural production – The availability of mineral, aggregate or petroleum resources – The availability of forest resources – Game and fishery resources	– Sections 4.5.7 through 4.5.10	– Sections 6.2.17 through 6.2.19

O.Reg. 116/01 Screening Criteria Category	O.Reg. 116/01 Screening Criteria	Reference to VECs Presented in Section 4.0 – Existing Environment	Reference to VECs Presented in Section 6.0 – Effects Assessment
Socio-Economic	– Neighbourhood or community character – Local businesses, institutions or public facilities – Recreation, cottaging or tourism – Community services and infrastructure – The economic base of a municipality or community – The local employment or labour supply – Traffic and transportation infrastructure – Public health and safety	– Sections 4.5.1 through 4.5.6	– Sections 6.2.11 through 6.2.16
Heritage and Culture	– Heritage buildings, structures or sites, archaeological resources, or cultural heritage landscapes – Scenic or aesthetically pleasing landscapes or views	– Section 4.5.15 and 4.5.16	– Sections 6.2.23 through 6.2.25
Aboriginal	– First Nations or other Aboriginal communities	– Section 4.5.12	– Section 6.2.11 through 6.2.16 and 6.2.22
Other	– Waste materials requiring disposal	– Section 4.5.13	– Section 6.2.23

3.2 Aboriginal Interests and Traditional Knowledge

O. Reg 116/01 requires proponents to identify Aboriginal interests, consult with, and have consideration for, any Aboriginal communities located in the vicinity of an undertaking or that may have an interest in an undertaking. Aboriginal traditional knowledge is the cumulative knowledge held by Aboriginal peoples through generations of living in close contact with nature. It encompasses cultural, environmental, economic, political and spiritual inter-relationships (HIFN, 2015).

The traditional knowledge of Anishnabek and other Aboriginal communities that has been made available to the ER team was taken into account in selecting Nishshing Aki and VECs, proposing mitigation and assessing the impacts of the Transmission Line.

Traditional knowledge for HIFN was gathered from secondary sources, as well as through a traditional knowledge study that was conducted in 2013 for the proposed Highway 69/400 widening project. In the *Traditional Land Use Study Related to Proposed Four Lane Highway 69*, HIFN community members and groups were interviewed to provide information on historic and current land uses within the community's traditional territory (HIFN, 2013). The information was used internally, and in discussion with HIFN Chief and Council, to identify Nishshing Aki and VECs and establish avoidance and / or mitigation strategies.

3.3 Consultation Program Feedback

Consultation with the public, other stakeholders, provincial, federal and non-government agencies, local municipalities and Aboriginal communities was completed at key stages in the ER process for the Transmission Line which included notices, meetings and opportunities for comment (e.g., through contact phone number / email and comment forms on the HIW website). A summary of all engagement activities throughout the ER process is included in **Section 9.**

All comments that were received from HIFN and its members, Aboriginal communities, municipalities, agencies, stakeholders, the general public and landowners within the Transmission Line study area were considered in the ER. Where applicable, consultation activities have influenced the identification of Nishshing Aki and VECs, assisted with the assessment of routes, contributed to the identification of mitigation measures, and provided feedback to improve the consultation process.

3.4 Selection of Nishshing Aki and Valued Ecosystem Components

As described in **Section 3.1**, the Nishshing Aki and VECs were identified to focus the ER on what is most relevant in the environment. The Nishshing Aki include existing social and cultural features on HIFN I.R. #2 lands that are valued by HIFN and must be protected. A review of the interaction between Transmission Line activities and components and the identified Nishshing Aki indicates that the proposed off-Reserve Transmission Line will not impact any of the Nishshing Aki since the Nishshing Aki are contained within HIFN I.R. #2.

VECs were developed based on the O. Reg. 116/01 Environmental Screening Criteria (see Screening Criteria Checklist in **Appendix A**) and linked to the VECs that were examined in **Volume A: Henvey Inlet Wind Energy Centre Environmental Assessment** to facilitate the assessment of overlapping effects in **Volume C**. To ensure a comprehensive review of the potential environmental effects of the Transmission Line, HIW also considered the following items when developing the VECs:

- Consultation with provincial agencies and consideration of other provincial and federal law and guidance (e.g., MNRF Class EA process);
- Input from HIFN;
- Federal and provincial law and guidance; and
- Any other source HIW considered to be relevant, such as scientific or academic publications or input from the public.

A full list of VECs, as well as their interactions with Transmission Line components and activities, is provided in **Section 6.1**.

3.5 Spatial and Temporal Boundaries

The spatial and temporal boundaries define the geographic and time-based limits of the ER.

The Transmission Line ROW for each route shown on **Figure 2-1** is of sufficient size to include all of the Transmission Line components, phases and activities. The study area includes a 1 km buffer on each side of the proposed transmission centre line; however, exceptions where a larger study area is warranted, the boundaries are described in **Section 4**. Individual spatial boundaries are defined specifically for each VEC, where required, based on the anticipated spatial extent of potential environmental effects. These individual study areas are identified for the applicable VECs in **Section 4**. Study areas may be adjusted as the ER progresses, where new information supports a change.

The temporal boundaries for each phase of the Transmission Line are defined below:

Construction Phase: ..... May 2016 to January 2018
Operating Phase: ..... February 2018 to January 2048
Decommissioning Phase: ..... January 2048 to September 2049

Based on the timing of the phases, the overall temporal boundary for the ER is from May 2016 to September 2049.

3.6 Potential Effects and Mitigation

Potential effects of each route of the Transmission Line are determined by assessing the interaction of components and activities of the Transmission Line with Nishshing Aki and VECs based on existing environmental conditions. O. Reg. 116/01 requires additional information and analysis for each of the potential environmental effects identified through the Environmental Screening Process including:

- a description of the potential negative environmental effects or concerns (see the Glossary for a description of what may constitute a negative environmental effect) (MOECC, 2011); and
- a description of any standard environmental mitigation or impact management measures that will be used to avoid, reduce, or minimize the environmental effects, concerns or issues (MOECC, 2011).

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 (MOECC, 2011; HIFN, 2015). Mitigation strategies are developed based on federal and provincial law and guidance, industry best practices and previous experience on similar electricity projects.

In accordance with O. Reg. 116/01, where the ER determines that there is a potential environmental effect, but that the effect could likely be addressed through mitigation, the ERR concludes if the effect exists and answers “Yes” to the criteria question in the Screening Checklist. This approach ensures that the potential environmental effects of the Transmission Line and proposed methods for mitigating and managing any impacts are open to discussion and reviewed by all interested and affected Aboriginal communities, public and agency stakeholders, and that HIW has made a binding commitment to implement mitigation measures. The potential effects, proposed mitigation measures and review of these are included in **Section 6**.

3.7 Net Effects and Determination of Significance

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. The main purpose of the ER is to assess and design the proposed Transmission Line so as to avoid or minimize significant net adverse environmental effects. In order to assess the significance of net adverse environmental effects, the following criteria are used:

Value of the Resource Affected: ..... is the affected resource and / or area considered common or scarce?

Magnitude of the Effect:..... is the effect inconsequential, low, moderate, or high?

Geographic Extent of the Effect: ..... is the effect confined to a small area around a physical work or activity, a larger area within study area, or a larger area?

Duration and Frequency of the Effect: ..... is the effect short-term, medium-term, or long-term? Infrequent, frequent, or continuous?

Irreversibility of the Effect:..... is the effect reversible?

Ecological / Social Context: ..... is the effect on a resilient feature or a sensitive feature?

These criteria are further defined in **Table 3-2**. To assist in determining significance, the degree of effect is defined in the following table. Once the degree of effect is understood, significance can be determined. The final determination of significance is based on weighing all criteria and identifying the likelihood of the effect occurring. The significance of negative net effects is described in **Section 6**.

Table 3-2: Net Effects Significance Criteria and Degree of Effect

Net Effects Criteria	Degree of Effect		
	Low	*Moderate*	*High*
Value of the Resource Affected	– Effect is on a common feature.	– Effect is on a moderately common feature.	– Effect is on feature that is not common.
Magnitude of the Effect	– Effect is inconsequential or is a minor change compared to existing conditions.	– Effect exceeds existing conditions, but is less than federal or provincial regulatory criteria or published guideline values.	– Effect exceeds federal or provincial regulatory criteria or published guideline values.
Geographic Extent of the Effect	– Effect is within the study area.	– Effect is outside of the Transmission Line study area as defined specifically for each VEC.	– Effect is regional.
Duration and Frequency of the Effect	– 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.
Irreversibility of the Effect	– 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.
Ecological / Social Context	– Effect is on a feature with low fragility (i.e., high resilience to effect).	– Effect is on a feature with moderate fragility (i.e.; moderate resilience to effect).	– Effect is on a feature with high fragility (i.e., low resilience to effect).

Based on the criteria in **Table 3-2**, the ERR identifies one 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 one (1.) to three (3.), the standard is not certainty, but likelihood. In other words, the effect does not need to be confirmed to occur in order to be considered significant. With regard to conclusion four (4), the ERR shall address the uncertainty of any adverse effect consistent with the precautionary principle[2].

3.8 Cumulative Effects

Given that portions of Route B may be carried out on Aboriginal lands (i.e., Magnetawan and Shawanaga First Nation Reserves), federal permits and associated approvals under Section 67 of the *CEAA* may be required.

Cumulative effects are assessed to meet the potential requirements under Section 67 ("projects carried out on federal lands") of the *CEAA*, 2012. The cumulative environmental effects are determined by assessing combined

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*

effects of the on- and off-Reserve components with other past, present and reasonably foreseeable future projects and activities.

This step of the ER is described in **Volume C - Overlapping and Cumulative Effects Assessment** and includes a determination of potential cumulative effects, proposed mitigation measures and the significance of the net adverse cumulative environmental effects.

3.9 Proposed Monitoring and Follow-up Programs

Monitoring and follow-up programs are developed in conjunction with mitigation measures for potentially adverse environmental effects (including cumulative effects). These programs will allow HIW to determine the effectiveness of the proposed mitigation measures, and verify the accuracy of the ER predictions. If adverse environmental effects are determined to be more severe than predicted, or if mitigation is less effective than planned, the results of monitoring and follow-up programs will serve as early warning signals that will allow HIW to implement remedial measures in a timely manner. Proposed monitoring programs are provided in **Section 8**.

3.10 Advantages and Disadvantages

The final step of the ER is reviewing the overall advantages and disadvantages of the Transmission Line. Advantages include positive environmental effects such as community benefits resulting from job creation, or enabling the use of a renewable resource to generate power. Such advantages can offset negative environmental effects and have been evaluated by comparing them against not constructing the Transmission Line. A summary of this comparison is provided in **Section 10**.

4. Existing Environment

4.1 Physical Environment

Physical environment existing conditions were reviewed within a 1 km buffer around the Route A and Route B Transmission Lines.

4.1.1 Topography and Soils

Route A & B:

The Route A and B Transmission Line study areas lie within the Georgian Bay Fringe physiographic region, as defined by Chapman and Putnam (1984). The Georgian Bay Fringe 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. Although relief within the Georgian Bay Fringe is generally considered to be low (i.e., less than about 15 m), numerous bare rock knobs and ridges occur which rise above the local ground topography. The character of the land surface across the region is dictated by the irregular bedrock surface that underlies a thin, discontinuous blanket of overburden.

Route A:

Steep-walled valleys and bedrock-controlled features are observed to trend northeast – southwest within the Route A Transmission Line study area and are dictated by the fault and fracture network prevalent in the bedrock. Ground elevations along the proposed Route A Transmission Line generally decline towards the west from a topographic high of approximately 222 m Above Sea Level (mASL) to a low of about 175 mASL at the western end of the Route A Transmission Line. The topography for the Route A Transmission Line study area can be seen in **Figure 4-1**.

Route B:

Steep-walled valleys and bedrock-controlled features are observed to trend in a general east – west direction within the Route B Transmission Line study area and are dictated by the fault and fracture network prevalent in the bedrock. Ground elevations along the proposed Route B Transmission Line generally decline towards the north from a topographic high of approximately 277.5 mASL near Parry Sound, Ontario to a low of about 176.5 mASL near Britt, Ontario. The topography for the Route B Transmission Line study area can be seen in **Figure 4-2**.

4.1.2 Bedrock Geology

Route A:

The Route A Transmission Line study area is situated over a folded assemblage of gneissic rocks of the Key Harbour Gneiss Association and intermediate to felsic intrusive within the western portion of the Central Gneiss Belt (Culshaw *et al.*, 2004a). The Key Harbour Gneiss Association is characterized by intermediate to felsic leucocratic gneiss, and layered metasedimentary rocks of pink to grey quartz-feldspar-biotite paragneiss. Rocks of the Key Harbour Gneiss Association within the study area are mapped as a single unit in **Figure 4-3** due to their similarity in age and generally more mafic composition when compared to the younger, more felsic intrusives.

Figure 4-1: Route A Transmission Line Topography

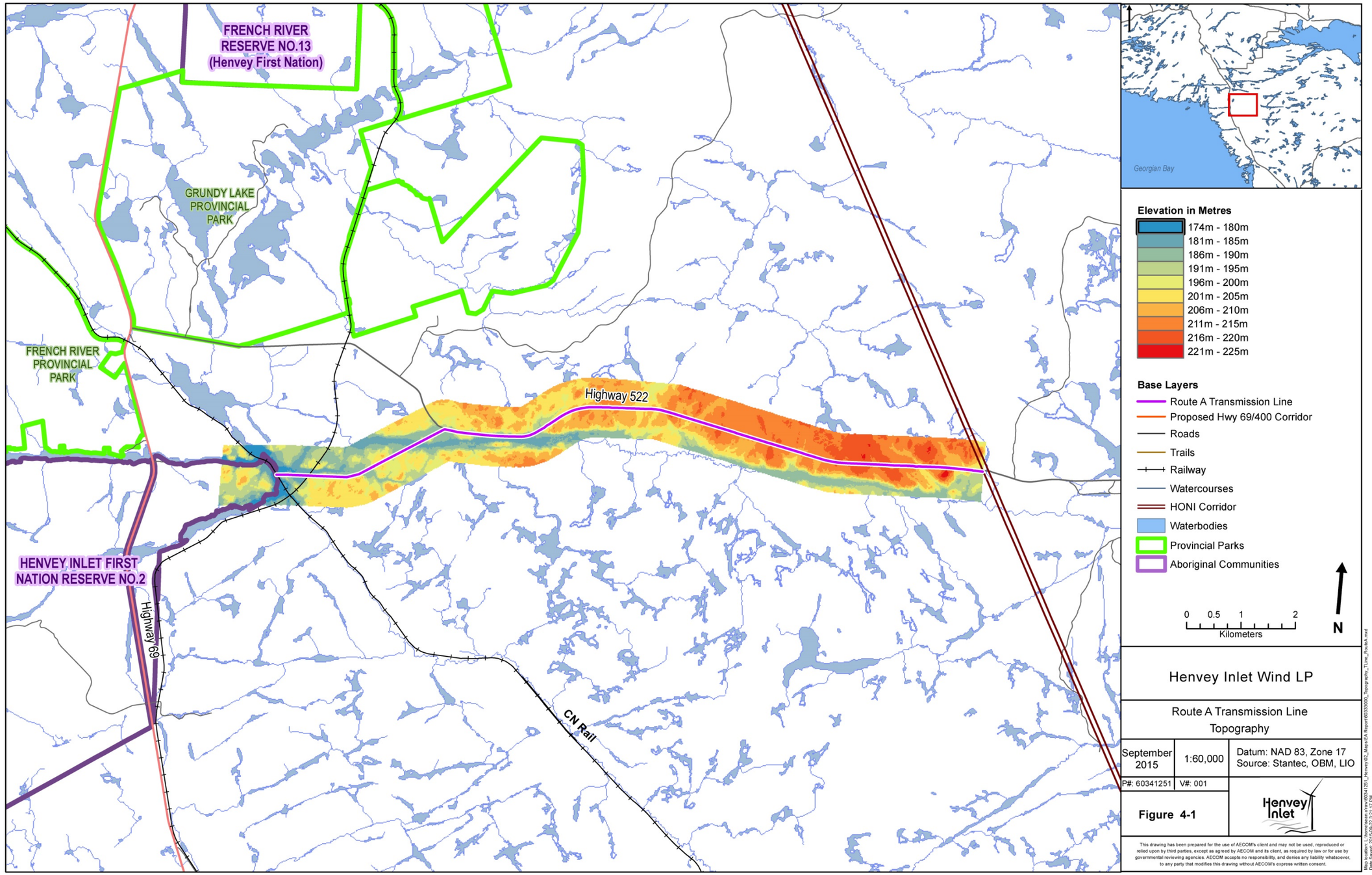


Figure 4-2: Route B Transmission Line Topography

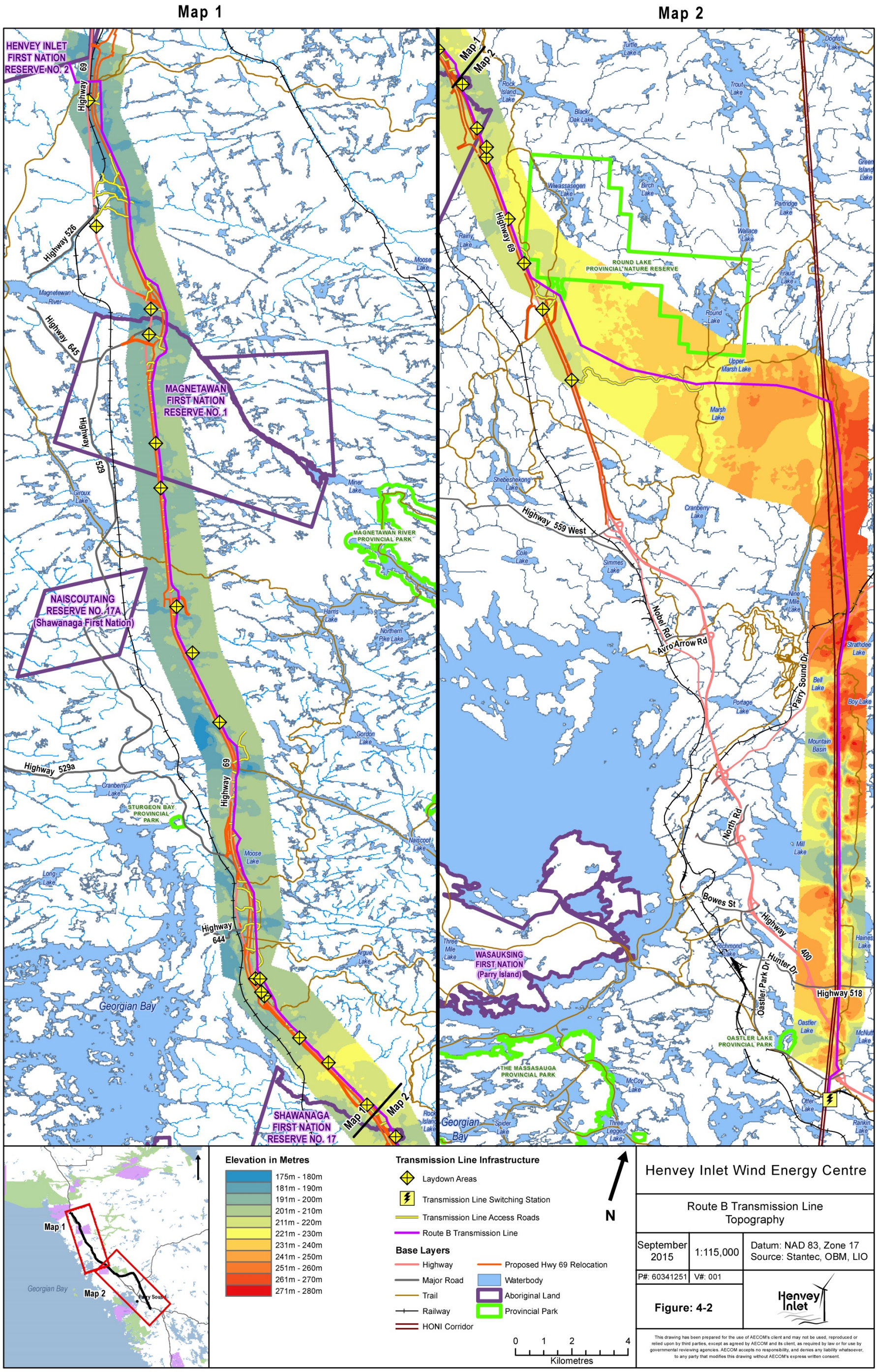
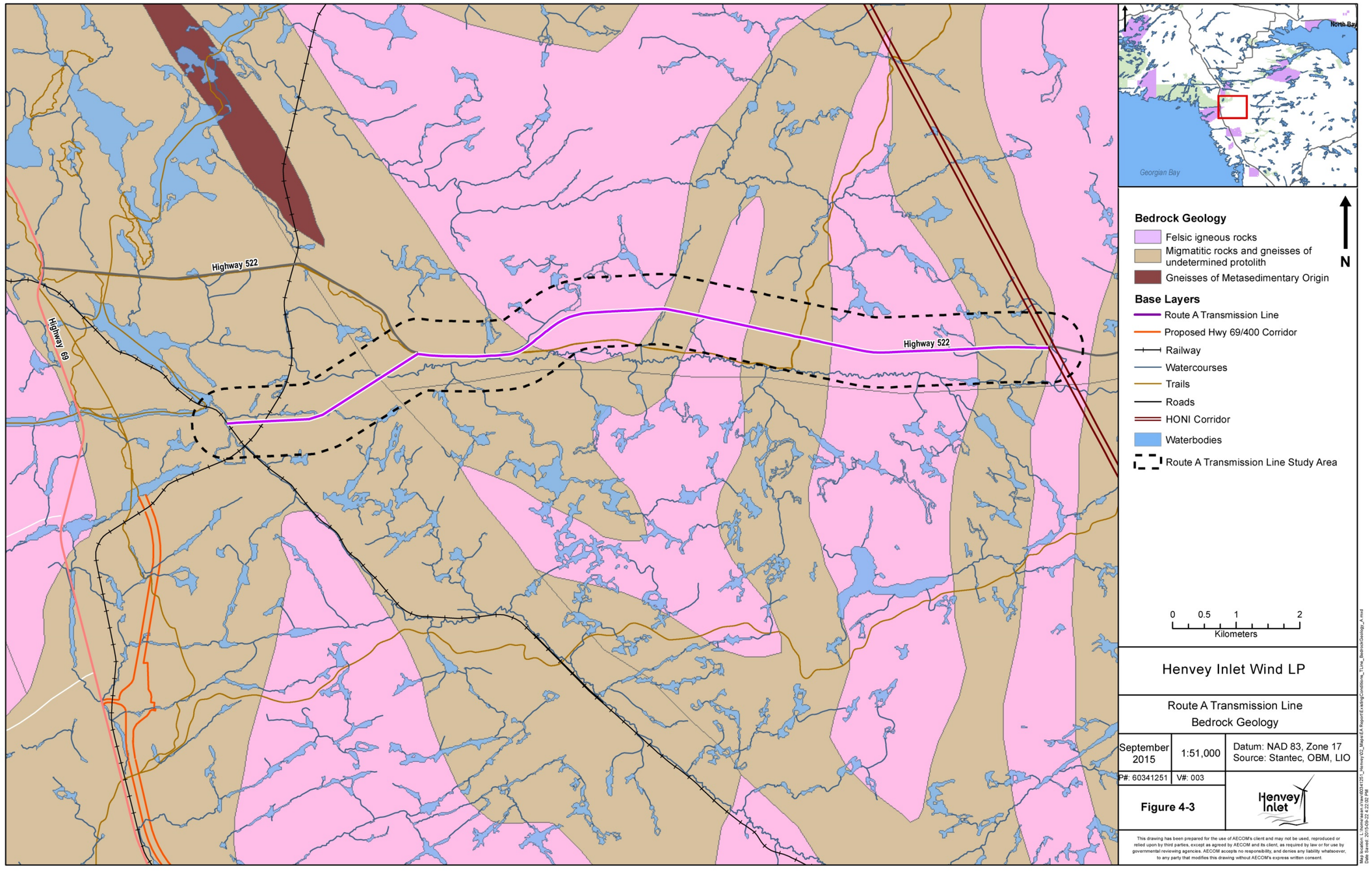


Figure 4-3: Route A Bedrock Geology



A later suite of intermediate to felsic intrusive rocks is mapped within the Route A study area and is characterized by weakly foliated to gneissic grey-coloured hornblende-biotite granodiorite, locally containing potassium feldspar megacrysts, minor tonalite, pink granite, and grey granodiorite (Culshaw *et al.*, 2004b).

Route B:

The Route B Transmission Line 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 Grenville Front Tectonic Zone lies to the north of the study area, and the Central Metasedimentary Belt lies to the south. The Central Gneiss Belt is composed of a complex suite of strongly foliated gneissic and migmatitic rocks of Early to Middle Proterozoic age (Kor, 1991). The Central Gneiss Belt has been further divided into separate lithotectonic domains and sub-domains, each separated by zones of intense metamorphism and based on distinct changes in geological, geophysical, and structural characteristics (Kor, 1991, Davidson *et al.*, 1982).

The Route B Transmission Line study area is located within two (2) geological domains; the Britt Domain which occupies the eastern shoreline of Georgian Bay north of Pointe-au-Baril, and the Shawanaga Domain which extends along Georgian Bay south to Parry Sound (Culshaw *et al.*, 2004). The Britt Domain is characterized by a complex of highly deformed layered, migmatitic gneisses of granitic to granodioritic composition that range from pinkish-grey to greyish white in colour and exhibit strong foliation (Bright, 1989). Mineral assemblages correspond to that of the mid- to upper amphibolites facies (Davidson and Morgan, 1981). Biotite gneiss and quartzofeldspathic gneiss are also present. These units are intruded by metamorphosed felsic to intermediate plutonic rocks consisting of massive to foliated monzogranitic to granitic orthogneiss, and a sequence of mafic dikes composed of amphibolite and gabbroic orthogneiss. The suite of metamorphic rocks within the area is intruded by late, unmetamorphosed pegmatitic granite dykes (Bright, 1989). The Shawanaga Domain differs from the Britt Domain in the lack of crosscutting mafic dikes, but rocks rather contain pods of retrogressed mafic ecologites composed essential of garnet and pyroxene (Culshaw *et al.*, 2004).

North of Pointe-au-Baril, the Route B study area is situated over a folded assemblage of gneissic rocks of the Key Harbour Gneiss Association and intermediate to felsic intrusives (Culshaw *et al.*, 2004). The Key Harbour Gneiss Association is characterized by intermediate to felsic leucocratic gneiss, and layered metasedimentary rocks of pink to grey quartz-feldspar-biotite paragneiss. Rocks of the Key Harbour Gneiss Association within the study area are mapped as a single unit in **Figure 4-4** due to their similarity in age and generally more mafic composition when compared to the younger, more felsic intrusives. A later suite of intermediate to felsic intrusive rocks is mapped along the Route B Transmission Line and is characterized by weakly foliated to gneissic grey-coloured hornblende-biotite granodiorite, locally containing potassium feldspar megacrysts, minor tonalite, pink granite, and grey granodiorite (Culshaw *et al.*, 2004).

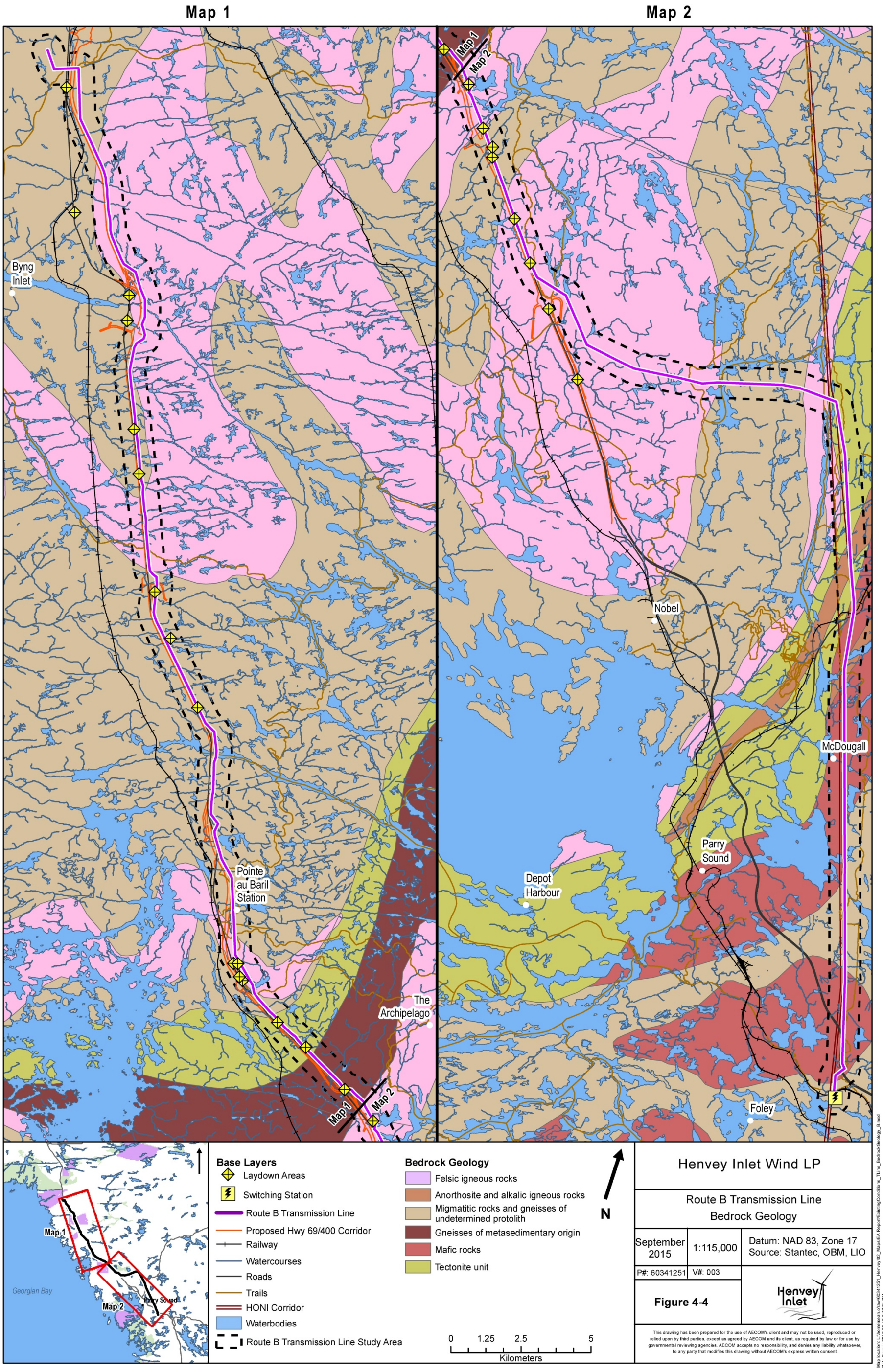
Through the Township of McDougall, the Route B Transmission Line overlies a thrust contact with the Parry Sound Domain, illustrated on **Figure 4-4** as a 'Tectonite Unit' (Culshaw *et al.*, 2004). This unit is dominated by mafic and metasedimentary rocks, which includes para-amphibolite and layered mafic gneiss.

4.1.3 Quaternary Geology

Route A:

Very little overburden is present within the Route A Transmission Line study area. Exposed, polished bedrock accounts for much of the surficial geology, with the remainder being characterized by organic deposits which have

Figure 4-4: Route B Bedrock Geology



accumulated in low-lying areas and bedrock valleys as well, as a bedrock-drift complex consisting of a thin, discontinuous veneer of glaciolacustrine and glaciofluvial sand and / or gravel, isolated occurrences of ice-contact stratified sands and gravels, and of loose, stony glacial till (OGS, 2003) (**Figure 4-5)** . Where present, the thickness of the overburden generally is less than about 1 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. Surficial geology mapping along Highway 522 for the eastern portion of the Route A Transmission Line study area is currently unavailable.

The past glacial history of the region is better described through observations of erosional bedrock features such as striae, chattermarks, and roches moutonees. The deposited drift and bedrock erosional features represent the final Late Wisconsinan glacial advance and retreat (Kor, 1989). The following sections provide a description of the quaternary geological deposits found along the Route A Transmission Line.

4.1.3.1 Ice-Contact Stratified Deposits and Till

Ice-contact stratified deposits occur in a narrow linear bedrock-controlled valley in the western portion of the Route A Transmission Line study area (**Figure 4-5**). This deposit is described by Kor (1989) as being comprised of rippled, cross-bedded, medium- to coarse-grained sands and fine gravels that are interbedded with loose stony diamict flows.

The till is of a loose sandy to silty sand texture and contains sub-angular clasts derived from local rock types. This deposit was observed by Kor (1989) in protected bedrock hollows and was associated with the ice-contact stratified deposits. Kor (1989) suggests this till may have been more extensively deposited, but was removed by glacial meltwaters.

4.1.3.2 Glaciolacustrine Deposits

Glaciolacustrine sands and gravels were deposited during a time when the study area was submerged by glacial Lake Algonquin. Thicker, more continuous deposits of glaciolacustrine sediments are mapped north and northwest of the Route A Transmission Line, but a small outcrop potentially intercepts the Route A Transmission Line near the CN railway and the CP railway. These deposits are generally characterized by a coarsening-upward sequence of laminated silts and clays overlain by stratified sand and some gravel (Kor, 1989).

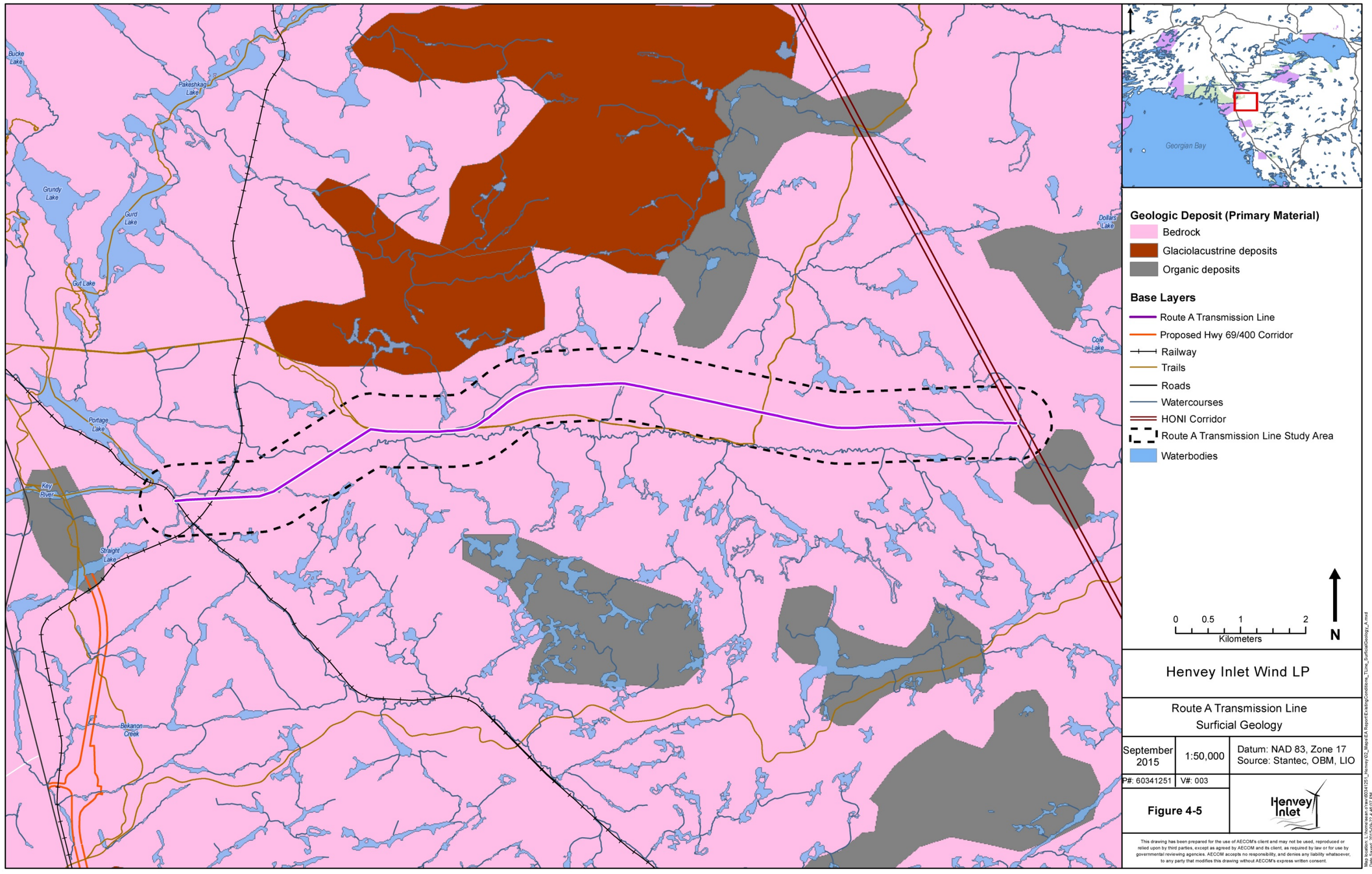
4.1.3.3 Glaciofluvial Deposits

A small outcrop of coarse-textured glaciofluvial deposits of sand and gravel intercepts the Route A Transmission Line near the CN railway crossing. Within the Parry Sound District these deposits typically overlie glaciolacustrine deposits, indicating drainage during phases of glacial lake decline (Kor, 1989).

4.1.3.4 Recent Deposits

Recent deposits, swamps and organic deposits are common within the Route A study area and are typically present in low-lying areas and bedrock hollows. These areas commonly exhibit poor drainage and associated marsh-like characteristics.

Figure 4-5: Route A Surficial Geology



Route B:

Very little overburden is present within the Route B study area. 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 as well as a bedrock-drift complex consisting of a thin, discontinuous veneer of glaciolacustrine and glaciofluvial sand and / or gravel, isolated occurrences of ice-contact stratified sands and gravels, and of loose, stony glacial till (OGS, 2003) (**Figure 4-6**). According to MOECC water well records, where present, the thickness of the overburden generally is less than about 1 m, with thicker accumulations of up to 45 m being found associated with ice-contact stratified deposits and glaciolacustrine sand and gravel deposits.

The past glacial history of the region is better described through observations of erosional bedrock features such as striae, chattermarks, and roches moutonees. The deposited drift and bedrock erosional features represent the final Late Wisconsinan glacial advance and retreat (Kor, 1989). The following sections provide a description of the quaternary geological deposits found along the Route B Transmission Line.

4.1.3.5 Ice-Contact Stratified Deposits and Till

Isolated occurrences of Ice-contact stratified deposits are primarily found within the southern portion of the Route B study area (**Figure 4-6**). This deposit is described by Kor (1989) as being comprised of rippled, cross-bedded, medium- to coarse-grained sands and fine gravels that are interbedded with loose stony diamict flows.

The till is of a loose sandy to silty sand texture and contains sub-angular clasts derived from local rock types. This deposit was observed by Kor (1989) in protected bedrock hollows and was associated with the ice-contact stratified deposits. Kor (1989) suggests this till may have been more extensively deposited, but was removed by glacial meltwaters.

4.1.3.6 Glaciolacustrine Deposits

Glaciolacustrine sands and gravels were deposited during a time when the study area was submerged by glacial Lake Algonquin. Thicker, more continuous deposits of glaciolacustrine sediments are mapped along the northern portion of the Route B Transmission Line. Based on MOECC water well records these deposits range in thickness from less than 10 m up to 29 m. These deposits are generally characterized by a coarsening-upward sequence of laminated silts and clays overlain by stratified sand and some gravel (Kor, 1989).

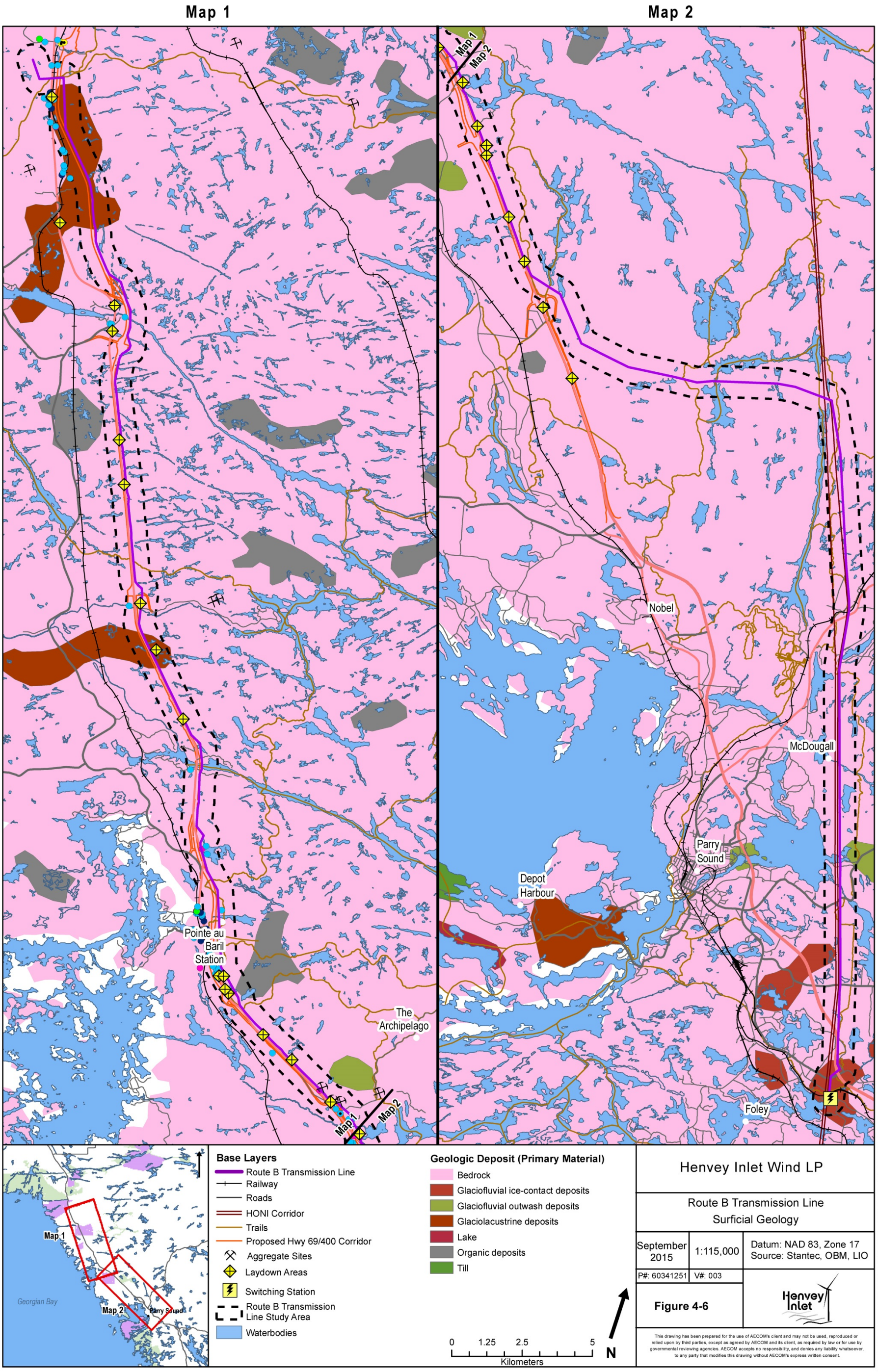
4.1.3.7 Glaciofluvial Deposits

A small outcrop of coarse-textured glaciofluvial deposits of sand and gravel is found west of the Route B Transmission Line in the southern portion of the Route B study area. Within the Parry Sound District these deposits typically overlie glaciolacustrine deposits, indicating drainage during phases of glacial lake decline (Kor, 1989).

4.1.3.8 Recent Deposits

Recent deposits, swamps and organic deposits are common within the Route B study area and are typically present in low-lying areas and bedrock hollows. These areas commonly exhibit poor drainage and associated marsh-like characteristics.

Figure 4-6: Route B Surficial Geology



4.1.4 Contaminated Land

A Contaminant Source Inventory (CSI) was completed to identify known and/or potential sources of contamination along the proposed Route A and B Transmission Line study areas. Potential sources of contamination may be associated with specific activities, industries or land uses. For the purposes of this CSI, a database search report was requested from EcoLog Environmental Risk Information Services (EcoLog). EcoLog has compiled environmental records from more than 60 government and private sources, including incident reports, retail and fuel storage tank records, spill records, and waste generator records. A 250 m search radius from the centerline of the proposed Route A and B Transmission Lines was considered during the records search. A copy of the EcoLog reports is provided in **Appendix B1** and **B2.**

Due to the remote location of the study area, other records typically searched for due diligence assessments were not readily available. Many of these searches rely on the availability of municipal addresses to identify the search location. However, due to the existence of limited development along the proposed Route A and B Transmission Lines, the EcoLog reports contain sufficient information to identify potential environmental concerns and to direct further investigation, as required.

Route A

No records were identified for properties directly within the proposed Route A Transmission Line ROW.

A total of nine (9) records, with known locations, were identified in the EcoLog report for properties located within 250 m of the proposed Route A Transmission Line alignment.

Additionally, a total of 80 potential records, with unknown locations, were included in the EcoLog report, which pertained to incidents that occurred along Highway 69/400. Upon further investigation, only seven (7) of these records were inferred to be situated within the study area.

Relevant and potentially relevant records are summarized below:

- A past producing mine, without reserves, was identified at the western most limit of the study area, near Highway 69. The commodity type was identified as Gneiss.
- Water Well records in the area relate principally to monitoring and/or test holes, with the exception of one domestic well. The identified well records indicate that subsurface conditions generally consist of sand underlain by granitic bedrock.
- Roadside spills from transport truck turnovers and malfunctions are fairly common along provincial highways. Several spill records were confirmed to be outside the study area, or were determined to be insignificant due to the quantity or substance spilled. Notable spills identified within the study area are listed below:
  - Diesel fuel spill of 100 L occurred along Highway 69 between Still River and Hwy 522 due to spill caused by a transport truck. The exact location was not identified.
  - Diesel fuel spill of 450 L occurred along a 4 km stretch on Highway 69 between Key River and Still River due to the release of fuel from a tractor. The exact location was not identified.
  - Dry compressed creosote (100 kg) was spilled due to a truck and trailer overturn on Highway 69. The location was not identified.
  - Diesel fuel spill of 310 L occurred along Highway 69. The location was not identified.

- Diesel fuel spill occurred along Highway 69 near Henvey Township due to a leaking saddle tank of a transport truck. The exact location was not identified.
- Gasoline leak of 3 L from a private motor vehicle along Highway 69. The location was not identified.
- Diesel fuel leak of unknown quantity occurred along Highway 69 within Still River area. The exact location was not identified.

Route B

A total of 164 potential records, with unknown locations, were included in the EcoLog report, which pertained to incidents that occurred along Highway 69/400. Upon further investigation, 28 of these records were inferred to be situated within the Route B Transmission Line study area.

Relevant and potentially relevant records are summarized below:

- Two (2) former landfill sites were identified:
  - One (1) site on Lot 18, Concession 11 in the Township of McDougall.
  - One (1) site on Lot 25, Concession 6 in the Township of The Archipelago.
- An abandoned aggregate pit and quarry facility was identified on Lot 17 of Concession 3 and 4 in the Township of McDougall.
- Four (4) records pertaining to fuel storage tanks were identified:
  - Three (3) locations along Highway 69 in Pointe au Baril. A review of available aerial imagery indicates that these listings likely reference the site of an existing Shell retail station.
  - One (1) confirmed leak of an underground tank in Pointe au Baril. It is unclear whether this tank is the same location as those listed above.
- Water well records in the area relate principally to monitoring wells and/or test holes, with the exception of one domestic well. The identified well records indicate that subsurface conditions generally consist of sand underlain by granitic bedrock.
- Roadside spills from transport truck turnovers and malfunctions are fairly common along provincial highways. Several spill records were confirmed to be outside the study area, or were determined to be insignificant due to the quantity or substance spilled. Notable spills identified within the study area are listed below:
  - Diesel fuel spill of an unknown quantity on Highway 69 north of Pointe au Baril. Groundwater pollution, surface water pollution and soil contamination was confirmed.
  - Diesel fuel spill of 180 L to a ditch south of Britt on Highway 69 due to an overturned truck. Soil contamination was confirmed.
  - Diesel fuel spill of 8,000 L to a ditch occurred south of Pointe au Baril on Highway 69. Possible contamination.
  - Diesel fuel spill of 513 L occurred just south of Shawanaga. Soil contamination was confirmed.
  - Diesel fuel spill along Highway 69 near in Wallbridge Township due to a leaking saddle tank of a transport truck. Soil contamination was confirmed.
  - Diesel fuel spill of 200 L to a ditch due to an overturned truck on Highway 69 north of Pointe au Baril. Possible contamination.
  - Diesel fuel leak of an unknown quantity along Highway 69 for 20 km due to a transport truck striking a moose. Contamination possible.
  - Diesel fuel leak of unknown quantity along Highway 69 from Britt to Port au Baril.

- Diesel fuel spill of 500 L due to an overturned truck. Land / water contamination confirmed.
- Diesel fuel spill of 100 L onto the shoulder due to an automobile collision at Highway 69 and Harris Lake Road. Soil contamination was confirmed.
- Diesel fuel spill approximately 1 km south of Pointe au Baril due to an automobile collision. 50 L leaked onto the ground and into a nearby creek. Surface water pollution was confirmed.
- Diesel fuel spill of 1,350 L onto Highway 69 from a leaking saddle tank of a transport truck approximately 9 km north of Pointe au Baril. Soil contamination was confirmed.
- Hydraulic oil spill of 25 L onto the ground from a HONI truck at the intersection of Highway 69 and Highway 529. Soil contamination was confirmed.
- Hydraulic oil spill of approximately 80 L on to the ground from a HONI hose along Highway 69, approximately 0.5 kilometers south of Highway 529. Soil contamination was confirmed.
- 675 L of diesel leaked from the saddle tank of a transport truck in Wallbridge Township; exact location not noted. Soil contamination was confirmed.
- 900 L of diesel fuel spilled to the ground due to tractor trailer accident on Highway 400 south of Highway 518. Soil contamination likely.
- Release of 40 tonnes of alloy to a ditch along Highway 69 approximately 20 kilometers north of Pointe au Baril. Soil contamination possible.

4.1.5 Seismicity

Route A:

Seismic hazard is quantified by determining the probability of expected ground motion within an area. The Geological Survey of Canada (GSC) is responsible for evaluating regional seismic hazards and preparing seismic hazard maps based on statistical analysis of past earthquake and from knowledge of Canada's tectonic and geological structure. The National Building Code uses seismic hazard maps and earthquake load guidelines to design and construct buildings to be as resilient to earthquake damage as possible. According to the 2010 Seismic Hazard Map, prepared by the GSC, the Route A Transmission Line study area is situated within a low relative seismic hazard area (GSC, 2015).

Route B:

According to the 2010 Seismic Hazard Map, prepared by the GSC (2015), the Route B Transmission Line study area is situated within a low relative seismic hazard area, however, seismic hazard increases towards the east and results in a relative higher seismic hazard along the southern portion of the Route B Transmission Line.

4.2 Natural Environment

A background information review of terrestrial natural heritage features and functions located within 1 km of the Route A and Route B Transmission Line was conducted using the following resources:

- MNRF Natural Resource Values Information System (NRVIS) mapping (MNRF, 2014);
- MNRF Make-a-Map: Natural Heritage Areas Application (MNRF, 2015a);
- MNRF Crown Land Use Policy Atlas (MNRF, 2014b);
- MNRF Natural Heritage Information Centre (NHIC) Rare Species Records (MNRF, 2005);
- MNR Significant Wildlife Technical Guide (MNRF, 2000);

- Draft Significant Wildlife Habitat 5E Criterion Schedule (MNRF, 2012a);
- Ontario Breeding Bird Atlas (OBBA) Website (Bird Studies Canada, *et al.* 2006);
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2014);
- Atlas of the Mammals of Ontario (Dobbyn, 1994);
- Important Bird Areas Canada (Bird Studies Canada, *et al*. 2015);
- Highway 69 Four-Laning From North of Nobel to Highway 522 (MTO, 2008);
- Highway 69 Four-Laning From North of Nobel to Highway 522 Natural Heritage Background Interim Report (Ecoplans, 2006);
- Highway 69 Four-Laning From North of Nobel to Highway 522 Vegetation and Wildlife Resources Technical Report (Ecoplans, 2007).
- The Neegan Burnside Nigig Power Corp / Henvey Inlet Wind Project Preliminary Environmental Constraints Analysis (Neegan Burnside, 2011);
- The results of the Stantec Consulting Ltd. (Stantec) 2013 terrestrial Field studies provided to AECOM in October 2014;
- The results of the Tulloch Engineering aquatic field studies in provided to AECOM in October 2014;
- The Ecosystems of Ontario Part 1: Ecozones and Ecoregions (Crins, *et al*. 2009); and
- Forest Regions of Canada (Rowe, 1972).

The study areas and the associated natural features are shown in **Figure 4-7** and **Figure 4-8.**

Route A:

The existing natural environment within the Route A Transmission Line study area is comprehensively described in the Henvey Inlet Route A Transmission Line – Terrestrial Environment Baseline Report (Route A Terrestrial Baseline Report) (**Appendix B3**). This document identifies any known or potential natural features for each Valued Ecosystem Component (VEC) within the study area based on a review of available background information.

The presence of natural features identified in the baseline review, as well as any additional features within 25 m on either side of the centreline of the proposed Route A Transmission Line, were studied further during the spring / summer 2015 field season. The results of these studies are also presented in the Route A Terrestrial Baseline Report **(Appendix B3)**.

Information from the Route A Terrestrial Baseline Report that is relevant to the VECs for the natural environment is summarized in the following sections.

Route B:

The natural environment surrounding the Route B Transmission Line study area is comprehensively described in the Henvey Inlet Route B Transmission Line – Terrestrial Environment Baseline Report (Route B Terrestrial Baseline Report) (AECOM, 2015x) (**Appendix B4**). This document identifies any known or potential natural features for each VEC within the study area based on a review of available background information.

The presence of natural features identified in the background review, as well as any additional features within 25 m on either side of centreline of the proposed Route B Transmission Line, were studied further during the spring / summer 2015 field season. The results of these studies are also presented in the *Route B Terrestrial Baseline Report* (**Appendix B4**).

Information from the Route B Terrestrial Baseline Report that is relevant to the VECs for the natural environment is summarized in the following sections.

Figure 4-7: Route A Terrestrial Environment Features

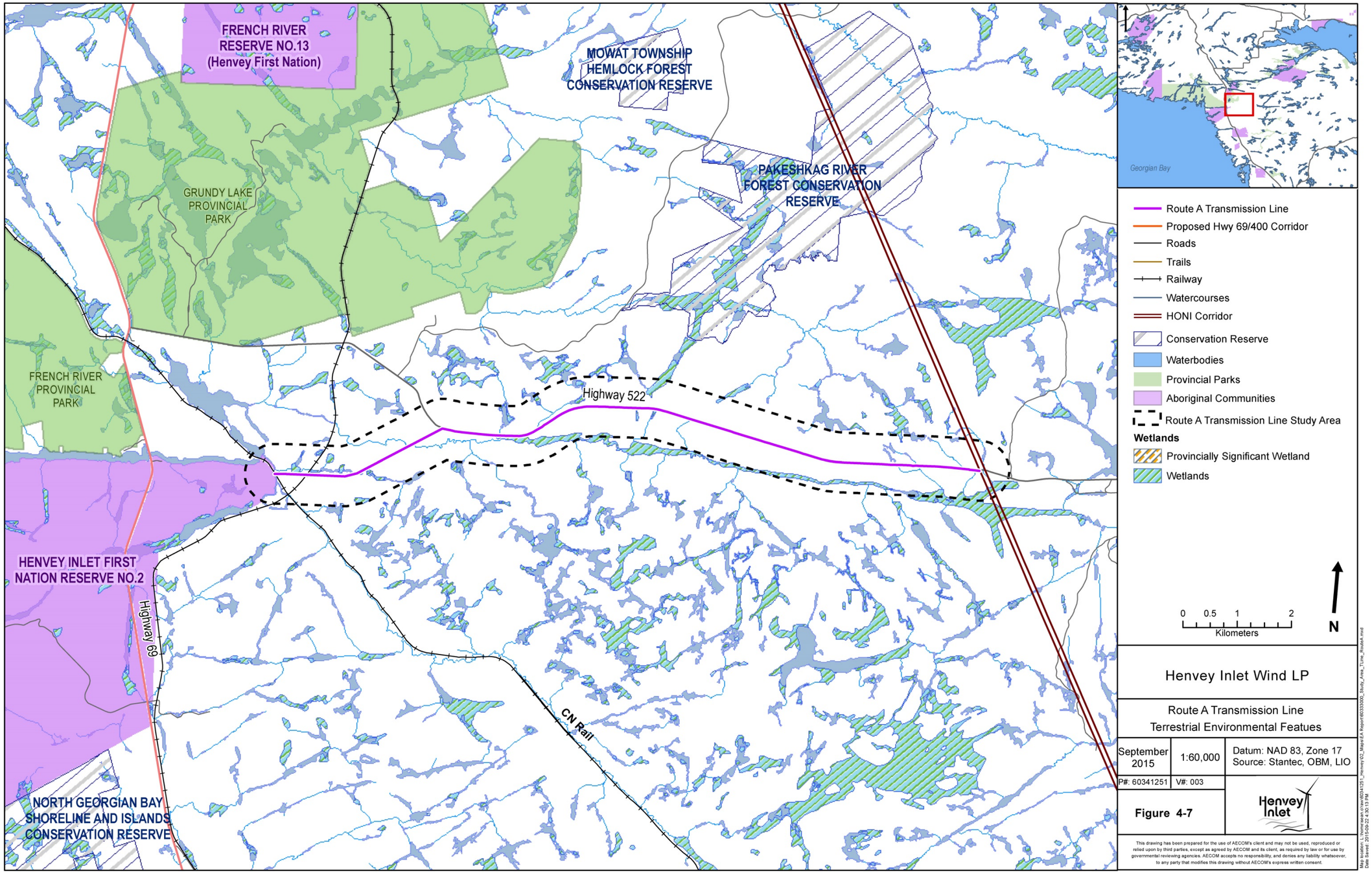
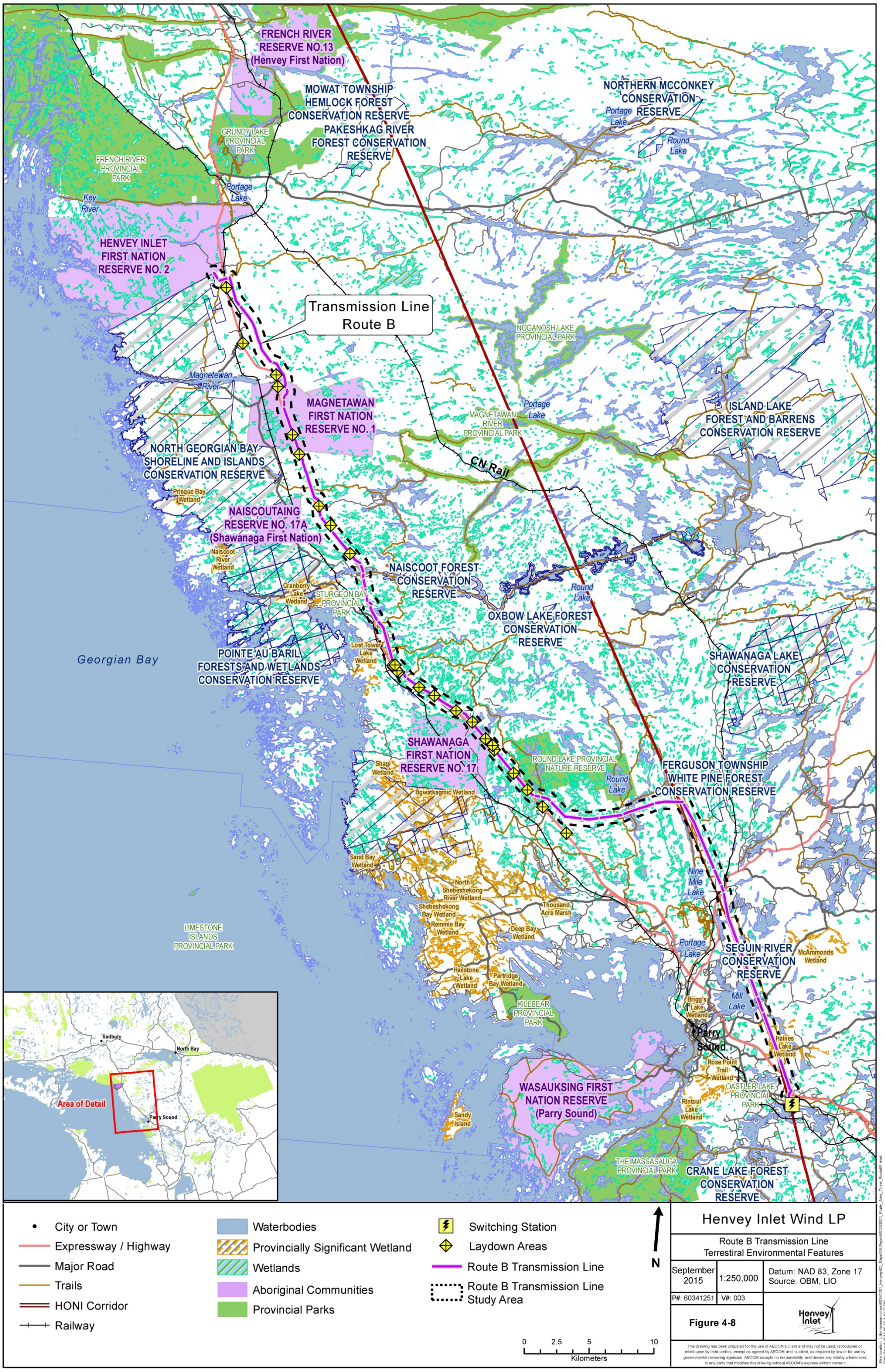


Figure 4-8: Route B Terrestrial Environment Features



4.2.1 Wildlife and Wildlife Habitat

Route A:

The Route A Transmission Line study area is largely undeveloped, and provides habitat for a diversity of wildlife. Background review revealed that 17 mammal, 200 bird, 13 reptile, and 12 amphibian species have been recorded within the study area (BSC, 2006; Dobbyn, 1994; MNRF, 2014; Ontario Nature, 2015). The majority of these species are considered common, with secure populations in Ontario.

Field studies conducted by AECOM in spring and summer 2015 particularly focused on wildlife Species at Risk (SAR) and Significant Wildlife Habitats (SWHs). Incidental wildlife observations were also recorded. A summary of Rare, Threatened or Endangered Species, which are considered either SAR or Species of Conservation Concern (SOCC), is provided in **Section 4.2.5** of this report.

The presence, boundaries and characteristics of candidate SWH within the Route A Transmission Line study area were determined in spring and summer 2015 using a combination of aerial photography interpretation and field studies. The following SWHs were identified as having potential to occur within the Route A Transmission Line study area:

- Raptor Wintering Areas;
- Bat Hibernacula;
- Bat Maternity Colonies;
- Bat Migratory Stopover Areas;
- Turtle Wintering Areas;
- Reptile Hibernacula;
- Deer Yarding Areas;
- Precambrian Rock Barren;
- Woodland Raptor Nesting Habitat;
- Turtle and Lizard Nesting Areas;
- Seeps and Springs;
- Aquatic Feeding Habitat;
- Mineral Licks;
- Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf;
- Amphibian Breeding Habitat (Woodland);
- Amphibian Breeding Habitat (Wetland);
- Marsh Bird Breeding Habitat;
- Shrub / Early Successional Bird Breeding Habitat;
- Amphibian Corridors;
- Deer Movement Corridors; and
- Furbearer Movement Corridors.

The results of wildlife and wildlife habitat studies are presented below. Detailed information pertaining to wildlife and Significant Wildlife Habitats is provided in the Route A Terrestrial Baseline Report **(Appendix B3)**.

Route B:

Similar to the Route A Transmission Line study area, the Route B Transmission Line is largely undeveloped, and provides habitat for a diversity of wildlife, many of which are considered common, with secure populations in Ontario. A review of background information indicated that 17 mammal species, 192 bird species, 13 reptile species, and 12 amphibian species have been recorded within the Route B Transmission Line study area (AECOM, 2014; AECOM, 2015; BSC, 2006; Dobbyn, 1994; MNRF, 2014; Ontario Nature, 2015; MTO, 2006; and MTO, 2008).

Field studies conducted by AECOM in spring and summer 2015 particularly focused on wildlife SAR and SWHs. Incidental wildlife observations were also recorded. A summary of Rare, Threatened or Endangered Species, which are considered either SAR or SOCC, is provided in **Section 4.2.5** of this report.

The presence, boundaries and characteristics of candidate SWH within the Route B Transmission Line study area were determined in spring and summer 2015 using a combination of aerial photography interpretation and field studies. The following SWHs were identified as having potential to occur within the Route B Transmission Line study area:

- Waterfowl Stopover and Staging Areas (Terrestrial);
- Waterfowl Stopover and Staging Areas (Aquatic);
- Shorebird Migratory Stopover Areas (Shorebird Staging);
- Raptor Wintering Areas;
- Bat Hibernacula;
- Bat Maternity Colonies;
- Bat Migratory Stopover Areas;
- Turtle Wintering Areas;
- Reptile Hibernacula;
- Colonially-Nesting Bird Breeding Habitat (Bank and Cliff);
- Colonially-Nesting Bird Breeding Habitat (Trees / Shrubs);
- Colonially-Nesting Bird Breeding Habitat (Ground);
- Deer Yarding Areas;
- Beach / Beach Ridges / Bar / Sand Dunes;
- Shallow Atlantic Coastal Marsh;
- Cliffs and Talus Slopes;
- Precambrian Rock Barren;
- Sand Barrens;
- Alvars;
- Old-growth or Mature Forests;
- Bog;
- Savannahs;
- Waterfowl Nesting Areas;
- Bald Eagle and Osprey Nesting, Foraging and Perching Habitat;
- Woodland Raptor Nesting Habitat;
- Turtle and Lizard Nesting Areas;
- Seeps and Springs;
- Aquatic Feeding Habitat;
- Mineral Licks;
- Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf;
- Amphibian Breeding Habitat (Woodland);
- Amphibian Breeding Habitat (Wetland);
- Mast Producing Areas;
- Marsh Bird Breeding Habitat;
- Open Country Bird Breeding Habitat;
- Shrub / Early Successional Bird Breeding Habitat;
- Amphibian Corridors;
- Deer Movement Corridors; and
- Furbearer Movement Corridors.

The results of wildlife and wildlife habitat studies are presented below. Detailed information pertaining to wildlife and SWHs is provided in the Route B Terrestrial Baseline Report **(Appendix B4)**.

4.2.1.1 Mammals

Route A:

Background Review — Background review revealed that at least 14 species of mammals, all of which are secure in Ontario, commonly occur within the Route A Transmission Line study area (Dobbyn, 1994). Additionally, three (3) SAR bats – Little Brown Bat (*Myotis lucifugus*), Northern Myotis (formerly Northern Long-eared Bat, *Myotis septentrionalis*) and Eastern Small-footed Myotis (*Myotis leibii*) – may be present within the Route A Transmission Line study area (Dobbyn, 1994; BatCon, 2015).

Incidental Mammal Observations — Over the course of the 2015 field studies, nine (9) incidental observations of five (5) mammal species or their traces were made. These included one (1) Threatened species, the Eastern Wolf (*Canis lupus lycaon*). For details pertaining to incidental mammal observations, refer to **Section 3.2.1.2.3** of the Route A Terrestrial Baseline Report **(Appendix B3)**.

Bats — Specific field studies, focused on ascertaining the presence of bat SAR, were undertaken in spring and summer 2015. Based on regular correspondence with, and guidance from, the MNRF, acoustic monitoring

protocols were followed to record bat vocalizations. Four (4) pre-programmed monitors, each set up at a different location, were deployed for a total of three (3) 10-day sessions; the monitors were moved to unique locations for each recording session, for a total of 12 monitored locations over 120 recording days. Recorded vocalizations were later analyzed by qualified Biologists in order to identify the bat species that were captured on the monitors.

In addition to the use of acoustic monitors to record bat species, a comprehensive survey of the study area was conducted in order to identify potential bat maternity roosts and hibernacula in the area. Finally, based on MNRF-specified protocols, a subset of Ecosites (*viz*., deciduous, mixed and coniferous forests and swamps as well as, to a lesser extent, cultural woodlands) were surveyed for density of cavity trees in which bats are likely to roost. A total of 88 snag / cavity tree density plots were surveyed by field staff in early April 2015. Based on these survey data snag density, an index of roosting habitat availability for bats, was calculated, and in turn used to determine the quantity of roosting habitat that is likely to be lost to Transmission Line infrastructure installation. Detailed descriptions of the methodology used to assess bat presence, and quantify suitable bat habitat within the study area, as well as preliminary results of these studies are provided under **Section 3.3.2.2** of the Route A Terrestrial Baseline Report **(Appendix B3).**

Significant Wildlife Habitats for Mammals — The Route A Transmission Line study area was surveyed extensively for the presence of SWHs that pertain to the mammalian fauna of the study area, in addition to those surveyed for bats. These habitats included: Deer Yarding Areas, Aquatic Feeding Habitat (specifically for Moose), Mineral Licks, Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf, Mast Producing Areas, Deer Movement Corridors, and Furbearer Movement Corridors. Three (3) potential Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf were noted during field studies and a number of other SWHs for mammals also have the potential to occur within the study area. For methodology and results of SWH surveys, see **Section 3.4.4** of the Route A Terrestrial Baseline Report **(Appendix B3)**.

Route B:

Background Review — Fourteen (14) species of mammals, all of which are secure in Ontario, have were known to commonly occur in the within the Route B study area (Dobbyn, 1994). Additionally, three (3) SAR bats – Little Brown Bat (*Myotis lucifugus*), Northern Myotis (formerly Northern Long-eared Bat, *Myotis septentrionalis*) and Eastern Small-footed Myotis (*Myotis leibii*) – were also thought to be present within the Route B Transmission Line study area (Dobbyn, 1994; BatCon, 2015).

Incidental Mammal Observations — Over the course of the 2015 field studies, one (1) incidental encounter with mammal species was recorded; four (4) River Otters were observed swimming together in a pond.

Bats — Specific field studies, focused on ascertaining the presence of these bat species, were undertaken in spring and summer 2015. Based on regular correspondence with, and guidance from, the MNRF, acoustic monitoring protocols were followed to record bat vocalizations. A total of 45 acoustic monitors (a combination of monitors deployed exclusively to capture bats, and monitors programmed to capture both bats and crepuscular birds) were deployed over four (4) 10-days sessions across the study area. Recorded vocalizations were later analyzed by qualified Biologists in order to identify the bat species that were captured on the monitors.

In addition to the use of acoustic monitors to record bat species, a comprehensive survey of the study area was conducted in order to identify potential bat maternity roosts and hibernacula in the area. Finally, based on MNRF-specified protocols, a subset of Ecosites (*viz*., deciduous, mixed and coniferous forests and swamps as well as, to a lesser extent, cultural woodlands) were surveyed for density of cavity trees in which bats are likely to roost. A total of 77 snag / cavity tree density plots were surveyed by field staff in early April 2015. Based on these survey data, snag density, an index of roosting habitat availability for bats, was calculated, and in turn used to determine the quantity of roosting habitat that is likely to be lost to Transmission Line infrastructure installation. Detailed

descriptions of the methodology used to assess bat presence, and quantify suitable bat habitat within the study area, as well as preliminary results of these studies are provided under **Section 3.2.1.2** of the Route B Terrestrial Baseline Report **(Appendix B4).**

Significant Wildlife Habitats for Mammals — The Route B Transmission Line study area was surveyed extensively for the presence of SWHs that pertain to the mammalian fauna of the study area, in addition to those surveyed for bats. These habitats were: Deer Yarding Areas, Aquatic Feeding Habitat (specifically for Moose), Mineral Licks, Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf, Mast Producing Areas, Deer Movement Corridors, and Furbearer Movement Corridors. Two (2) potential Denning Sites for Mink, Otter, Marten, Fisher and Eastern Wolf were observed and a number of other SWHs for mammals also have the potential to occur within the study area. Additionally, data provided by MNRF reveal that Deer Yarding Areas are distributed across the study area. For methodology and results of SWH surveys, see **Section 3.4.4 2** of the Route B Terrestrial Baseline Report **(Appendix B4).**

4.2.1.2 Avifauna

Route A:

Background Review — The OBBA (OBBA; BSC, 2006) reports the presence of 200 bird species within the six (6) 10 x 10 square kilometre (km^2) that overlap the Route A study area. These include one (1) Endangered, eight (8) Threatened, and 13 Special Concern (SC) species; the rest are considered common and secure or apparently secure in Ontario.

Breeding bird surveys — Point counts were conducted to determine the number of species of Breeding Birds in the study area. Based on a preliminary desktop review of aerial photography and the results of Ecological Land Classification (ELC) field studies across a variety of habitat types, 12 breeding bird point count stations were selected for the Route A Transmission Line study area. Two (2) sets of two (2) point counts each were carried out at least ten (10) days apart, at the peak of the breeding bird season. The counts were conducted in the early morning, during calm weather, and consisted of 10-minute sessions wherein all birds seen or heard were recorded.

A total of 461 individuals, across 49 species were recorded during the point counts. Red-eyed Vireo (*Vireo olivaceus*) was identified as the most abundant with 51 observations (11.1% of individuals birds observed). Three (3) Canada Warblers (*Wilsonia canadensis*), a COSEWIC-ranked Threatened species, were also documented within suitable breeding habitat during the course of the surveys.

Incidental avifauna observations — Additionally, 14 species of birds were recorded as incidental observations during other field studies. These included three (3) SC species in the province (according to the *ESA*) - Bald Eagle, Canada Warbler, and Eastern Wood-pewee. Of these, the former two are ranked SC according to the federal *SARA* as well. For details pertaining to both breeding bird point counts as well as incidental avifaunal observation, see **Section 3.2.2** of the Route A Terrestrial Baseline Report **(Appendix B3)**.

Species at Risk Avifauna — Targeted survey methodology was employed for only one (1) of several probable SAR birds in the study area, the Eastern Whip-poor-will (*Caprimulgus vociferous*), because preliminary review of information did not reveal the presence of suitable habitats for other species within the study area. These other species, and their habitats, were recorded only as incidental observations during the course of other field studies. The presence of Whip-poor-will (and Common Nighthawk) was ascertained using the same acoustic monitors deployed for bats, but programmed specifically to record crepuscular birds. Recordings from monitors set up at least 60 m from the edge of the 30 m ROW, and in the portion of Route A that parallels Highway 522, were under analysis at the time of preparation of this report. Initial findings, however, confirm that Whip-poor-wills and Common

Nighthawks are present in the area. For details on the surveys conducted for the crepuscular SAR birds see **Section 3.2.2.3** of the Route A Terrestrial Baseline Report **(Appendix B3)**.

A combination of the results of targeted surveys and incidental observations confirmed the presence of five (5) SAR birds in the Route A study area – Eastern Wood-pewee, Common Nighthawk, Canada Warbler, Eastern Whip-poor-will, and Bald Eagle. See **Section 3.3.3** of the Route A Terrestrial Baseline Report **(Appendix B3)** for further information on the SAR avifauna that were included in 2015 background reviews and field studies.

Significant Wildlife Habitats for Avifauna — Preliminary desktop review and aerial photography interpretation revealed that the following SWHs for birds were likely to be present in the Route A Transmission Line study area:

- Waterfowl Stopover and Staging Areas (Terrestrial);
- Waterfowl Stopover and Staging Areas (Aquatic);
- Shorebird Migratory Stopover Areas (Shorebird Staging);
- Raptor Wintering Area;
- Colonially-Nesting Bird Breeding Habitat (Bank and Cliff);
- Colonially-Nesting Bird Breeding Habitat (Trees/Shrubs);
- Colonially-Nesting Bird Breeding Habitat (Ground);
- Waterfowl Nesting Areas;
- Bald Eagle and Osprey Nesting, Foraging and Perching Habitat;
- Woodland Raptor Nesting Habitat;
- Marsh Bird Breeding Habitat;
- Open Country Bird Breeding Habitat; and
- Shrub/Early Successional Bird Breeding Habitat.

Potential Woodland Raptor Nesting Habitat (an old stick nest in a riparian Spruce stand, and an ideal nesting site for Sharp-shinned Hawk were recorded at two locations), and Marsh Bird Breeding Habitat (although no nests were observed, marsh birds were heard calling at one meadow marsh dominated by sedges and grasses, and interspersed with small pools of varying depth) were noted during field studies. A number of additional SWHs also have to potential to occur within the study area. Detailed information pertaining to SWHs for Birds is provided in **Section 3.4.4** of the Route A Terrestrial Baseline Report **(Appendix B3)**.

Route B:

Background Review — The OBBA (OBBA; BSC, 2006) reports the presence of 192 bird species within the 11 10 x 10 km^2 that overlap the Route B study area. These include one (1) Endangered, eight (8) Threatened, and 13 SC species; the rest are considered common and secure or apparently secure in Ontario. Of these, 178 species are considered common and secure or apparently secure in Ontario (BSC, 2006).

Previous breeding bird surveys were completed by LGL Limited (LGL) in 2011 and Stantec in 2013, within the portions of the Route B study area that parallel Highway 69. LGL reported only observations of rare species (Neegan Burnside, 2011). Stantec conducted both breeding bird point counts as well as area searches. From the former surveys, they reported 84 species of birds (across 1,997 individuals recorded), the most common of which were Canada Goose (*Branta canadensis*), Red-eyed Vireo (*Vireo olivaceus*) and Ovenbird (*Seiurus aurocapillus*). During their area searches Stantec recorded a total of 71 species of birds, the most common of which were Turkey Vulture (*Cathartes aura*), Barn Swallow (*Hirundo rustica*) and Red-winged Blackbird (*Agelaius phoeniceus*). Stantec also completed crepuscular breeding bird surveys during which Whip-poor-will (*Caprimulgus vociferus*) and Common Nighthawk (*Chordeiles minor*) were recorded within or in the vicinity of the Route B study area (AECOM, 2014a).See **Section 3.2.2.1** of the Route B Terrestrial Baseline Report **(Appendix B4)** for further information pertaining to background review and results for avifauna.

Breeding Bird Surveys — Point counts were conducted to determine the number of species of Breeding Birds in the study area. Based on a preliminary desktop review of aerial photography, and the results of ELC field studies across a variety of habitat types, 12 breeding bird point count stations were selected for the Route B Transmission Line study area. Two (2) sets of two (2) point counts each were carried out at least ten (10) days apart, at the peak of the breeding bird season. The counts were conducted in the early morning, during calm weather, and consisted of one 10-minute sessions wherein all birds seen or heard were recorded.

A total of 340 individuals, across 36 species, were recorded during the point counts. Ovenbird (*Seiurus aurocapillus*) was identified as the most abundant with 54 observations (15.8% of individuals birds observed). Two (2) Canada Warblers (*Wilsonia canadensis*), a COSEWIC-ranked Threatened species, and four (4) Eastern Wood-Pewees (Special Concern in Ontario and Canada) were also documented within suitable breeding habitat during the course of the surveys. For details pertaining to breeding bird point counts see **Section 3.2.2.2** of the Route B Terrestrial Baseline Report **(Appendix B4)**.

Incidental Avifauna Observations — Eleven (11) species of birds were recorded as incidental observations during other field studies. These included two (2) species considered Threatened under both *ESA* and *SARA* – Bobolink (*Dolichonyx oryzivorus)* and Eastern Whip-poor-will (*Caprimulgus vociferous*). Additionally, three (3) SC species in the province (according to the *ESA*) – Common Nighthawk, Canada Warbler, and Eastern Wood-pewee – were also recorded as part of the incidental avifauna observation for Route B; of these, the former two are ranked SC according to the federal *SARA* as well. See **Section 3.2.2.9** of the Route B Terrestrial Baseline Report **(Appendix B4)** for further information on incidental observations for avifauna for Route B.

Species at Risk Avifauna — Species-specific survey methodology was employed for only two (2) of several probable SAR birds in the study area – Eastern Whip-poor-will (*Caprimulgus vociferous*) and Least Bittern (*Ixobrychus exilis*) – because preliminary review of information did not reveal the presence of suitable habitats for other species within the study area. These other species, and their habitats, were recorded only as incidental observations during the course of other field studies.

The presence of Whip-poor-will (and Common Nighthawk) was ascertained using the same acoustic monitors deployed for bats, but programmed specifically to record crepuscular birds; 17 additional monitors, programmed specifically for crepuscular birds alone, were also deployed to capture Whip-poor-will vocalizations. Recordings from these monitors, set up in rock barrens and other open areas, at least 60 m from the edge of the 30 m ROW, and in the portion of Route B that parallels the HONI corridor, were under analysis at the time of preparation of this report. Initial findings, however, confirm that Whip-poor-wills and Common Nighthawks are present in the area. For details on the surveys conducted for the crepuscular SAR birds see **Section 3.2.2.3** of the Route B Terrestrial Baseline Report **(Appendix B4)**.

Least Bittern surveys comprised of call playback carried out by ornithologists at two (2) sites within habitats identified to be suitable (based on desktop review of aerial photography). Each site was visited twice, at least ten (10) days apart, and surveyed for a total of 15 minutes (including one 5-minute session of call broadcasts, between two 5-minute sessions of passive listening). No Least Bitterns were recorded during these surveys.

A combination of the results of targeted surveys and incidental observations confirmed the presence of five (5) SAR birds in the Route B study area – Eastern Wood-pewee, Common Nighthawk, Canada Warbler, Eastern Whip-poor-will, and Bobolink. See **Section 3.3.3** of the Route B Terrestrial Baseline Report **(Appendix B4)** for further information on the SAR avifauna that were included in 2015 background reviews and field studies.

Significant Wildlife Habitats for Avifauna — Preliminary desktop review and aerial photography interpretation revealed that the following SWHs for birds were likely to be present in the Route B Transmission Line study area:

- Waterfowl Stopover and Staging Areas (Terrestrial);
- Waterfowl Stopover and Staging Areas (Aquatic);
- Shorebird Migratory Stopover Areas (Shorebird Staging);
- Raptor Wintering Area;
- Colonially-Nesting Bird Breeding Habitat (Bank and Cliff);
- Colonially-Nesting Bird Breeding Habitat (Trees/Shrubs);
- Colonially-Nesting Bird Breeding Habitat (Ground);
- Waterfowl Nesting Areas;
- Bald Eagle and Osprey Nesting, Foraging and Perching Habitat;
- Woodland Raptor Nesting Habitat;
- Marsh Bird Breeding Habitat;
- Open Country Bird Breeding Habitat; and
- Shrub/Early Successional Bird Breeding Habitat.

Potential Bald Eagle and Osprey Nesting, Foraging and Perching Habitat (adult ospreys sitting on a large stick nest located in a snag at the northern edge of a treed swamp to the south of Marsh Lake, as well as a Bald Eagle flying in the vicinity), and Colonially-Nesting Bird Breeding Habitat (Trees / Shrubs; three (3) active Great Blue Heron nests at one (1) location, and one (1) Heron together with two (2) stick nests at another location) were noted during field studies. A number of additional SWHs also have to potential to occur within the study area. Detailed information pertaining to SWHs for Birds is provided in **Section 3.4.4** of the Route B Terrestrial Baseline Report **(Appendix B4)**.

4.2.1.3 Herpetiles

Route A:

Background Review — Previous studies in the region (though not specifically within the Route A Transmission Line study area) documented 12 species of amphibians (Neegan Burnside, 2011) of which all, except Western Chorus Frog (*Pseudacris triseriata*), which is listed as Threatened Schedule 1 under the federal *SARA*, are considered common and secure in Ontario. These studies also documented 13 species of reptiles, of which six (6) have some level of conservation / protection status, either provincial or federal - Snapping Turtle (*Chelydra serpentina*), Blanding's Turtle (*Emydoidea blandingii*), Common Musk Turtle (*Sternotherus odoratus*), Five-lined Skink – Southern shield population (*Eumeces fasciatus*), Eastern Foxsnake – Georgian Bay population (*Pantherophis gloydi*), Eastern Massasauga Rattlesnake (*Sistrurus catenatus catenatus*), and one Restricted Species[3].

Incidental Herpetofaunal Observations — Based on correspondence with MNRF, sufficient information on amphibian species in the area is available and, as such, no targeted field work for breeding amphibians was carried out in the Route A Transmission Line study area. However, amphibians and suitable amphibian habitats were recorded as incidental observations – three (3) amphibians, all anurans, were recorded in the Route A study area. Additionally, four (4) species of reptiles – two (2) turtles and two (2) snakes – were also recorded as incidental observations. Of these Blanding's Turtle and Eastern Hog-nosed Snake are SAR reptiles. For details regarding

3. *Records of Species At Risk considered to be restricted are not being made public due to the threat of poaching experienced by these species. These records will be provided under a separate cover to the Ministry of Natural Resources and Forestry (MNRF) and / or Environment Canada – Canadian Wildlife Service (EC-CWS) for permitting purposes.*

incidental herpetofaunal observations please see **Table 3-7** under **Section 3.2.3** of the Route A Terrestrial Baseline Report **(Appendix B3)**.

Species at Risk Herpetiles — Based on previous records of several SAR reptiles in the study area (see above; Neegan Burnside, 2011), field methods targeted at confirming the presence of select reptile SAR were carried out in spring and summer 2015, in regular consultation with the MNRF. Suitable snake habitat, based on MNRF input and knowledge of the habitat requirements / preferences of the SAR species from the literature, was first identified through desktop aerial photo interpretation. These habitats were then visited by qualified Biologists who carried out Basking Surveys to ascertain the presence of the SAR snakes – Eastern Massasauga Rattlesnake, Eastern Foxsnake, Eastern Hog-nosed Snake, and Milksnake. Of the four (4) snakes targeted, only the Eastern Hog-nosed Snake was recorded. Similarly, Basking Surveys for the SAR turtles were also carried by qualified Biologists out at swamp, marsh, open aquatic and shallow aquatic ELC Community Series as well as open fen and open bog ELC Ecosites throughout the study area, as per MNRF protocols for these species. Blanding's Turtle was the only SAR turtle recorded during these surveys. See **Section 3.2.3** of the Route A Terrestrial Baseline Report **(Appendix B3)** for details regarding the methodology used to survey for SAR reptiles, and **Section 3.3.4** of the Route A Terrestrial Baseline Report **(Appendix B3)** for information on the SAR herpetofauna that were included in 2015 background reviews and field studies.

Significant Wildlife Habitats for Herpetofauna — Preliminary desktop review and aerial photography interpretation revealed that the following Significant Wildlife Habitats for herpetiles were likely to be present in the Route A study area:

- Turtle Wintering Areas;
- Reptile Hibernacula;
- Turtle and Lizard Nesting Areas;
- Amphibian Breeding Habitat (Woodland);
- Amphibian Breeding Habitat (Wetland); and
- Amphibian Corridors

Based on 2015 field studies, SWHs for herpetofauna have potential to occur within the study area. The extensive presence of wetlands, forested habitats, and rock barrens in the study area is conducive for all of these habitats to occur. Detailed information pertaining to SWHs for Herpetofauna is provided in **Section 3.4.4** of the Route A Terrestrial Baseline Report **(Appendix B3)**.

Route B:

Background Review — Previous studies by LGL in the region (though not specifically within the Route B study area) documented 12 species of amphibians (Neegan Burnside, 2011) of which all, except Western Chorus Frog (*Pseudacris triseriata*), which is listed as Threatened Schedule 1 under the federal *Species at Risk Act*, are considered common and secure in Ontario. These studies also documented 13 species of reptiles, of which six (6) have some level of conservation / protection status, either provincial or federal - Snapping Turtle (*Chelydra serpentina*), Blanding's Turtle (*Emydoidea blandingii*), Common Musk Turtle (*Sternotherus odoratus*), Five-lined Skink – Southern shield population (*Eumeces fasciatus*), Eastern Foxsnake – Georgian Bay population (*Pantherophis gloydi*), Eastern Massasauga Rattlesnake (*Sistrurus catenatus catenatus*), and one Restricted Species. Additionally, the NHIC database records the presence of Milksnake (*Lampropeltis triangulum*), another SAR reptile, in the study area (MNRF, 2015).

Stantec conducted herpetile surveys in the portion of the Route B Transmission Line study area that adjoins Highway 69, as well as portions adjoining the HONI corridor. Five (5) species of amphibians, of which the most common was the Spring Peeper (*Pseudacris crucifer*), were recorded during these surveys; however, no Western

Chorus Frogs (*Pseudacris triseriata*) were recorded (AECOM, 2014b). Three (3) species of reptiles, all turtles, were recorded as well; these included Blanding's Turtle, as species listed as Threatened according to the *ESA* (AECOM, 2014b). Furthermore, a total of 24 potential gestation habitats for Eastern Massasauga Rattlesnake (*Sistrurus c. catenatus*) were identified within the Route B Transmission Line study area. For greater detail regarding previous studies in the study area, see **Section 3.2.3.1** of the Route B Terrestrial Baseline Report **(Appendix B4)**.

Incidental Herpetofaunal Observations — Based on correspondence with MNRF, sufficient information on amphibian species in the area is available and, as such, no targeted field work for breeding amphibians was carried out in the Route B Transmission Line study area. However, amphibians and suitable amphibian habitats were recorded as incidental observations – five (5) species of amphibians, consisting of four (4) anurans and Eastern Red-backed Salamander, were recorded in the Route B study area. Additionally, ten (10) species of reptiles – three (3) confirmed and one (1) unidentifiable species of turtles, five (5) snakes, and one (1) lizard (Five-lined Skink) – were also recorded as incidental observations. These incidental herpetofaunal observations included five (5) SAR reptiles – Blanding's Turtle, Eastern Hog-nosed Snake, Eastern Massasauga Rattlesnake, Common Five-lined Skink, and Snapping Turtle. For details regarding incidental herpetofaunal observations please see **Table 3-9** under **Section 3.2.3.2** of the Route B Terrestrial Baseline Report **(Appendix B4)**.

Species at Risk Herpetiles — Based on previous records of several SAR reptiles in the study area (see above; Neegan Burnside, 2011), field methods targeted at confirming the presence of these species and important habitats for them in the Route B study area, were carried out in spring and summer 2015, in regular consultation with the MNRF. Suitable snake habitat, based on MNRF input and knowledge of the habitat requirements / preferences of the SAR species from the literature, was first identified through desktop aerial photo interpretation. These habitats were then visited by qualified Biologists who carried out Basking Surveys to ascertain the presence of the SAR snakes – Eastern Massasauga Rattlesnake, and Eastern Hog-nosed Snake. Data from these surveys were under analysis at the time that this report was prepared. However, preliminary results suggest that both targeted SAR snakes as well as Milksnake, another SAR reptile, were recorded during these surveys.

Similarly, Basking Surveys for the SAR turtles were also carried out by qualified Biologists at swamp, marsh, open aquatic and shallow aquatic ELC Community Series as well as open fen and open bog ELC Ecosites throughout the study area, as per MNRF protocols for these species. Although data from these surveys were under analysis at the time that this report was prepared, preliminary results suggest that both targeted SAR turtles – Blanding's and Snapping – were recorded during these surveys. See **Section 3.2.3.2** of the Route B Terrestrial Baseline Report **(Appendix B4)** for details regarding the methodology used to survey for SAR reptiles, and **Section 3.3.4** of the Route B Terrestrial Baseline Report **(Appendix B4)** for information on the SAR herpetofauna that were included in 2015 background reviews and field studies.

Significant Wildlife Habitats for Herpetofauna — Preliminary desktop review and aerial photography interpretation revealed that the following SWHs for herpetiles were likely to be present in the Route B Transmission Line study area:

- Turtle Wintering Areas;
- Reptile Hibernacula;
- Turtle and Lizard Nesting Areas;
- Amphibian Breeding Habitat (Woodland);
- Amphibian Breeding Habitat (Wetland); and
- Amphibian Corridors

Of these habitats, potential Amphibian Breeding Habitat (Woodland) and Amphibian Breeding Habitat (Wetland) were recorded – vernal pools in woodland habitats and a variety of wetland sites were recorded with amphibian egg masses and / or adults present in them. One Turtle and Lizard Nesting Area in a sandy habitat, with evidence of

several turtle nests at the site, was also recorded. Finally, potential Turtle Wintering and Reptile Hibernation Areas were also recorded during targeted surveys for Significant Wildlife Habitats that pertain to herpetofauna. Detailed information pertaining to SWHs for Herpetofauna is provided in **Section 3.4.4** of the Route B Terrestrial Baseline Report **(Appendix B4)**.

4.2.2 Vegetation and Valued Ecosystems

Route A:

The Route A Transmission Line study area is located in the Georgian Bay Ecoregion (Ecoregion 5E), which is situated in south-central Ontario on the Canadian Shield. Land cover within the ecoregion is largely dominated by mixed, deciduous, coniferous and sparse forest communities (Crins, *et al.* 2009). The ecoregion is located within the Great Lakes-St. Lawrence Forest Region and tree species within the area are generally represented by species common to this forest region; however, Boreal Forest species may also be present (Rowe, 1972).

The topography within the Route A Transmission Line study area is undulating and vegetation varies accordingly. Given that the uplands have little to no soil, biological productivity in these areas is low. Conversely, as the lowlands have accumulated more soils, these areas have greater amounts of vegetation present and thus have higher biological productivity (Neegan Burnside, 2011).

ELC was carried out by AECOM in 2015 and targeted a pre-determined and diverse subset of representative vegetation communities identified through preliminary aerial photography interpretation conducted for areas within 25 m of the centre line. Protocols outlined in the *Ecological Land Classification Manual for Southern Ontario* (Lee, *et al.* 1998) were followed for 2015 ELC field work; the results of which were extrapolated to refine aerial photography interpretation results.

A total of 42 ecological communities were identified in the study area. Of these, 11 were communities that could be identified only to ELC Community Series, four (4) were identified to Ecosite, and the remaining 26 were identified down to Vegetation Type. Results of field studies were consistent with previous studies and reports (e.g., Neegan Burnside, 2011) and indicated that Forests (coniferous, deciduous and mixed) cover much of the study area (approximately 71%), followed by Rock Barrens (approximately 14%) and Marshes (8.6%).

Additionally, a total of 421 vascular plant species, comprised of 211 native and 210 non-native / exotic species, were documented in the study area during 2015 ELC field studies. An additional six (6) species of lichen and ten (10) mosses were also identified. No provincially-ranked SC, Threatened, Endangered plants or SOCC were recorded. Detailed methodology and results of 2015 ELC field studies are provided under **Section 3.1.1 of** the Route A Terrestrial Baseline Report **(Appendix B3).**

Route B:

Similar to the Route A Transmission Line study area, the Route B Transmission Line study area lies within the Georgian Bay Ecoregion (Ecoregion 5E), where land cover is largely dominated by mixed, deciduous, coniferous and sparse forest communities (Crins, *et al.* 2009). Tree species within the area are generally represented by species common to the Great Lakes-St. Lawrence Forest Region and some Boreal Forest species may also be present (Rowe, 1972).

In general, vegetation within the vicinity of the Route B Transmission Line study area is sparse in areas due to extensive rock outcrops and organic soils (Neegan Burnside, 2011). As noted above, biological productivity in upland areas is low, while lowland areas tend to have higher biological productivity (Neegan Burnside, 2011). Previous studies within and in the vicinity of the Route B study area have identified the following vegetation

community types: deciduous forest, coniferous forest, mixed forest, rock barren, deciduous swamp, coniferous swamp, mixed swamp, thicket swamp, shrub fen, meadow marsh, shallow marsh, floating-leaved shallow aquatic, mixed shallow aquatic, shallow aquatic, open aquatic, cultural and anthropogenic communities (Ecoplans, 2006a, Ecoplans 2007, MTO, 2006, 2008).

During previous field studies, Ecoplans classified forest communities to the Ecosite level using the *Field Guide to Forest Ecosystems of Central Ontario* (Chambers, *et al*. 1997), and other communities to community series level using the *Ecological Land Classification for Southern Ontario* (Lee *et al*., 1998) within their study area, located along Highway 69 from Harris Lake Road to north of Highway 522 (Ecoplans, 2007). Through Geographic Information System (GIS) analysis, Ecoplans determined that approximately 75% of their study area was comprised of terrestrial communities, 16% was wetland, 5% was aquatic and 6% was anthropogenic (Ecoplans, 2007). A total of 24 vegetation communities were identified within their study area along Highway 69 from Harris Lake Road to north of Highway 522. For further information on the Ecosites and Community Series identified by Ecoplans, see **Section 3.1.1** of the Route B Terrestrial Baseline Report **(Appendix B4)**.

ELC that was carried out by AECOM in 2015 targeted a pre-determined and diverse subset of representative vegetation communities identified through preliminary aerial photography interpretation conducted for areas within 25 m of the centre line. Protocols outlined in the *Ecological Land Classification Manual for Southern Ontario* (Lee, *et al.* 1998) were followed for 2015 ELC field work, the results of which were extrapolated to refine aerial photography interpretation results.

A total of 103 ecological communities were identified in the study area. Of these, 30 were communities that could be identified only to ELC Community Series, 20 were identified to Ecosite, and the remaining 53 were identified down to Vegetation Type.

Additionally, a total of 528 vascular plant species, comprised of equal numbers of native and non-native / exotic species, were documented in the study area during 2015 ELC field studies. An additional six (6) species of lichen and ten (10) mosses were also identified. No provincially-ranked SC, Threatened, Endangered plants or SOCC were recorded. Detailed methodology and results of 2015 ELC field studies are provided under **Section 3.1.2** of the Route B Terrestrial Baseline Report **(Appendix B4)**.

4.2.3 Wetlands

In Ontario, Provincially Significant Wetlands (PSWs) are identified and evaluated using the Ontario Wetland Evaluation System, which is a standardized assessment process developed by the MNRF (2013). This process assesses the value or importance of a wetland based on a numerical scoring system. The key components considered in a wetland evaluation are the biological, social, hydrological and special features of the wetland or wetland complex. Based on scoring, a wetland can fall into one of two (1 of 2) classes: Provincially Significant or Locally Significant (non-Provincially significant).

According to the *Provincial Policy Statement* (2014), Section 2.1: Natural Heritage, subsection 2.1.4 notes that,

> *"Development and site alteration shall not be permitted in:*
> *a) significant wetlands in Ecoregions 5E, 6E and 7E[1]; and*
> *b) significant coastal wetlands.*

Route A:

There are no PSWs or Locally Significant (Non-Provincially) Wetlands identified within or in the vicinity of the Route A Transmission Line study area. However, unevaluated wetlands are abundant, and include swamps, bogs and fen

communities (Neegan Burnside, 2011). Wetlands of the area are presented in **Figure 3-14** of the Route A Terrestrial Baseline Report **(Appendix B3).**

AECOM conducted Field studies to characterize vegetation communities, identify wetlands and compile data on plant species within the Route A Transmission line study area in spring and summer of 2015. Wetland analyses were conducted as desktop analyses which utilized both ELC field data collected in the spring and summer of 2015, as well as orthophotographic interpretation conducted by AECOM in the spring of 2015. Wetland boundaries and the complexing of wetlands were conducted using standardized methods outlined in the *Ontario Wetland Evaluation System, Northern Manual* (MNRF, 2014d). Important characteristics of the wetland complexes within the Route A Transmission Line study area were described using Ontario Wetland Evaluation System (OWES) methods; however a complete Wetland Evaluation will not be undertaken.

A total of eight (8) unevaluated wetland complexes were identified within the Route A Transmission Line study area through the 2015 field studies, representing approximately 22.45 ha. More detailed information is provided in **Section 3.4.1** of the Route A Terrestrial Baseline Report **(Appendix B3)**.

Route B:

There are many unevaluated wetlands identified in or near the Route B Transmission Line study area; as well as a single PSW, the Haines Lake PSW complex, which crosses Route B at five (5) locations. The remaining unevaluated wetlands are comprised of swamps, bogs and fen communities and occur throughout the Route B Transmission Line study area (AECOM, 2015a); Wetlands within Route B Transmission Line are presented in **Figure 3-10a-k** in **Appendix A** of the Route B Terrestrial Baseline Report **(Appendix B4).**

AECOM conducted field studies to characterize vegetation communities, identify wetlands and compile data on plant species within the Route B Transmission line study area in spring and summer of 2015. Wetland delineations were conducted as a desktop analysis which utilized both ELC field data collected in the spring and summer of 2015, as well as orthophotographic interpretation conducted by AECOM in the spring of 2015. Wetland complexes were prepared using these data in accordance with the wetland complexing criteria outlined in the *Ontario Wetland Evaluation System, Northern Manual* (MNRF, 2014d). Important characteristics of the wetland complexes within the Route B study area were described using OWES methods; however a complete Wetland Evaluation has not been undertaken at this time.

Field studies coupled with desktop interpretation of aerial imagery of the proposed Route B revealed the presence of 18 wetland complexes in the study area, covering a total of approximately 656 ha. More detailed information is provided in **Section 3.4.1** of the Route B Terrestrial Baseline Report **(Appendix B4)**.

4.2.4 Protected Areas

Route A:

Although the Route A Transmission Line study area contains no federal or provincial parks, or designated natural areas, several are present in the vicinity. These include the Grundy Lake Provincial Park, the French River Provincial Park, and the Pakeshkag River Forest Conservation Reserve (MNFR, 2014, 2015a). Most of the Route A study area is located on Crown land, within the North Parry Sound Enhanced Management Area (EMA) (ONTLA, 2001). Therefore, although sustainable business and industrial activities may be permitted, the region is under protection for resource-based tourism, and for the preservation of wilderness areas not protected within Parks and other Protected Areas (ONTLA, 2001). Additionally, the western portion of the study area, located between Highway 69 and the Canadian National (CN) railway track (CN, 2015), fall within HIFN Reserve. There are no Life Science or Earth Science ANSIs or ESAs located within the Route A Transmission Line study area.

Route B:

Similarly, the Route B Transmission Line study area does not contain any ANSIs or Candidate ANSIs. Grundy Lake Provincial Park and Sturgeon Bay Provincial Park are in close proximity to, but not within, the Route B corridor (MNRF, 2014a, 2015a). Additionally, North Georgian Bay Shoreline and Islands Conservation Reserve, Round Lake Provincial Nature Reserve, Seguin River Conservation Reserve, and Georgian Bay Biosphere Reserve are located within 1 km of the Route B Transmission Line study area (MNRF, 2014a, 2014b, 2015a). Large portions of the Route B corridor consist of Crown Land, within the North Parry Sound EMA (ONTLA, 2001). Therefore, although sustainable business and industrial activities may be permitted, the region is under protection for resource-based tourism, and for the preservation of wilderness areas not protected within Parks and other Protected Areas (ONTLA, 2001). Finally, the Red Oak - Little Bluestem Provincially Significant vegetation community reported by MTO (2008) is at least 1 km from the proposed Route B corridor – no other rare vegetation communities are known to be present.

4.2.5 Species at Risk

Route A:

A total of eight (8) SOCC were recorded during 2015 field studies (**Table 4-1**). Acoustic data on the three (3) SAR bats were under analysis at the time that this report was prepared, and their presence in the study area has not confirmed. For details regarding the SOCC and SAR species recorded both during previous studies, as well as 2015 field studies see **Section 3.3** of the Route A Terrestrial Baseline Report **(Appendix B3).**

Table 4-1: SOCC Occurring in the Route A Study Area

Species	Scientific Name	S-rank	G-rank	SARO	SARA
Eastern Wolf	*Canis lupus lycaon*	S4	G4TNR	THR	SC Schedule 1
Bald Eagle	*Haliaeetus leucocephalus*	S2	G5	SC	-
Canada Warbler	*Wilsonia canadensis*	S4	G5	SC	THR Schedule 1
Common Nighthawk	*Chordeiles minor*	S4B	G5	SC	THR Schedule 1
Eastern Whip-poor-will	*Caprimulgus vociferus*	S4B	G5	THR	THR Schedule 1
Eastern Wood-pewee	*Contopus virens*	S4	G5	SC	-
Blanding's Turtle	*Emydoidea blandingii*	S3	G4	THR	THR Schedule 1
Eastern Hog-nosed Snake	*Heterodon platirhinos*	S3	G5	THR	THR Schedule 1

Route B:

A total of 13 SOCC were recorded during 2015 field studies (**Table 4-2**). Acoustic data on the three (3) SAR bats were under analysis at the time that this report was prepared, and their presence in the study area has not been confirmed. For details regarding the SOCC and SAR species recorded both during previous studies, as well as 2015 field studies see **Section 3.3** of the Route B Terrestrial Baseline Report **(Appendix B4).**

Table 4-2: SOCC Recorded during Route B 2015 Field Studies

Species	Scientific Name	S-rank	G-rank	SARO	SARA
Birds (6)					
Bald Eagle	*Haliaeetus leucocephalus*	S2	G5	SC	-
Bobolink	*Dolichonyx oryzivorus*	S4B	G5	THR	-
Canada Warbler	*Wilsonia canadensis*	S4	G5	SC	THR Schedule 1
Common Nighthawk	*Chordeiles minor*	S4B	G5	SC	THR Schedule 1
Eastern Whip-poor-will	*Caprimulgus vociferus*	S4B	G5	THR	THR Schedule 1
Eastern Wood-pewee	*Contopus virens*	S4	G5	SC	-
Herpetiles (6)					
Blanding's Turtle	*Emydoidea blandingii*	S3	G4	THR	THR Schedule 1
Eastern Musk Turtle	*Sternotherus odoratus*	S3	G5	THR	THR Schedule 1
Snapping Turtle	*Chelydra serpentina*	S3	G5	SC	SC Schedule 1
Eastern Hog-nosed Snake	*Heterodon platirhinos*	S3	G5	THR	THR Schedule 1
Eastern Massasauga Rattlesnake	*Sistrurus catenatus catenatus*	S3	GNR	THR	THR Schedule 1
Milksnake	*Lampropeltis triangulum*	S3	G5	SC	SC Schedule 1
Common Five-lined Skink	*Eumyces fasciatus*	S3	G5T3	SC	SC Schedule 1
Insects (1)					
Monarch	*Danaus plexippus*	S2N,S4B	G5	SC	SC Schedule 1

4.3 Water Bodies, Fish Habitat and Aquatic Ecosystems

A background review of aquatic natural heritage features and functions located within 1 km of the proposed Route A and B Transmission Line was conducted using the following resources:

Interactive Mapping Tools:

- MNRF Make-a-Map: Natural Heritage Areas Application;
- MNRF NHIC Rare Species Records;
- MNRF SAR by Area Online Search Tool (2014c)
- University of Guelph *FishMAP* Online Tool (University of Guelph, 2011)

MNRF's NRVIS mapping from Land Information Ontario (LIO) for:

- Waterbody, watercourse, wetland layers
- Thermal regime; and,
- Fish records.

Previous studies in the vicinity of the proposed Transmission Line:

- Highway 69 Four-Laning From North of Nobel to Highway 522 Natural Heritage Background Interim Report (Ecoplans, 2006);
- Highway 69 Four-Laning From North of Nobel to Highway 522 (MTO, 2008);
- Highway 69 Four-Laning Detail Design from 5.3 km South of Highway 529 (North Junction) northerly to 2.2 km North of Highway 529 (North Junction) Fish and Fish Habitat Report
- Fisheries and Aquatic Habitat Ecosystems Report- Highway 69 Four-Laning From 1.7 km North of Highway 529 Northerly to Straight Lake
- Fisheries and Aquatic Habitat Ecosystems Report- Highway 69 Four-Laning From Straight Lake Northerly to 3.9 km North of Highway 522;
- Fisheries and Aquatic Habitat Ecosystems Report- Highway 69 Four-Laning From the South Study Limits Northerly for 1.6 km;
- The Neegan Burnside Nigig Power Corp / Henvey Inlet Wind Project Preliminary Environmental Constraints Analysis (Neegan Burnside Ltd., 2011); and,
- Field data provided by Tulloch Environmental (Tulloch, 2013).

A request for information was submitted to MNRF's Parry Sound District office on January 27, 2015 and February 17, 2015 for any data gaps identified during the background information review.

A request for information was submitted to DFO Fisheries Protection Program office in Burlington, Ontario on March 16, 2015 for any additional fishery or SAR data.

Data collected was confirmed and supplemented during fisheries and aquatic habitat field assessments completed by AECOM in 2015. All data has been summarized herein and will be used to support the impact assessment in Section 6.

4.3.1 Waterbodies

Route A:

The Route A Transmission Line study area falls within the Henvey Inlet watershed to the east, and the Key River watershed to the west. The Key River watershed drainage basin covers an area of 121.4 km^2, and flows into the Henvey Inlet watershed near the village of Cranberry. The eastern portion of Key River, south of Highway 522, enters into Portage Lake to the west. Portage Lake drains into Key Bay, which in turn drains into the western portion of Key River, of the Henvey Inlet watershed. The Henvey Inlet watershed drainage basin covers an area of 157 km^2 and consists of two major waterbodies, the Key River and Henvey Inlet. Both waterbodies are tributaries to Georgian Bay. The Route A Transmission Line study area is shown on **Figure 4-9**.

The study area is comprised of upland rock barrens interspersed by wetland drainages between rocky ridges. The western portion of the Route A Transmission Line study area extends into HIFN I.R. #2 and therefore includes the waterbodies of the Key River, the Henvey Inlet, and Portage Lake. These larger water systems are located at the northwestern limit of the Route A Transmission Line study area near the junction of Highway 69 and Highway 522. While these larger water bodies are located outside of the study area for the Transmission Line, tributaries to these systems are located within the study area and have been summarized according to their catchment watershed in **Table 4-3.**

Figure 4-9: Route A Aquatic Environment Features

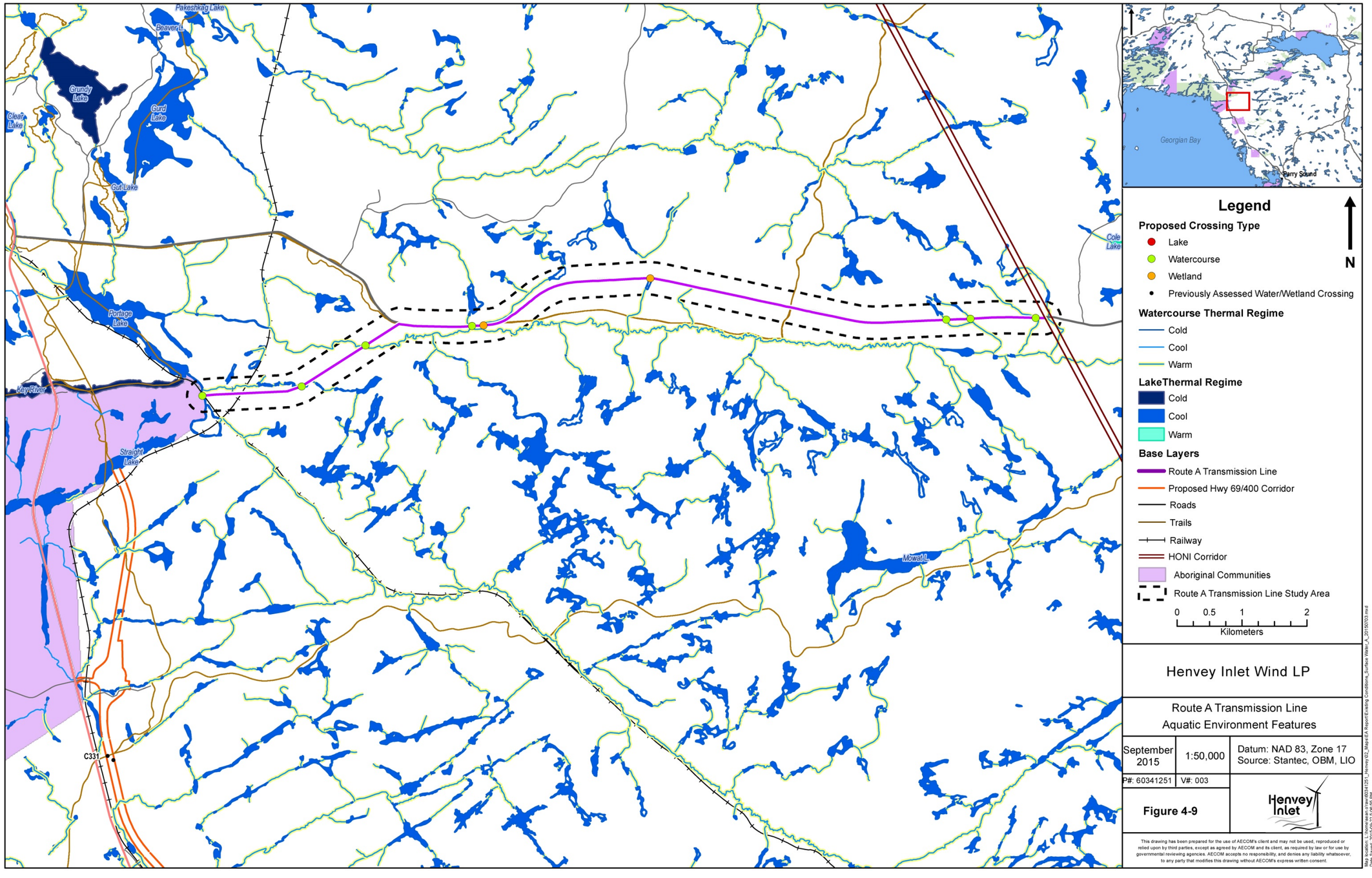


Table 4-3: Route A Transmission Line Crossing Sites According to Watershed

Watershed	Subwatersheds	Sites
Nineteen Georgian Bay Tributaries (02EA)	Henvey Inlet (02EA-01)	WB-A-M3-3
		WB-A-M5-4
	Key River (02EA-02)	WB-A-M6-5
		WB-A-M7-12
		WB-A-M9-6
		WB-A-M9-7
		WB-A-M12-8
		WB-A-M17-9
		WB-A-M18-10
		WB-A-M19-11

4.3.1.1 Key River

The Key River is a relatively slow moving river that is moderately deep. It is important as a migratory route and supports warm, cool, and some cold water salmon species. The central unnamed wetland just to the west of the Route A Transmission Line, north of the Key River is likely a significant spawning and nursery area for Northern pike. There are also portions of the Key River shoreline that can function as spawning and nursery habitat as well. The mixed shallow aquatic wetland at the Key River supports a warm water baitfish community.

Tributaries to the Key River

The Key River is a relatively slow moving river that is moderately deep. It is important as a migratory route and supports warm, cool, and some cold water salmon species. The Route A Transmission Line is proposed to cross two (2) water bodies that flow into the Key River. A complete summary of aquatic habitat assessments completed at these crossing locations is provided in Route A - Waterbodies, Fish Habitat and Aquatic Ecosystems Environmental Baseline Report (**Appendix B5)**.

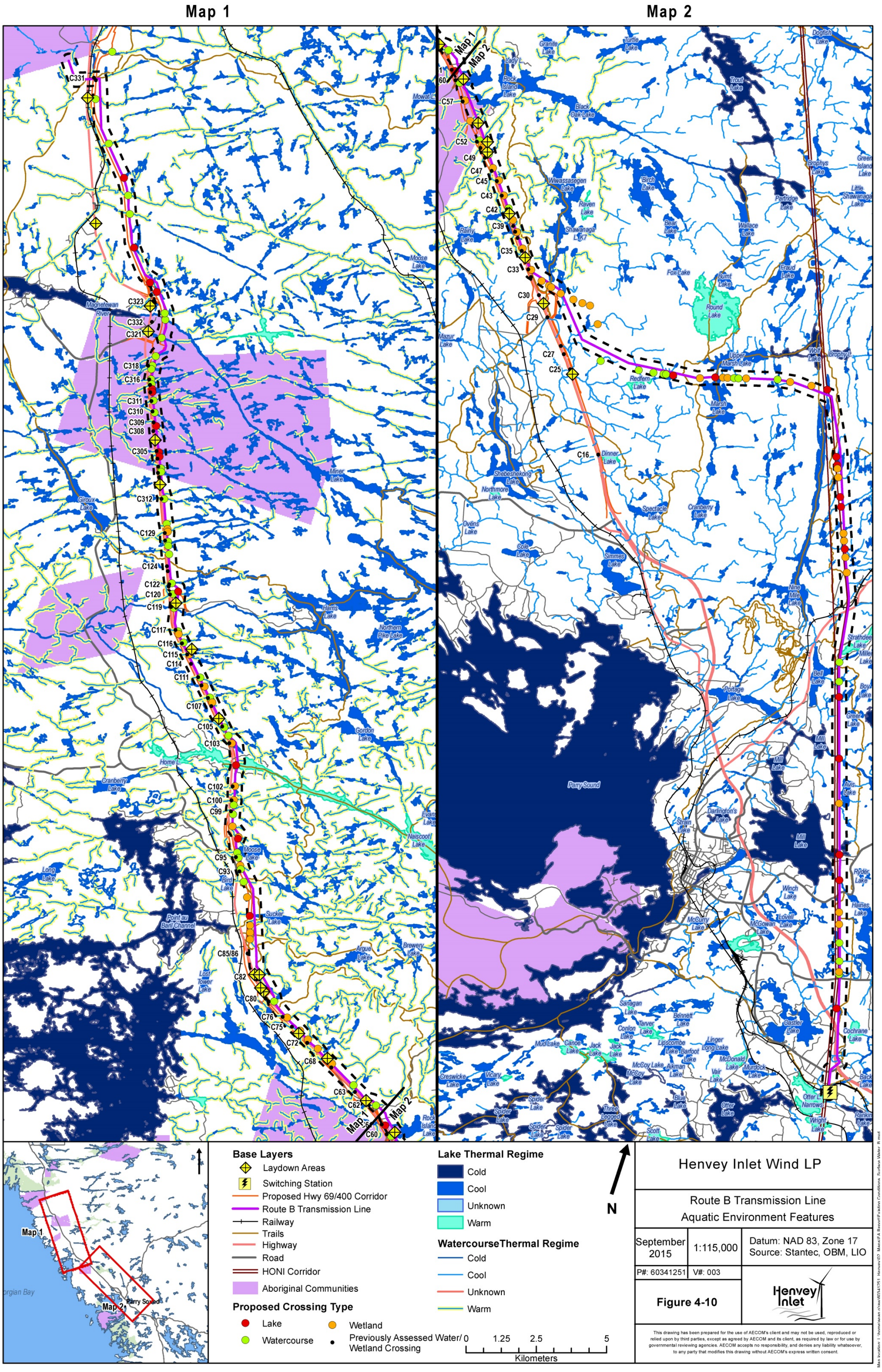
Tributaries to Portage Lake

The Route A Transmission Line study area traverses east-west following Highway 522. Along this alignment, tributaries drain into the Key River that then flows west to Portage Lake at the western limits of the study area. The Route A Transmission Line is proposed to cross eight tributaries to Portage Lake. A complete summary of aquatic habitat assessment completed for these crossings is provided in Route A - Waterbodies, Fish Habitat and Aquatic Ecosystems Environmental Baseline Report (**Appendix B5)**.

Route B:

The proposed Route B Transmission Line is situated within the Nineteen Georgian Bay Tributaries watershed (02EA), and transects ten subwatersheds within. These include Henvey Inlet, Still River, Magnetewan – Naiscoot Rivers, Giroux River, Upper Naiscoot River, Point au Baril, Shawanaga River, Shebeshekong River – St. Aubyn Bay, Parry Sound, and Otter Creek watersheds, from north to south. The Route B Transmission Line study area is shown on **Figure 4-10**.

Figure 4-10: Route B Aquatic Environment Features



The Nineteen Georgian Bay Tributaries watershed is dominated by Canadian Shield bedrock, with the majority of tributaries running along southeast to northwest depressions that drain into east to south major tributaries due to the scouring of retreating glaciers during the last glaciation. Wetlands are located in depressions left by the scouring, between exposed rock barrens. The tributary channels of these watercourses are frequently blocked with a series of active beaver dams which has resulted in a patchwork of cattail marshes and wet meadows that comprise the majority of aquatic habitat available (AECOM, 2013). Aquatic habitat assessments were completed for proposed water crossings of the Route B Transmission Line. Complete summaries of these assessments can be found in Route B - Waterbodies, Fish Habitat and Aquatic Ecosystems Environmental Baseline Report (**Appendix B6)**.

Henvey Inlet Watershed

The Henvey Inlet watershed (02EA-01) has two (2) major drainages into Georgian Bay, the Key River to the north and Henvey Inlet to the south, with a 158 km^2 drainage area. Both drainages flow in an east to west direction. Route B Transmission Line has only one (1) proposed waterbody crossing located within this watershed.

Still River Watershed

The Still River watershed (02EA-09) is situated south of the Henvey Inlet watershed and north of the Magnetewan-Naiscoot Rivers watershed. The main tributary, Still River, flows in a westerly direction but turns southwest after crossing Highway 69/400 to drain into Byng Inlet. The Still River drainage area is 227 km^2. Seven (7) waterbody crossings are located within this subwatershed.

4.3.1.1.1 Still River

The Still River is a small to medium-sized, low-gradient river that flows westerly into Georgian Bay. It is located south of the Key River. The Route B Transmission Line is located immediately west of an existing lamprey weir operated by DFO. The land use is mainly pasture lands to the south with a narrow riparian fringe of vegetation. This vegetation includes white birch, red maple, speckled alder along with grasses and sedges. The north bank rises sharply to a rock barren community that includes pine and oak species. The instream cover is a combination of boulders, cobble sand and silt. The river ranges from 7.8 m to 10.6 m in width throughout the reach with depths of 0.5 m to 1.8 m. (MTO, 2013). A number of beaver dams have been recorded along the Still River. Tributaries of the Still River provide a variety of habitat types for baitfish such as undercut banks and slow moving flows.

4.3.1.1.2 Little Still River & Tributaries

The Little Still River, located south of Still Lake is a well-defined meandering channel flowing through upland and wetland habitats. The substrates include sands, silts and clays. Sandy sediments in the floodplain indicate that it tops its banks frequently. Instream cover includes woody debris, undercut banks, overhanging vegetation and detritus. Riparian vegetation is a mixture of grasses, sedges and forbs along with speckled alder and occasional patches of black ash (MTO, 2013).

Magnetewan-Naiscoot Rivers Watershed

The Magnetewan –Naiscoot Rivers watershed (02EA-10) is a large watershed south of the Still River watershed, north of the Upper Naiscoot River watershed, and surrounds the Giroux River watershed from the east. The drainage area is 959 km^2, with the Magnetewan River draining into Byng Inlet to the north and the Naiscoot River draining into Georgian Bay to the south. Eleven (11) waterbody crossings are located north of the Giroux River watershed, and three (3) are located to the south.

4.3.1.1.3 Magnetawan River

The Magnetawan River, a permanently flowing, cool water system in its lower reaches, drains the majority of the Route B study area with its bisecting west-flowing channel. This is a large river with an upstream drainage area in the order of 2,850 km^2 and extends from its outlet in Georgian Bay east to beyond Highway 11 and into Algonquin Provincial Park. Within the Magnetawan Reserve No. 1, it flows as a series of slower moving and deeper ponded areas separated by rapids over the exposed bedrock and boulder clusters. The Magnetawan River channel is contained within a shallow valley in the surface bedrock with grasses and other herbaceous growth approaching the water's edge from the adjacent forest in some locations. The entire reach of the river for 100 m up and downstream is flat with rapids at each end. Broken rock litters the overbanks with a dense cover of spruce-pine-balsam fir forest just beyond. The pH and conductivity values were similar to those of other stations although Dissolved Oxygen (DO) values were high as would be expected in this large, fast moving system (Warme, 2014).

Giroux River Watershed

The Giroux River watershed (02EA-04) is located between Georgian Bay to the west and Magnetewan-Naiscoot River watershed to the north, east, and south. The entire drainage area for this small watershed is 105 km^2. Sixteen (16) crossings are located near the headwaters of this watershed, which drain into Giroux Lake, before entering Georgian Bay.

The Giroux River is a permanently flowing watercourse with an approximate drainage area of 15 km^2. It is a slow moving, minor watercourse outletting directly to Georgian Bay 10 km south of the mouth of the Magnetawan River. The tributary sub-watersheds, in combination, drain approximately 10 km^2 and headwaters extend, in some cases, a kilometre or more (Warme, 2014).

The channel morphology, beaver dams and ponds up and downstream that are frequently confined between rock outcrops, is typical and represent very similar aquatic habitat conditions that occur at all Giroux River tributaries. Defined channels, when present, were 1 m or less in width and 0.1 m deep and frequently choked with vegetation – cattails, sedges, rushes and long grasses are dominant. Alder, buckthorn, dogwood and willow shrubs occupy adjacent areas. Water lilies, burreed, phragmites, duckweed and arrowhead are common floating and emergent species.

Based on observations made by Warme, 2014, the flows at most crossings were weak or undetectable by mid-summer. In the very dry latter part of 2012, all channels were dry with the exception of occasional refuge pools and within culvert barrels. Muck and organic detritus are the predominant streambed and wetland substrates. DO levels were expectedly low (< 3 mg/L) with widely fluctuating conductivities (20 - 4420+ us/cm) (Warme, 2014).

Upper Naiscoot River Watershed

The Upper Naiscoot River watershed (02EA-11) lies south of the Magnetewan-Naiscoot Rivers watershed. Many tributaries drain into Naiscoot Lake, which drains into the lower reaches of the Naiscoot River in the south region of the Magnetewan-Naiscoot Rivers watershed. This watershed is long in the east-west direction but narrow along the north-south axis, and drains 202 km^2. There are 14 water crossings within this watershed.

Pointe au Baril Watershed

The Pointe au Baril watershed (02EA-05) is south of the Upper Naiscoot River watershed and north of the Shawanaga River watershed. This watershed has a large shoreline of Georgian Bay, and has a drainage area of 113 km^2. This watershed has 13 water crossings continuing in a north-northwest to south-southeast direction.

Shawanaga River Watershed

The Shawanaga River watershed (02EA-13) is south of the Pointe au Baril watershed and north of the Shebeshekong River-St. Aubyn Bay watershed. The Shawanaga River watershed has a large drainage area of 304 km2, and has one (1) large waterbody, the Shawanaga River, that flows west into Georgian Bay. There are 11 water crossings downstream of Rock Island Lake, five water crossing upstream of Rock Island Lake, and four water crossings upstream of Wiwassasegen Lake.

Shebeshekong River-St. Aubyn Bay Watershed

South of the Shawanaga River watershed but north of the Parry Sound watershed, the Shebeshekong River-St. Aubyn Bay watershed occurs. Its drainage area is 193 km^2, and a large shoreline on the Georgian Bay. The Shebeshekong River flows west into Georgian Bay. Seven (7) water crossings occur in the tributaries of Rainy Lake, while three (3) occur in the eastern limits of the upper watershed.

Parry Sound Watershed

South of the Shebeshekong River-St. Aubyn Bay watershed, the Parry Sound watershed (02EA-14) occurs north of the Otter watershed. The Parry Sound watershed is the second largest drainage in the study area, with a drainage area of 611 km^2. Ten (10) water crossings occur in the tributaries of the Upper Marsh and Marsh Lakes, which also receive input from Round Lake and Fraud Lake. Marsh Lake then drains into Cranberry Lake, which in turn drains into Spectacle Lake then Simmes Lake before draining into Georgian Bay. Eight (8) water crossings occur in the east tributaries on Nine Mile Lake, which eventually drains into Portage Lake before entering Georgian Bay. Three (3) water crossings occur in the west tributaries of Harris Lake drainage, which subsequently drains into Campbell Lake, then Strathdee Lake, Bell Lake, and Mill Lake before entering Georgian Bay. Two (2) water crossings occur in the tributaries of Bell Lake, while another four (4) water crossings occur in the tributaries of Mill Lake. One (1) water crossing is within a bay Mill Lake itself. Five (5) water crossings occur in the western tributaries of Haines Lake, which drains into Mill Lake. Altogether, the Parry Sound watershed has 33 water crossings.

Otter Lake Watershed

The southern limit of the study area occurs in Otter Lake watershed (02EA-15), south of the Parry Sound watershed. The single water crossing in this watershed occurs at a lake that drains into Oastler Lake, which drains west into Georgian Bay.

4.3.2 Fish and Fish Habitat

Route A:

The major aquatic system in the Route A Transmission Line study area is the Key River upstream of Portage Lake and its drainage network. Portage Lake and the surrounding streams, including the Key River, support sport and bait fish communities typical of central / northern Ontario. The area is used widely for recreational sportfish anglers, with records of Largemouth and Smallmouth Bass, Northern Pike, and Walleye in Portage Lake, Black Crappie in Little Key River, and Northern Pike, Walleye and Smallmouth Bass in the Upper Key River (Georgian Bay Bass Hole, 2015; The App Door, 2015).

Known Walleye spawning habitat was reported below the CN bridge in Ludgate by the Key River Association, and Walleye are frequently caught at the outlet of Portage Lake (Smitka, J., 2013).

A summary of fish species records for study area waterbodies are presented in **Table 4-4** below.

Table 4-4: Fish Species Records for Water Bodies in the Route A Transmission Line Study Area

Common Name	Scientific Name	Sources
Finescale Dace	*Phoxinus neogaeus*	Tulloch Environmental, 2013; FRi, 2013.
Northern Redbelly Dace	*Chrosomus eos*	Tulloch Environmental, 2013; FRi, 2013.
Fathead Minnow	*Pimephales promelas*	Tulloch Environmental, 2013
Central Mudminnow	*Umbra limi*	Tulloch Environmental, 2013; FRi 2013
Brown Bullhead	*Ameiurus nebulosus*	Tulloch Environmental, 2013; MNRF Species Records
Brook Stickleback	*Culaea inconstans*	Tulloch Environmental, 2013; FRi, 2013; AECOM, 2015
Creek Chub	*Semotilus atromaculatus*	Tulloch Environmental, 2013; FRi, 2013
Emerald Shiner	*Notropis atherinoides*	Tulloch Environmental, 2013
Golden Shiner	*Notemigonus crysoleucas*	Tulloch Environmental, 2013
Walleye	*Sander vitreus*	Smitka, J., 2013; Flybenji, 2008;; Georgian Bay Bass Hole
Largemouth Bass	*Micropterus salmoides*	Flybenji, 2008;
Northern Pike	*Esox lucius*	Flybenji, 2008; Georgian Bay Bass Hole
Smallmouth Bass	*Micropterus dolomieu*	Georgian Bay Bass Hole; Flybenji, 2008;
Black Crappie	*Pomoxis nirgomaculatus*	Georgian Bay Bass Hole

Route B:

The Route B Transmission Line study area includes the Magnetawan, Key, Still and Little Still Rivers and all support sport fish and bait fish communities typical of central / northern Ontario. The area is used widely for recreational sportfish anglers as well as by local communities including Magnetawan First Nation, Shawanaga First Nation, and Henvey Inlet First Nations members. Areas identified by community members as used for fishing include Two-Foot Rapids, Byng Inlet, and Miner's Lake. The Georgian Bay coastline was also identified to be of importance to community members, mainly in sheltered areas with weed-beds suitable for Bass, Walleye and Northern Pike (Neegan Burnside Limited, 2011). Previous studies completed on watercourses within the Route B Transmission Line study area were listed as references at the beginning of **Section 4.3** summary of fish species caught in study area waterbodies during previous studies overlapping the Route B Transmission Line are presented in **Table 4-5** below.

Table 4-5: Fish Species Caught within Route B Transmission Line Study Area During Previous Studies

Common Name	Scientific Name	Magnetawan River	Key River Wetland	Still River	Still River Tributaries	Little Still River	Little Still River Tributaries	Sources
Finescale Dace	*Phoxinus neogaeus*		X					Tulloch Environmental, 2013; FRi, 2013a.
Northern Redbelly Dace	*Chrosomus eos*		X	X	X			Tulloch Environmental, 2013; Warme, 2014; FRi, 2013a.
Fathead Minnow	*Pimephales promelas*							Tulloch Environmental, 2013
Central Mudminnow	*Umbra limi*			X	X			Tulloch Environmental, 2013; Warme, 2014

Common Name	Scientific Name	Magnetawan River	Key River Wetland	Still River	Still River Tributaries	Little Still River	Little Still River Tributaries	Sources
Pumpkinseed	*Lepomis gibbosus*	X				X		Tulloch Environmental, 2013; MNRF Species Records
Brown Bullhead	*Ameiurus nebulosus*	X				X		Tulloch Environmental, 2013; MNRF Species Records
Smallmouth Bass	*Micropterus dolomieu*	X						Warme, 2014
Largemouth Bass	*Micropterus salmoides*	X						Warme, 2014
Walleye	*Sander vitreus*	X						Warme, 2014
Northern Pike	*Esox lucius*	X						Warme, 2014
Lake Sturgeon	*Acipenser fulvescens*	X						Warme, 2014
Logperch	*Percina caprodes*	X						Warme, 2014
Pearl Dace	*Margariscus margarita*	X						Warme, 2014
Iowa Darter	*Etheostoma exile*	X						Warme, 2014
White Sucker	*Catosotomus commersoni*	X				X		Warme, 2014
Redhorse Sucker	*Moxostoma macrolepidotum*	X						Warme, 2014
Brassy Minnow	*Hybognathus hakinsoni*		X					FRi, 2014
Brook Stickleback	*Culaea inconstans*		X	X	X			FRi, 2014
Yellow Perch	*Perca flavescens*	X						Warme, 2014
Rock Bass	*Ambloplites rupestris*	X						Warme, 2014
Creek Chub	*Semotilus atromaculatus*			X	X	X		Warme, 2014
Common Shiner	*Luxilus cornutus*					X		Warme, 2014

Protected Aquatic Species

Route A & B:

Rare species include species with designations by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), species listed as Species at Risk in Ontario (SARO) by the Committee on the Status of Species at Risk in Ontario (COSSARO), as well as Provincially Ranked S1 to S3 species. The Make-a-map: Natural Heritage Areas Application (MNRF, 2015a) was used to search for NHIC rare species records within any of the 1 km UTM squares that intersected the Route A and Route B study area. The search resulted in a total of two (2) provincially or federally rare species including one (1) species designated as Threatened (Lake Sturgeon (*Acipenser fulvescens*)). Refer to **Table 4-6** below.

The search also resulted in two (2) species designated as SC which have been documented within the Nineteen Georgian Bay Tributaries watershed and the species have the potential to occur within the Transmission Line study areas where suitable habitat is present. The University of Guelph *FishMAP* online tool and the MNRF SAR online range mapping tool indicate the presence of Northern Brook Lamprey (*Ichthyomyzon fossor*) and Silver Lamprey (*Ichthyomyzon unicuspis*) in the area; in tributaries to Georgian Bay. The COSEWIC Assessment and Status reports for these fish also indicate historical records of lamprey ammocoetes (juveniles) in these watersheds, including the Still River, Magnetawan River and Shawanaga River. Both species are currently designated as SC

under the ESA. Species designated as Special Concern under the ESA do not receive additional habitat protection under this Act.

Table 4-6: Rare Species Records within the Vicinity of the Route A and Route B Transmission Line Study Areas

Taxon	Common Name	Scientific Name	S-Rank[1]	ESA Status	COSEWIC Status	Year Last Observed
Fish	Lake Sturgeon (Great Lakes – Upper St. Lawrence River population)	*Acipenser fulvescens*	S2	THR	THR	1990s
Fish	Deepwater Sculpin §	*Myoxocephalus thompsoni*	S3	NAR	SC	1976-04-20
Fish	Northern Brook Lamprey	*Ichthyomyzon fossor*	S3	SC	SC	SC
Fish	Silver Lamprey (Great Lakes – Upper St. Lawrence population)	*Ichthyomyzon unicuspis*	S3	SC	SC	No Schedule

Notes: For all notes pertaining to this table please see the end of section 4.3.2.1
Species marked with "§" are considered historical records

Federal

Route A and B:

The Deepwater sculpin is a designated at-risk fish species in Canada and is listed as a species of SC under Canada's *SARA*. This species has historical records in the Route A and B Transmission Line study areas; however, it is not expected to be currently present (COSEWIC, 2000). The record for Deepwater Sculpin is historical (more than 30 years old) and is not considered conclusive evidence of the species' continued presence within the Route A and B study areas.

The Deepwater Sculpin is a bottom-dwelling fish that is found in cold (<7°C), well-oxygenated, deep lakes. In the Great Lakes, adults usually live between 60 and 150 m in depth. Its distribution ranges from the Great Bear Lake of Canada to the Great Lakes. It is a designated at-risk fish species in Canada, listed as a species of SC under *SARA* (COSEWIC, 2000).

Waterbodies in the Route A and B Transmission Line study areas do not exceed 40 m in depth, and are therefore not deep enough to provide habitat for the Deepwater Sculpin.

Provincial

Route A and B:

Lake Sturgeon (Great Lakes - Upper St. Lawrence River population) is listed as a threatened species under the Ontario *ESA*, 2007.

Lake Sturgeon inhabits large rivers and lakes, inland deltas and the mouths of large rivers; however detailed habitat information for this species is limited (COSEWIC, 2000). Adults of this species are known to forage for invertebrates in aquatic habitats with depths of 5 to 10 m with substrates of mud, clay, sand or gravel (COSEWIC, 2000). Spawning habitats are fast-flowing waters that contain a fine to medium sized gravel and boulders with spawning sites often located below waterfalls, rapids, or dams (COSEWIC, 2000). Young-of-the-year are typically associated with shallower waterbodies with sand bars, fine gravel or cobble substrates (COSEWIC, 2000).

The study area is well within the range of Lake Sturgeon, which stretches from western Alberta to the St. Lawrence drainage of Quebec, and from southern Hudson Bay to the lower Mississippi. Identified Lake Sturgeon waters within the study area include the Key River, Magnetawan River, Giroux River, and Naiscoot River (Kerr, 2011). Although extant populations are at these locations (Kerr, 2002; DFO, 2008), the staging areas, spawning

areas, nursery habitat, feeding areas, and overwintering areas for Lake Sturgeon at these sites are currently unknown (Kerr, 2011). Lake sturgeon in the Seguin River of Parry Sound is believed to be extirpated (Pratt, 2008), while population status at Shawanaga River and Shebeshekong River are unknown (Kerr, 2011).

Recorded captures of Lake Sturgeon include:

- In a spring Walleye trap netting program in late 1990s in the mouth of the Magnetawan River (Kerr, 2011);
- Anecdotal information of Lake Sturgeon presence in the Naiscoot River from local Conservation Officers (Kerr, 2011);
- Lake Sturgeon observed by MNR staff circa 1994 in Seguin River (Kerr, 2011); and
- Lake Sturgeon caught in Wiwassasegen Lake, part of Round Lake Provincial Nature Reserve (Royal Ontario Museum, 2015)

Much of the Route B study area has not been studied for Lake Sturgeon presence, and waterbodies not identified should not be assumed to be void of Lake Sturgeon.

Notes for Tables 4-2 – 4-7, 4-9 and 4-10

[1]S-rank:
The Natural Heritage provincial ranking system (provincial S-rank) is used by the MNRF NHIC to set protection priorities for rare species and natural communities. Definitions are as follows:

S1..... Extremely rare in Ontario; usually five (5) or fewer occurrences in the province or very few remaining individuals; often especially vulnerable to extirpation.
S2..... Very rare in Ontario; usually between five (5) and 20 occurrences in the province or with many individuals in fewer occurrences; often susceptible to extirpation.
S3..... Rare to uncommon in Ontario; usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances. Most species with an S3 rank are assigned to the watch list, unless they have a relatively high global rank.
S4..... Common and apparently secure in Ontario; usually with more than 100 occurrences in the province.
S5..... Very common and demonstrably secure in Ontario.
SH..... Possibly Extirpated (Historical). Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years.
S#S# ..... A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community.
S#..... Rank uncertain.

[2] ESA Status:
The ESA 2007 (ESA) protects species listed as Threatened and Endangered on the SARO List on provincial and private land. The Minister lists species on the SARO list based on recommendations from the COSSARO, which evaluates the conservation status of species occurring in Ontario. The following are the categories of at risk:

***END** (Endangered) ..... A species facing imminent extinction or extirpation in Ontario.*
***THR** (Threatened) ..... Any native species that, on the basis of the best available scientific evidence, is at risk of becoming endangered throughout all or a significant portion of its Ontario range if the limiting factors are not reversed.*
***SC** (Special Concern) ..... A species that may become threatened or endangered due to a combination of biological characteristics and identified threats.*
***NAR** (Not at Risk)..... A species that has been evaluated and found to be not at risk.*

[3]COSEWIC Status:
COSEWIC evaluates a federal status ranking for all species that it assesses. Rankings include the following:

***END** (Endangered) ..... A species facing imminent extirpation or extinction throughout its range.*
***THR** (Threatened) ..... A species likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction*
***SC** (Special Concern) ..... A species of special concern because of characteristics that make it particularly sensitive to human activities or natural events, but does not include an extirpated, endangered or threatened species.*
***NAR** (Not at Risk)..... A species that has been evaluated and found to be not at risk.*

[4]SARA Status:
The SARA (SARA protects SAR designated as Endangered, Threatened and Extirpated listed under Schedule 1, including their habitats on federal land. Schedule 1 of SARA is the official list of wildlife SAR in Canada and includes species listed as Extirpated, Endangered, Threatened

and of Special Concern. Once a species is listed on Schedule 1, they receive protection and recovery measures that are required to be developed and implemented under SARA. Species that were designated at risk by COSEWIC before SARA need to be reassessed based on the new criteria of the Act before they can be listed under Schedule 1. These species that are waiting to be listed under Schedule 1 do not receive official protection under SARA. Once the species on other schedules (2 and 3) have been reassessed, the other schedules are eliminated and the species is either listed under Schedule 1 or is not listed under the Act.

The following are definitions of the SARA status rankings assigned to each species in the tables above:

END (Schedule 1)..... *These species are listed as Endangered under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.*

THR (Schedule 1)..... *These species are listed as Threatened under Schedule 1 of SARA and receive species and habitat protection under SARA, as well as recovery strategies and action plans.*

SC (Schedule 1) ..... *These species are listed as Special Concern under Schedule 1 of SARA and receive management initiatives under SARA to prevent them from becoming endangered and threatened.*

No Status (No schedule) .... *These species are evaluated and designated by COSEWIC but are not listed under Schedule 1 and therefore do not receive protection under SARA.*

NAR (Not at Risk)..... *These species have either been assessed by COSEWIC as Not at Risk or there is not enough sufficient data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.*

Not Applicable (N/A)..... *These species have either been assessed by COSEWIC as Not at Risk or there is not enough sufficient data to assess the status ranking of the species and therefore these are not listed on Schedule 1 nor do they receive protection under SARA.*

Source: *Government of Canada, 2009: Frequently Asked Questions: What are the SARA schedules? Accessed on February 2015. Available: http://www.dfo-mpo.gc.ca/species-especes/faq/faq-eng.htm*

4.3.3 Surface Water Quality

Route A

An inactive station of the Provincial Water Quality Monitoring Network (PWQMN) is located at the Key River at Highway 69, 2.5 km south of the junction of Highways 522 and 69 (MOECC, 2015). This station is located just west of the Transmission Line Route A study area. It was first sampled in 1973 and last sampled in 2005; therefore records from this station are not current.

In situ surface water quality data was collected at water crossings along the Route A Transmission Line during May 2015 field studies. In general, field findings indicated that the water crossings in this study area are characterized by slightly acidic pH, low conductivity, high dissolved oxygen and clear and colourless water, which is typical of bog and fen-type environments.

A summary of water quality results recorded by AECOM in 2015 are included in Route A - Waterbodies, Fish Habitat and Aquatic Ecosystems Environmental Baseline Report (**Appendix B5).**

Route B:

Three (3) PWQMN stations are located on the Magnetawan River, Naiscoot River, and Shawanaga River in the Route B Transmission Line study area. However, they were last sampled in 2005 or earlier, and records are therefore considered not current (MOECC, 2015).

Previous studies completed by Tulloch Environmental (2013) found water quality for waterbodies near the Route B Transmission Line study area to be lower than average for dissolved oxygen and pH parameters. This is commonly observed in bog and fen-type environments and is not unexpected in the Route B study area.

A Fisheries Impact Assessment Study was completed in 2014 by AECOM for MTO, within the Unincorporated Township of Wallbridge and on Magnetawan First Nation Reserve No. 1. Water quality parameters were tested in the field, upstream of many waterbody crossings of the proposed Highway 69/400 widening, generally located west

of the Route B study area, where fish habitat was identified. The results of this study show that water quality was within acceptable and expected ranges for the area (MTO, 2014).

In situ surface water quality data was collected by AECOM at water crossings along the Route B Transmission Line during field studies from May to August 2015. In general, field findings indicated that the water crossings in this study area are characterized by slightly acidic pH, low conductivity, low dissolved oxygen and clear and colourless water, which is typical of bog and fen-type environments.

A summary of water quality results recorded by AECOM in 2015 are included in Route B - Waterbodies, Fish Habitat and Aquatic Ecosystems Environmental Baseline Report (**Appendix B6).**

4.3.4 Hydrogeology and Groundwater

Hydrostratigraphy

Route A & B:

Within the Canadian Shield, two (2) separate groundwater systems are identified: a shallow, freshwater system that extends to at least 150 m depth, and a deep saline system that extends down hundreds of metres (Singer and Cheng, 2002; Thorne and Gascoyne, 1993). The majority of drinking water wells within the Canadian Shield source water from the shallow freshwater system. Geological materials that host and transmit groundwater can be subdivided into two (2) distinct groups based on their ability to allow groundwater movement: aquifers and aquitards. Aquifers are classically defined as a geological unit permeable enough to permit a useable supply of water to be extracted, and aquitards are relatively impermeable units that inhibit groundwater movement. The exposed bedrock of the Central Gneiss Belt across the region is highly fractured within the upper 10 to 20 m (Sykes *et al.*, 2009; Ecoplans Limited, 2007), making it an aquifer unit. It is the secondary permeability created by these fractures that dictate the ease at which groundwater is able to move through the bedrock aquifer, and the intensity and distribution of fractures determines the total porosity, hydraulic conductivity, and infiltration rate (Singer and Cheng, 2002).

Within the Route A and B study area, the pattern of fractures in the bedrock aquifer allows for movement of groundwater, however, this secondary permeability generally decreases with depth (Sykes *et al.* 2009). Overburden deposits, such as the glaciolacustrine sands and gravels are also considered aquifer units; however, as mentioned in **Section 4.1.3**, these units are thin and discontinuous and thus are not considered to be significant, although they may be hydraulically connected with the underlying Precambrian bedrock aquifer (Singer and Cheng, 2002). The primary aquifer within the Route A and B study areas is considered to be the upper fractured bedrock.

The fundamental characteristics of fractured rock aquifers are the extreme variability in hydraulic properties, such as conductivity and flow direction. In a fractured rock setting, groundwater flows may be extremely high through discrete fractures or faults, creating a defined flow zone. In a purely fractured media, such as in crystalline bedrock environments, groundwater flow in the host rock between these fractures and faults is extremely low and is considered a low permeability unit (confining unit).

Groundwater Recharge and Discharge

Route A & B:

Recharge is the term used to describe downward flowing groundwater, that is, from the ground surface toward the water table. Discharge is defined as the movement of groundwater such that the water table intersects the ground surface. Within the Canadian Shield, recharge and downward groundwater movement occurs in topographically

high regions, such as the Algonquin Highlands to the east of the Route A and B study areas or more locally on bedrock knobs and ridges. Discharge and upward groundwater flow occurs in topographic lows, such as the Key River valley or within bedrock valleys and isolated topographic depressions between bedrock knobs. Throughflow, sub-parallel to ground surface, occurs in areas of low topographic relief at moderate elevations (Sykes *et al.*, 2009). A significant component of the Route A and B study areas can be classified as a recharge area due to the dense, interconnected fracture network at surface.

Route B:

In addition to the Key River valley, Route B Transmission Line study area also contains the Magnetawan River valley, where additional discharge and upward groundwater flow occurs.

Groundwater Flow

Route A & B:

Groundwater flow is the result of differences in hydraulic head or, simply stated, water table elevation, from one (1) location to another. Regional groundwater flows from east to west toward Georgian Bay. Topographic lows, such as river valleys, can have local effects on the rate and direction of groundwater movement. Groundwater flowpaths frequently bend into river valleys and isolated topographic depressions; examples within the Route A and B study areas include Key River, and some of the deeper bedrock hollows and valleys within the lowlands.

In addition to the Key River, Route B study area also includes the Magnetawan River, where additional groundwater flowpaths frequently bend into.

Groundwater Use

Route A:

An inventory of private water wells (i.e., domestic, commercial, industrial, etc.) was performed within the Route A study area, by means of searching the MOECC's Water Well Database. Results are shown in **Figure 4-5**, along with the primary use of each well. A total of two (2) water well records were identified within the Route A study area. A review of the water well records indicates that both wells are domestic supply wells, completed within bedrock to a depth of between about 24 m and 34 m.

Route B:

An inventory of private water wells (i.e., domestic, commercial, industrial, etc.) was performed within the Route B study area, by means of searching the MOECC Water Well Database. Results of the private well inventory are shown in **Figure 4-6**, along with the primary use of each well. A total of 171 water well records were identified within the Route B study area. A review of the water well records indicates that the majority (81%) of wells are completed in bedrock and range in depth between about 6.7 and 182.9 m. Zero (0) wells were reported to be completed in overburden material (sand); however, 36 records did not provide information pertaining to well type (overburden or bedrock).

As shown in **Table 4-7**, available well records indicate that 76% of groundwater use in the Route B study area is for domestic purposes, followed by commercial use (8%), public and municipal supply use (3%), industrial use (1%) and irrigation (1%). Approximately 2% of MOECC water well records specified the primary use as 'Monitoring and Test Hole', which indicates those wells are not used as a groundwater supply, and the remaining (9%) provided no well use information.

Table 4-7: Summary of MOECC Water Well Records

Primary Well Use	Number
Commercial	13
Domestic	130
Industrial	2
Irrigation	1
Monitoring and Test Hole	4
Municipal	2
No Information	15
Public	4
Total	171

4.3.5 Hazard Lands, Erosion and Sedimentation

Route A & B:

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. Erosion is influenced primarily by four (4) factors: climate, soil type, topography and vegetation. Rainfall is the major climatic factor which contributes to erosion. It causes erosion in two (2) ways: by raindrop impact and by runoff. Although the amount and intensity of rainfall are critical parameters affecting erosion, the seasonal distribution is often more critical. The season of heaviest erosion is characterized by a combination of the most unstable ground condition and the most intensive rainfall. In the Route A and B Transmission Line study areas, this occurs in the spring and fall.

The rate of soil erosion may be influenced by landscape, rainstorm characteristics, cover and soil management but even with all factors being equal, some soils erode more readily than others. Soil erodibility tends to increase with a greater content of silt and very fine sand and decrease with a greater content of coarse sand, clay and organic matter. Within the Route A and B study areas, little overburden is present and exposed 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 as well as a bedrock drift complex consisting of a thin, discontinuous veneer of glaciolacustrine and glaciofluvial sand and / or gravel, isolated occurrences of ice-contact stratified sands and gravels and of loose, stony glacial till (OGS, 2003). The thickness of overburden is generally less than about 1 m across the study area 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.

The lengths and steepness of slopes affect the velocity of runoff water, and therefore are the principal surface features affecting erosion on a site. Chapman and Putnam (1984) delineate the Route A and B study areas as being 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. Although relief in the Georgian Bay Fringe is generally considered to be low, numerous bare rock knobs and ridges occur which rise above the local ground topography. Due to the absence of overburden material on these topographic highs, minor amounts of sediment are expected to be eroded due to topography.

Accelerated soil erosion on construction sites is generally caused by the removal of a protective vegetative cover. Generally, there is sparse vegetation along the proposed Route A and B Transmission Line routes resulting in an increased risk of accelerated soil erosion. Upland areas have little to no soil erosion as it is primarily barren bedrock knobs. On-rock knobs and ridges where soil accumulation has occurred an increased risk for unstable land occurs.

4.4 Air and Noise

4.4.1 Atmospheric Environment

Climate

Route A & B:

The Route A and B Transmission Lines are located within the Georgian Bay Ecoregion, situated on the southern portion of the Precambrian Shield in south-central Ontario. The climate of this ecoregion is cool-temperate and humid, and falls within the Humid High Moderate Temperature Ecoclimate Region. The mean annual temperature range is between 2.8 to 6.2°C, and the mean length of growing season is between 183 to 219 days. The mean summer rainfall is between 204 and 304 mm, with annual precipitation ranging between 771 and 1,134 mm (Crins *et al*., 2009).

Monthly climatic statistics were derived from EC's nearest long-term monitoring stations to the Route A and B Transmission Lines; because of the length of the Transmission Lines, two (2) stations were selected, Monetville and Dunchurch, Ontario, as shown in **Table 4-8**. The Monetville, Ontario station is located approximately 30 km from HIFN I.R. #2 (EC, 2015a) near the northern extent of the Route A and B Transmission Lines, whereas the Dunchurch, Ontario station is located approximately 30 km from Parry Sound (EC, 2015b) near the southern extent of Route B Transmission Line.

Table 4-8: Monthly Average Climatic Statistics for Monetville and Dunchurch, Ontario (1981-2010)

Monetville, Ontario[1]					
Month	**Daily Average Temperature (°C)**	**Daily Minimum Temperature (°C)**	**Daily Maximum Temperature (°C)**	**Monthly Average Rainfall (mm)**	**Monthly Average Snow Fall (cm)**
January	-12.0	-17.5	-6.4	17.4	63.2
February	-9.3	-15.0	-3.5	12.3	48.8
March	-4.2	-9.9	1.5	35.4	29.4
April	4.4	-1.5	10.3	55.8	12.7
May	11.2	4.7	17.5	94.8	1.4
June	16.4	10.0	22.9	76.9	0.0
July	19.4	13.0	25.8	85.3	0.0
August	18.0	11.6	24.3	85.0	0.0
September	13.5	8.0	18.9	103.3	0.0
October	6.7	1.8	11.5	100.6	3.9
November	-0.0	-3.9	3.9	67.3	29.0
December	-7.3	-12.0	-2.6	24.8	58.2

Dunchurch, Ontario[2]					
Month	**Daily Average Temperature (°C)**	**Daily Minimum Temperature (°C)**	**Daily Maximum Temperature (°C)**	**Monthly Average Rainfall (mm)**	**Monthly Average Snow Fall (cm)**
January	-11.1	-16.8	-5.3	23.3	80.9
February	-9.1	-15.1	-3.0	16.8	58.9
March	-3.8	-9.8	2.2	39.2	32.3
April	4.4	-1.7	10.5	59.3	12.1
May	11.1	4.3	17.9	93.4	0.8
June	16.2	9.4	22.9	73.7	0.0
July	18.9	12.2	25.5	79.0	0.0

Dunchurch, Ontario[2]					
Month	**Daily Average Temperature (°C)**	**Daily Minimum Temperature (°C)**	**Daily Maximum Temperature (°C)**	**Monthly Average Rainfall (mm)**	**Monthly Average Snow Fall (cm)**
August	17.8	11.3	24.3	87.7	0.0
September	13.4	7.5	19.3	105.8	0.0
October	6.9	1.9	12.0	115.9	6.1
November	0.3	-3.8	4.4	81.2	37.5
December	-6.7	-11.5	-1.8	31.8	82.6

Notes: 1. Monetville Station: 46°08'33.006"N 80°18'25.044"W, Elevation 221.00 m
2. Dundurch Station: 45°37'00.000"N 79°53'00.000"W, Elevation 268.20 m
Source: EC, 2015a; EC, 2015b

Air Quality

Route A & B:

The MOECC Air Quality Index is an indicator of air quality in Ontario, based on air pollutants that are known to have adverse effects on human health and the environment; these include ozone, fine particulate matter, nitrogen dioxide, carbon monoxide, sulphur dioxide and total reduced sulphur compounds. According to MOECC, an Air Quality Index (AQI) reading below 16 is categorized as very good, a reading of 16 to 31 is good, 32 to 49 is moderate but there may be some adverse effects on very sensitive people, 50 to 99 is poor and may have adverse effects on sensitive human and animal populations and may cause significant damage to vegetation and property, and a reading above 99 is categorized as very poor and may have adverse effects on a large proportion of those exposed (MOECC, 2014).

The Parry Sound AQI monitoring station is the closest station to the Route A and B Transmission Lines. The 2014 daily data from this station shows an average AQI of 22.38 (good) with a standard deviation of 6.10 and extreme AQIs of seven (7) (very good) on September 30 and October 16 and of 45 (moderate) on May 26 (MOECC, 2014).

4.4.2 Noise

Existing Sound Levels

Route A:

The proposed Route A Transmission Line is primarily adjacent to sections of the existing Highway 522. Along this section, existing anthropogenic sound sources are primarily associated with highway traffic. A small section (approximately 3 km) is primarily undeveloped but is bisected by a CN rail corridor with several adjacent buildings. In this section there are few anthropogenic sound sources aside from intermittent passing trains.

Route B:

The proposed Route B Transmission Line is primarily adjacent to sections of the existing and/or future proposed sections of Highway 69/400. Along these sections, existing anthropogenic sound sources are associated with the highway. The existing railway line, adjacent to sections of Highway 69, also influences existing sound levels along some sections of Route B.

The central portion of Route B deviates from Highway 69/400 into an undeveloped area before connecting with the existing HONI 500 kV system, and travelling south towards a more developed area near Highway 124. This primarily undeveloped section of the route has few anthropogenic sound sources aside from intermittent recreational activities such as All-Terrain Vehicles (ATVs), snowmobiles and hunting.

The southern portion of Route B continues south as a connection with the existing HONI 500 kV system from Highway 124 to Highway 518; and from Highway 518 to south of Highway 400. Existing sound levels near Highway 124, Highway 518 and Highway 400 are controlled by the respective Highways. The remaining sections along this portion of Route B are generally composed of greenspace areas and dispersed residential dwellings, where existing sound levels are controlled by residential activities, and natural sounds (e.g., weather and wildlife).

4.5 Socio-Economic, Resources, Land Use, Aboriginal, Heritage and Culture

This section provides a description of the following VECs:

- Economic Base;
- Employment and Labour Supply;
- Local Business;
- Neighbourhood and Community Character;
- Community Services and Infrastructure;
- Transportation and Traffic;
- Recreation, Cottaging and Tourism;
- Public Health and Safety;
- Non-Renewable Resources;
- Forestry Resources;
- Game and Fishery Resources;
- Agriculture and Soils;
- Residential, Commercial and Industrial Land Use;
- Provincial, Municipal and First Nation Policies, Plans and Zoning By-laws;
- Waste Disposal Facilities;
- Aboriginal Land Use and Resources;
- Archaeology;
- Built Heritage and Cultural Heritage Landscapes; and
- Landscapes and Views

Information on these VECs was collected through desktop research. This research included a review of information from publicly available sources such as: existing GIS data, and community, municipal and government websites. Information was also consulted from Aboriginal community websites, published statistics from Statistics Canada and AANDC, treaty and land claims information from the Aboriginal Treaty Research Information System, and previously asserted interests from Aboriginal communities on other undertakings such as the proposed Highway 69/400 expansion.

The Route A Transmission Line socio-economic study area includes the Route A Transmission Line ROW, the Unincorporated Townships of Mowat and Blair, HIFN I.R. #2 as well as the adjacent Municipality of Killarney and the Unincorporated Township of Henvey (**Figure 4-11**). The Route B Transmission Line socio-economic study area includes the Route B Transmission Line ROW and the following geographic and incorporated municipalities (**Figure 4-12**);

- HIFN I.R. #2;
- Unincorporated Township of Henvey;
- Unincorporated Township of Wallbridge;
- Magnetawan Reserve No. 1;
- Unincorporated Township of Harrison;
- Township of The Archipelago;
- Shawanaga Reserve No. 17;
- Unincorporated Township of Shawanaga;
- Carling Township;
- Municipality of McDougall; and
- Seguin Township.

Figure 4-11: Route A Socio-Economic Features

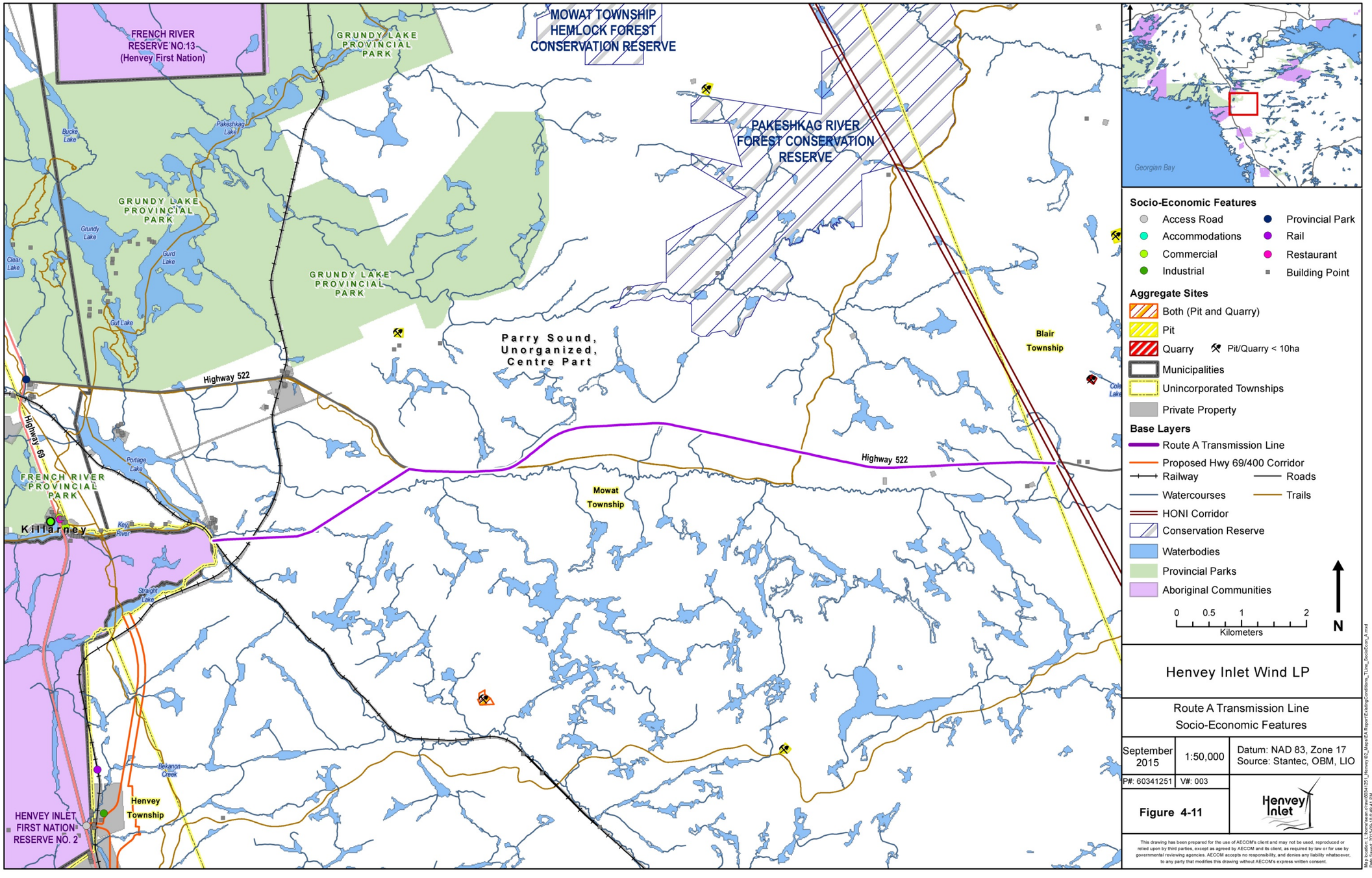
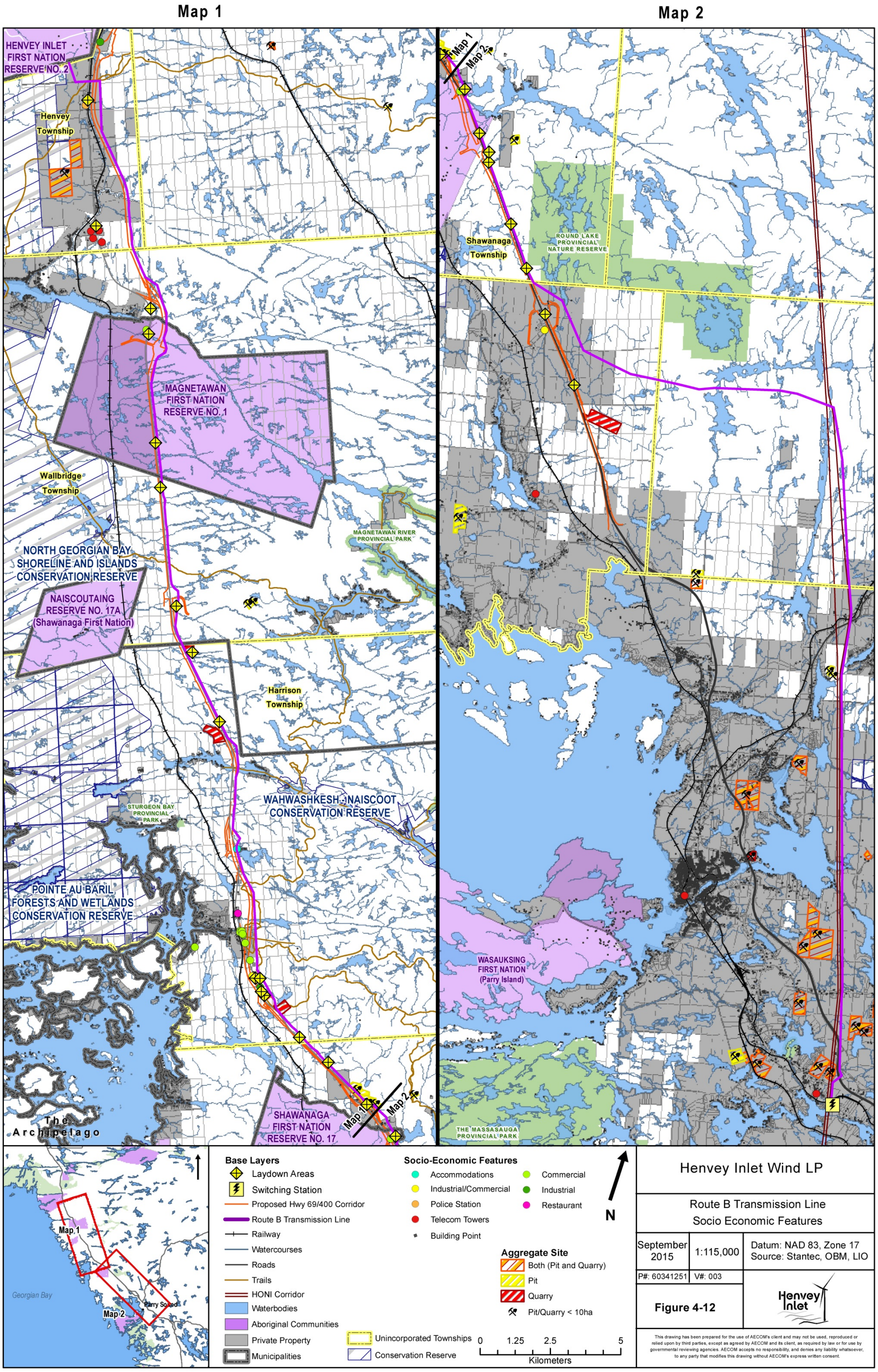


Figure 4-12: Route B Socio-Economic Features



In addition, First Nations with Reserve lands located within the Route B Transmission Line socio-economic study area were also examined. These communities include:

- Henvey Inlet First Nation (HIFN);
- Magnetawan First Nation; and
- Shawanaga First Nation.

4.5.1 Economic (Economic Base, Employment, Labour Supply and Local Businesses)

Economic Base

Table 4-9 includes information of Parry Sound District industries in 2011 from the National Household Survey. The largest industry segments in the District are "healthcare and social assistance" services claiming approximately 13% of the industry for Parry Sound District, followed closely by "construction" and "retail trade", these together make up approximately 30% of the Parry Sound District industry. These areas suggest a focus on providing core services for residents, while the construction industry may serve both local and cottage industries. Likewise, retail activities may have both a local and tourism focus.

Table 4-9: Parry Sound District by Industry, 2011

	Total	Male	Female
Total Labour Force Population aged 15 years and over by industry	20,345	10,965	9,380
Industry – not applicable	390	160	230
All Industries	19,955	10,800	9,155
Agriculture, Forestry, Fishing and Hunting	295	235	65
Mining, Quarrying, and Oil and Gas Extraction	125	95	25
Utilities	135	125	0
Construction	2,710	2,440	270
Manufacturing	1,450	1,080	365
Wholesale Trade	440	365	75
Retail Trade	2,565	1,245	1,320
Transportation and Warehousing	890	675	220
Information and Cultural Industries	265	185	80
Finance and Insurance	315	85	230
Real Estate and Rental and Leasing	400	255	145
Professional, Scientific and Technical Services	640	290	350
Management of Companies and Enterprises	0	0	0
Administrative and Support, Waste Management and Remediation Services	660	450	210
Educational Services	1,565	430	1,140
Health Care and Social Assistance	2,725	355	2,370
Arts, Entertainment and Recreation	540	360	180
Accommodation and Food Services	1,650	635	1,010
Other Services (except public administration)	1,045	555	490
Public Administration	1,535	950	585

Source: Statistics Canada, 2011g

Employment and Labour Supply

Due to the sparsely populated geography of the Parry Sound District, employment and industry tend to be centralized in the Town of Parry Sound, with some small commercial and tourism activities located along the Highway 69 corridor.

Table 4-10 identifies that the Parry Sound District has an unemployment rate of 11.8%, higher than the national average of 7.8% in 2011.

Table 4-10: Parry Sound District by Labour Force Status, 2011

	Total	Male	Female
Total Population aged 15 years and over by Labour Force Status	35,750	17,850	17,895
In the Labour Force	20,345	10,965	9,380
Employed	17,950	9,400	8,550
Unemployed	2,395	1,565	830
Not in the Labour Force	15,400	6,885	8,515
Participation Rate (%)	56.9	61.4	52.4
Employment Rate (%)	50.2	52.7	47.8
Unemployment Rate (%)	11.8	14.3	8.8

Source: Statistics Canada, 2011g

Table 4-11 shows the occupation categories for Parry Sound District residents in 2011 from the National Household Survey. The most common occupation categories were “sales and service” occupations, and “trades, transport and equipment operators and related occupations”. The least common occupations other than those not applicable were in the “art, culture recreation and sport” sector.

Table 4-11: Parry Sound District by Occupations, 2011

	Total	Male	Female
Total Labour Force Population aged 15 years and over by	20,350	10,965	9,385
Occupation – not applicable	390	160	230
All Occupations	19,955	10,805	9,150
Management Occupations	2,245	1,430	815
Business, Finance and Administration Occupations	2,515	615	1,900
Natural and Applied Sciences and Related Occupations	745	635	110
Health Occupations	1,375	185	1,190
Occupations in Education, Law and Social, Community and Government Services	2,350	765	1,585
Occupations in Art, Culture, Recreation and Sport	480	195	280
Sales and Service Occupations	4,460	1,815	2,645
Trades, Transport and Equipment Operators and Related Occupations	4,335	4,020	315
Natural Resources, Agriculture and Related Production Occupations	510	390	115
Occupations in Manufacturing and Utilities	940	750	190

Source: Statistics Canada, 2011g

Local Business

Route A:

The Route A Transmission Line socio-economic study area has limited business activity and there is minimal commercial activity taking place at HIFN I.R #2. HIFN has a commercial building at French River Reserve No. 13, as well as a gas station located 1 km from Highway 69 on Pickerel River Road which sells convenience items. The area along Highway 522 is remote and does not have commercial buildings. The closest commercial businesses are those at Key River associated within the marina, as well as some aggregate / quarry operations which are shown on **Figure 4-11**.

Route B:

There is some business activity within the Route B Transmission Line socio-economic study area. The HIFN commercial activity is centred at the Pickerel village located at French River Reserve No. 13, although this is north of the Route B transmission line route. There is minimal commercial activity occurring on HIFN I.R. #2.

Magnetawan First Nation operates a convenience store / gas bar located on existing Highway 69. The community is close to Britt, Ontario, where some individuals may work. The community also has a band office which serves as a location for governance, recreation and social functions for the community (Magnetawan First Nation, 2015).

Shawanaga First Nation operates the Shawanaga Gas and Variety store located in the community which provides fuel, tobacco products, groceries and other convenience items. The store also stocks local crafts and fishing supplies. According to the community website, the store employs eight (8) community members (Shawanaga First Nation, 2015a).

Highway 69/400 provides some access to businesses in Britt and Pointe au Baril, typically service stations and seasonal businesses catering to travellers and the small local population. The Town of Parry Sound is the primary commercial centre in the Parry Sound District and offers a diverse range of retail and small industrial opportunities. The community serves a wide area, including a significant seasonal population during the summer months. Many businesses based in Parry Sound may have a large service area that includes much of the Route B Transmission Line socio-economic study area.

South of Highway 124 and north of Highway 518 there are two (2) businesses located along the Route B Transmission Line. Camp Koinonia, a summer camp for children and families, is located on the shores of Haines Lake near Parry Sound, and Mill Lake Cottage Resort resides on the northwest shores of Mill Lake.

South of Highway 518 there is a small community of Otter Lake, in which many businesses are located, such as the manufacturing plant for Crofter's Foods. Other industrial businesses are located on Industrial Boulevard including Biosenta, Zero Mold, RJW Enterprises, Parry Sound Fuels, and Watermark Innovations Inc. This area also includes a Quality Inn Hotel and restaurant on the East side of Highway 400 at Oastler Lake Road.

4.5.2 Neighbourhood and Community Character

4.5.2.1 Parry Sound District

Parry Sound District is located in Northeastern Ontario. The District is located on the eastern shore of Georgian Bay and is bordered by Muskoka District to the south, Nipissing District to the North and East, and Sudbury and Manitoulin Districts to the Northwest. The district covers an area of 9,300 square kilometers which accounts for 3.3% of Northeastern Ontario's area.

Parry Sound District is comprised of 22 townships, towns, villages and municipalities, as well as six (6) First Nations and two (2) unincorporated townships. The District is predominantly rural with the majority of the population living in rural areas outside the population areas (PSDSSAB, 2014).

Route A:

Census information for the unorganized portion of Parry Sound District is limited, given that much of the district consists of Crown Land with limited dwellings and only a small year-round population with many seasonal residents being cottagers or tourists. Population figures for the Parry Sound District are presented in **Table 4-12**. The Unorganized portion of Parry Sound District has had a significantly declining population between 2006 and 2011 of

9.3%. The area also has a higher median age and percentage of the population over 15 years of age compared to the Parry Sound District as a whole. These indicators may be the result of a higher prevalence of retirees in the area, or youth outmigration in search of work.

Table 4-12: Population Trend (2006-2011) – Parry Sound District Communities

	2006 (Census)	2011 (Census)	2006-2011 Population Change (%)	Median Age	% Age Over 15 years
Parry Sound District	40,918	42,162	3.0	49.8	86.8
Parry Sound, Unorganized Centre Part	2,424	2,199	-9.3	58.6	92.7

Source: Statistics Canada, 2011a-b

Route B:

Population figures for the municipalities located within the Route B socio-economic study area are presented in **Table 4-13**.

Table 4-13: Population Trend (2006-2011) – Parry Sound District Communities

	2006 (Census)	2011 (Census)	2006-2011 Population Change (%)	Median Age	% Age Over 15 years
Parry Sound District	40,918	42,162	3.0	49.8	86.8
Parry Sound, Unorganized Centre Part	2,424	2,199	-9.3	58.6	92.7
The Archipelago	576	566	-1.7	55.2	90.5
Carling Township	1,123	1,248	11.1	52.8	88.9
McDougall (Municipality)	2,704	2,705	0.0	48.7	85.5
Seguin Township	4,276	3,988	-6.7	49.7	86.2

Source: Statistics Canada, 2011a-e.

4.5.2.2 Anishinabek Communities

Henvey Inlet First Nation

HIFN is located adjacent to both the Route A and B Transmission Line study areas. HIFN I.R. #2 is located on the Northeast shore of Georgian Bay approximately 90 km south of Sudbury on the west side of Highway 69/400 and 71 km north of Parry Sound. HIFN identifies that this Reserve is sparsely populated, with few dwellings.

Statistics Canada 2011 Census provides data specifically about HIFN I.R. #2 where both Transmission Line routes will originate. The population given for HIFN I.R. #2 was 15 in 2006 and 28 in 2011 (Statistics Canada, 2011f). The majority of HIFN on-Reserve population lives at the HIFN French River Reserve No. 13 village.

Table 4-14 below shows HIFNs statistics for its community (both Reserves, as well as off-Reserve members).

Table 4-14: Henvey Inlet First Nation Membership

Population Location	Population
On-Reserve	150
Off-Reserve	450
Total	600

Source: HIFN, 2015a

The AANDC identifies an on-Reserve population for both Reserves that is slightly higher at 165 in 2011 and 115 members in 2006 (AANDC, 2015a).

The HIFN population characteristics are provided in **Table 4-15.** These statistics demonstrate that the average age has decreased between 2006 and 2011.

Table 4-15: Henvey Inlet First Nation Population and Age Characteristics

Population and Age Characteristics		2006			2011		
		Total	*Male*	*Female*	*Total*	*Male*	*Female*
Population Characteristics	Total all persons	115	55	60	165	80	75
	Registered Indian	100	45	55	125	60	65
	Not a registered Indian	15	10	0	35	25	10
Age Characteristics	Total all persons	115	55	60	165	80	75
	Age 0-19	40	20	25	50	25	25
	Age 20-64	65	35	30	100	55	45
	Age 65 and over	10	0	10	10	0	0
Median Age		32.5	32.0	33.0	30.9	31.8	30.3

Source: AANDC, 2015a

Magnetawan First Nation

Magnetawan First Nation Reserve No. 1 is located along the proposed Route B Transmission Line. The community is situated 6 km east of Georgian Bay, south of Sudbury. **Table 4-16** shows population statistics from AANDC, as of January 2015 for Magnetawan First Nation.

Table 4-16: Magnetawan First Nation Membership

Population Location	Population
On-Reserve	76
Off-Reserve	177
Total	253

Source: AANDC, 2015b

Statistics Canada offers data for Magnetawan First Nation for the years 2006 and 2011. The Census data reveals that the population grew from 80 on-Reserve members in 2006 to 90 on-Reserve members in 2011, for a population change of 12.5%. This was higher than the Ontario average of 5.2% over the same period.

Other details regarding the community population and age characteristics are included in **Table 4-17** below over the 2006 to 2011 period.

Table 4-17: Magnetawan First Nation Population and Age Characteristics

Population and Age Characteristics		2006			2011		
		Total	**Male**	**Female**	**Total**	**Male**	**Female**
Population Characteristics	Total all persons	80	40	35	90	45	50
	Registered Indian	75	35	35	80	35	45
	Not a registered Indian	10	0	0	15	10	0

Population and Age Characteristics		2006			2011		
		Total	Male	Female	Total	Male	Female
Age Characteristics	Total all persons	80	40	35	90	45	50
	Age 0-19	25	20	10	25	15	0
	Age 20-64	45	20	20	60	25	30
	Age 65 and over	10	0	0	10	10	10
Median Age		33.0	25.5	39.0	39.0	27.8	42.4

Source: AANDC, 2015a

Shawanaga First Nation

Shawanaga First Nation Reserve No. 17 is located along the proposed Route B Transmission Line, approximately 30 km northwest of Parry Sound and approximately 150 km southeast of Sudbury. The traditional territory is bordered by the Seguin River to the south, the Magnetawa River to the north and extending to Georgian Bay, and east to the Ottawa valley (Shawanaga First Nation, 2014).

Table 4-18 shows population statistics from AANDC, as of January 2015 for Shawanaga First Nation (all three Reserves and off-Reserve populations).

Table 4-18: Shawanaga First Nation Membership

Population Location	Population
On-Reserve	188
Off-Reserve	446
Total	634

Source: AANDC, 2015c

Statistics Canada offers data for Shawanaga First Nation for the years 2006 and 2011. The Census data reveals that the reported population grew from 190 on Reserve-members in 2006 to 215 on-Reserve members in 2011, for a population change of 13.2%. This was higher than the Ontario average of 5.2% over the same period.

Other details regarding the community population and age characteristics are included in **Table 4-19** below over the 2006 to 2011 period.

Table 4-19: Shawanaga First Nation Population and Age Characteristics

Population and Age Characteristics		2006			2011		
		Total	Male	Female	Total	Male	Female
Population Characteristics	Total all persons	190	95	100	215	105	110
	Registered Indian	170	80	90	180	85	95
	Not a registered Indian	25	15	0	30	20	10
Age Characteristics	Total all persons	190	95	100	215	105	110
	Age 0-19	65	35	35	70	25	45
	Age 20-64	115	55	60	130	75	55
	Age 65 and over	10	0	0	15	10	10
Median Age		33.9	32.5	34.4	33.8	38.6	30.0

Source: AANDC, 2015c

4.5.3 Community Services and Infrastructure

4.5.3.1 Social Services and Organizations

Routes A & B:

The Parry Sound District operates the Parry Sound District Social Services Administrative Board (PSDSSAB) which oversees programs such as day care licensing, social housing units, Ontario Works (financial and employment support for those in need), and a women's shelter in the Town of Parry Sound. Licensed childcare centres are located in:

- Parry Sound;
- South River;
- Emsdale; and
- Powassan.

The PSDASSAB indicates that there are over 40 Early Years / Best Start Child and Family Centres throughout the Districts of Parry Sound and Muskoka. Early Years Programs / Best Start Child and Family Centres enable parents and children to drop-in, meet, share, and play and find support and information for children's programing (PSDSSAB, 2015).

The PSDSSAB owns and operates 209 affordable housing units in the District through the Parry Sound Housing Corporation. In addition to the PSDSSAB stock, there are 164 units of affordable non-profit housing stock in the District (PSDSSAB, 2015).

The Manitoulin-Sudbury DSB oversees social and emergency services within the Manitoulin District and Sudbury District, including the Municipality of Killarney. The DSB is responsible for Ontario Works, social housing, Emergency Medical Services (Land Ambulance) and Early Learning and Child Care Services (Manitoulin-Sudbury DSB, 2015).

4.5.3.2 Public Facilities and Institutions

Route A & B:

For many communities in Northern Ontario, arenas and community centres are synonymous with each other given that they often provide a venue for community events as well as social and recreation opportunities. For other communities, churches play a similar role as community gathering places.

Route A:

There are no community centres within the Route A socio-economic study area. Arnstein Baptist Church is located in Port Loring, a community located on Highway 522 east of HIFN I.R. #2 in Blair Township.

Route B:

The Town of Parry Sound features the Bobby Orr Community Centre, which provides ice surfaces for hockey and other sports, as well as three (3) meeting rooms. Other community events in the Town of Parry Sound are held at the municipal building on Seguin Street (Town of Parry Sound, 2015).

The Town of Parry Sound includes a number of churches and other religious offerings for residents, including denominations such as Anglican, Catholic, Mennonite, United, Church of Jesus Christ of Latter-day Saints, Baptist, Salvation Army, Pentecostal, and Jehovah's Witness. Other churches are present in the rural communities of Parry Sound District, for example the United church in Nobel, the Mennonite and the United church in Otter Lake and the Holy Family Church in Britt.

South of Parry Sound, in the community of Otter Lake, the Foley Activity Centre is also home to the Library and the Agricultural Hall and is located on Rankin Lake Road. This centre is in close proximity to the Parry Sound TS.

Local First Nation band offices provide a gathering place for community members during community events. Magnetawan First Nation, Shawanaga First Nation, and HIFN each have a band office. The HIFN band office is located on French River Reserve No. 13.

4.5.3.3 Utilities

4.5.3.3.1 Water and Wastewater

Route A:

Well water or surface water are the predominant water supplies for the Route A Transmission Line socio-economic study area. Septic systems are also common throughout the study area.

Route B:

The Town of Parry Sound Public Works department operates the only municipal drinking water and waste water systems along the Route B socio-economic study area, serving an area within town limits that includes 32 kilometres of sanitary collection mains and 40 kilometres of water distribution mains (Town of Parry Sound, 2015).

Well or surface water supplies are the predominant water supply for all other areas given the prevalence of bedrock exposed or near the surface and the limited population. Septic systems are also common in rural areas of the Parry Sound District.

4.5.3.3.2 Electrical Utilities

Route A:

The Route A Transmission Line socio-economic study area is within the HONI electricity service territory.

Route B:

The proposed Route B Transmission Line is located near the Highway 69/400 corridor. Given the presence of dwellings and businesses along the highway, there is some local electricity distribution available. Communities along Highway 69/400 and some cottage areas are served by HONI.

The Town of Parry Sound has a local distribution company (LDC), Parry Sound Power, which now operates as Lakeland Power. Parry Sound Power Corporation (Wiresco) owns the land, land rights, distribution station, poles, towers and fixtures, overhead and underground conductors and devices, underground conduit, line transformers, services and meters. Wiresco distributes power from Genco to its customers and is responsible for the activities relating to the transmission, distribution and retailing of electricity. The coverage area is limited to areas on the west

side of the existing Highway 69/400, with the exception of a small area near Mill Lake. All other electricity is provided by Hydrop One (Lakeland Power, 2015).

4.5.3.4 On-Reserve Infrastructure

Route A & B:

There is a small population at the HIFN I.R. #2 of approximately 12 households. Households are located along Bekanon Road and several cottages are located on the shores of Henvey Inlet. The majority of HIFN population resides at French River Reserve No. 13 where at the present time there are 50 houses; most have been built within the last ten (10) to fifteen years. More housing is in the planning stages along Pickerel River Road within French River Reserve No. 13 and further subdivision will occur should population continue to increase. (HIFN, 2015a)

The HIFN website identifies the following structures within its main village at French River Reserve No. 13:

- Public Works garage – 370 m^2
  - This structure includes Henvey Inlet Fire and Rescue and the First Response Team.
  - Community events are held in this location as well.
- Commercial building – 110 m^2. This building also includes the current Band Office.
- Former Band Office – Leased by the Waabnoong Bemjiwang Association of First Nations Tribal Council.
- Subdivision development: Pickerel River Road – Under development. (HIFN, 2015a)
- Schools – None
- Daycare – Opened in 1999
- Library – Opened in 2000. The library is notable as it offers public access to reading materials as well as public internet (HIFN, 2015a; HIFN, 2015d).

Route B:

Magnetawan First Nation

Magnetawan First Nation has a band office located on Highway 529, which contains a large meeting room, offices, as well as the community library. The main commercial operation in the community is the gas bar/convenience store operation along existing Highway 69.

The community is seeking to expand its gas bar / convenience store operation. Magnetawan First Nation is also seeking other initiatives to improve economic development as the widening of Highway 69/400 may limit visibility of the gas bar (AECOM, 2014b).

The main community settlement area has a water and waste treatment plant for services, and the community has a waste disposal site. HONI provides electricity for the community (Magnetawan First Nation, 2015).

Shawanaga First Nation

The Shawanaga First Nation Public Works department maintains buildings in the community village including First Nation office buildings, the Health Centre, the Recreation Centre, the Gas Bar and the Fire Hall. There is also an elementary school that operates within the community. Community members receive water by truck. Community homes use septic systems, and there are no wastewater facilities on-Reserve. (Shawanaga First Nation, 2015a).

4.5.4 Transportation and Traffic

Route A & B:

The Route A Transmission Line mostly follows Highway 522 and the northern section of Route B Transmission Line primarily follows the proposed Highway 69/400 widening corridor. These are provincially maintained highways with Highway 69 being part of the Trans-Canada Highway. As such, neither highway can be closed for construction purposes without acquiring applicable MTO permits. In addition, any proponent wishing to install transmission lines or pole lines within 400 m of a provincial highway require an MTO building and land use permit and must adhere to a minimum setback of 14 m from the MTO ROW (MTO, 2009).

Additional modes of transportation serving the Route A and B socio-economic study area includes local marinas located off-Reserve that provide fixed access to the rivers in the area, including the Pickerel River. Two (2) freight railway lines owned by CN and Canadian Pacific (CP) follow the Highway 69/400 corridor connecting the Route A and B socio-economic study area to northern and southern Ontario. There is no passenger service for these railway lines. Inter-city bus service using Highway 69 is available with stops in Sudbury, Parry Sound, Britt, Byng Inlet, Point Au Baril and Key River(Ontario Northland, 2015).

The nearest major airport by car to the Route A and B socio-economic study area is the Greater Sudbury Airport located approximately 80 km north from start of the Transmission Lines on HIFN I.R. #2. There are also a number of local aerodromes and water aerodromes within 50 km of the Route A and B Transmission Lines.

Route A:

The Route A Transmission Line crosses Highway 69 within HIFN I.R.#2, before heading east along Highway 522. Highway 522 is a narrow, paved, two (2) lane highway with no passing lanes. **Table 4-20** shows the annual average daily traffic (AADT) volume as of 2010 for the sections of Highway 522 that run adjacent to the Route A Transmission Line.

Table 4-20: 2010 Highway 522 Annual Average Daily Traffic (AADT)

Highway 522 Section		Distance (km)	2010 AADT
From	To		
Rogerson Rd(S) – Wilson Twps	Grundy Lake Prv Park Rd(N) Mowat Twp	37.4	450
Grundy Lake Prv Park Rd(N) Mowat Twp	Hwy 69 - Hwy End Of Hwy 522	1.0	870

Source: MTO, 2010

Route B:

Along much of the proposed Route B Transmission Line, Highway 69 is a paved, two (2) lane highway with passing lanes alternating between the northbound and southbound lanes. Highway 69 becomes Highway 400 north of the Town of Parry Sound where it is four (4) lanes. **Table 4-21** shows the annual average daily traffic (AADT) volume as of 2010 for the sections of Highway 69 and Highway 400 that run adjacent to the Route B Transmission Line.

Table 4-21: 2010 Highway 69 Annual Average Daily Traffic (AADT)

Highway 69 Section		Distance (km)	2010 AADT
From	To		
Rankin Rd (W)/Hwy 69 N IC Overlap Hwy 400	Parry Sound Dr (W) Hall's Quarry Rd (E)IC Up	15.8	N/A
Parry Sound Dr (W) Hall's Quarry Rd (E)IC Up	Hwy 124 (E) Parry Sound Dr (W)IC Up	2.6	13,300
Hwy 124 (E) Parry Sound Dr (W)IC Up	Bayside Dr (W) Lake Forest Dr (E)	1.8	13,100

Table 4-21: 2010 Highway 69 Annual Average Daily Traffic (AADT)

Highway 69 Section		Distance (km)	2010 AADT
From	To		
Bayside Dr(W)Lake Forest Dr (E)	Hwy 7910 Avro Arrow Rd IC Up	3.4	13,400
Hwy 7910 Avro Arrow Rd IC Up	JCT Sec Hwy 7287 (Old Hwy 559)Up 241	5.8	10,700
JCT Sec Hwy 7287 (Old Hwy 559)Up 241	A Point 5.6 Km N of Sec Hwy 559	5.6	7,250
A Point 5.6 Km N of Sec Hwy 559	Hwy 7182 -Shebeshekong Rd(W)	12.9	7,250
Hwy 7182 -Shebeshekong Rd(W)	Huntsville-Sudbury MTO District Boundary	4.6	6,900
Huntsville-Sudbury MTO District Boundary	Sec Hwy 644(W)N Archipelago Twp	4.6	6,900
Sec Hwy 644(W)N Archipelago Twp	S JCT Sec Hwy 529(W)Archipelago Twp	1.9	6,100
S JCT Sec Hwy 529 (W)Archipelago Twp	N JCT Sec Hwy 529(W)Magnetawan Bdy	20.0	6,600
N JCT Sec Hwy 529 (W) Magnetawan Bdy	Sec Hwy 526(W)-Henvey Twp	5.2	7,050
Sec Hwy 526(W)-Henvey Twp	Sec Hwy 522(E)-Mowat Twp	12.8	6,900

Source: MTO, 2010

Through the Northern Highways Program 2013 - 2017, the Ontario Ministry of Northern Development and Mines (MNDM) and MTO plan to widen Highway 69/400 to four (4) lanes, with construction occurring in segments along the route between Sudbury and the Town of Parry Sound (MNDM, 2013).

The Highway 69 / Highway 400 corridor provides an important north-south link between Sudbury and Barrie, and is also a major freight shipping route. Other important highways along the Route B Transmission Line include: Highway 526 providing access to Britt, Highway 529 which provides an alternate route paralleling Highway 69 between Magnetawan First Nation and Pointe au Baril Station, and Highway 124 which links Parry Sound to Highway 11 (West Parry Sound Geography Network, 2015).

The southern portion of the Route B Transmission Line is also located near the Parry Sound Area Municipal Airport located in Seguin Township servicing local flights to and from the Parry Sound District (Seguin Township, 2012).

4.5.5 Recreation, Cottaging and Tourism

Route A & B:

According to the MTCS, both the Route A and Route B socio-economic study area are located in Tourism Region 12 (MTCS, 2015). The region's tourism website provides links and information relating to the activities that can occur within the region, notably a number of outdoor recreation activities. The region is known as cottage country and caters to a tourism and recreation population that predominately travels to the region from May to September. While the region seeks to promote activities that can occur in all seasons, the busiest period is the summer months due to the influx of cottagers and visitors using nearby waterways and forests (Explorers Edge, 2015).

Notable recreational activities common within the Route A and B socio-economic study area include fishing, hunting and hiking, paddling (canoeing / kayaking), and motor sports such as ATVs and snowmobile uses. The tourism strategy for the region also identifies other pursuits such as spas, shopping, golf, health and wellness, arts and culture and area attractions (Explorer's Edge, 2015).

Route A and the northern extent of Route B Transmission Lines are located in close proximity to the Grundy Lake Provincial Park and French River Provincial Park. These parks include camping and other recreational amenities that draw visitors to the area and provide opportunities for local businesses in the service industry including marinas at the Pickerel and French Rivers, as well as the trading post at Grundy Lake Road.

Grundy Lake Provincial Park is located approximately 2.5 km north of the Route A Transmission Line. This provincial park is 3,614 ha in size and received 104,594 visitors in 2010, with 485 developed campsites as well as other interior camping opportunities. The park has 69% camping occupancy during the peak July-August period, or 100,646 camper nights. The French River Provincial Park (73,530 ha) offers only interior camping opportunities (i.e., no developed campsites), and recorded 18,100 camper nights in 2010 (Ontario Parks, 2010).

There are also many trails and open spaces to ride ATVs in the spring, summer and fall and ride snowmobiles in the winter months. The Northeast Georgian Bay snowmobile club is the organization which has jurisdiction within the Route A and B socio-economic study area (Northeast Georgian Bay Snowmobile Club, 2015) and maintains snowmobile trails in the area.

Route A:

The Route A Transmission Line socio-economic study area is remote with little access beyond Highway 522, limiting potential recreation pursuits. Hunting, fishing, and other activities occur on Crown Land throughout the Parry Sound District, and may be present during hunting and fishing seasons.

There are also trails and open spaces within the area that can be utilized for ATVs or snowmobiles. The proposed Route A Transmission Line crosses three (3) recreational trails.

The Route A Transmission Line is also close to the Pakeshkag River Forest Conservation Reserve, a protected forest area listed as a Conservation Reserve located approximately 2 km north of the proposed Route A Transmission Line and just east of Grundy Lake Provincial Park (NRCAN, 2015).

Route B:

The Route B Transmission Line study area is located along the proposed Highway 69/400 corridor for much of its length, a major transportation route providing access to recreational areas throughout Northern Ontario. Outdoor recreation enthusiasts utilize the transportation infrastructure and associated access roads (i.e., for logging or other past uses) to access the provincial Crown Land. The existing Highway 69 corridor provides access for many recreational land owners with cottages located in the Route B socio-economic study area, largely concentrated near the Town of Parry Sound. As shown in **Section 4.5.1.1,** a large part of the Parry Sound District economy serves these recreational residents.

There are also trails and open spaces within the Route B Transmission Line socio-economic study area that can be utilized for ATVs or snowmobiles. The proposed Route B Transmission Line crosses a total of 11 recreational trails.

The North Georgian Bay Shoreline and Islands Conservation Reserve is located to the west of the existing Highway 69 from the southern border of the HIFN I.R. #2, south, to the north Point au Baril forest and Wetland conservation area. This is an area of protected Crown land for recreation and traditional land uses. The area is protected from development.

The Route B Transmission Line is also close to the Round Lake Provincial Nature Reserve. This reserve includes Round Lake, as well as other smaller lakes and rivers in proximity to the proposed Route B Transmission Line.

4.5.6 Public Health and Safety

4.5.6.1 Health and Safety Facilities and Services

Route A:

There is no health care access within the Route A Transmission Line socio-economic study area, given its remote location. The closest first response capabilities are available at French River Reserve No. 13, although ambulance dispatch comes from the Municipality of Killarney ambulance base at Noëlville. The nearest hospitals are located in Parry Sound and Sudbury with a night landing heliport located on the French River Reserve No. 13 to assist with emergency evacuations. A nursing station is available in Britt, and is part of the West Parry Sound Health Centre system. The station was established in 2012 and has a nurse practitioner on site.

Police services in the Route A socio-economic study area are provided by the Still River detachment of the Ontario Provincial Police (Municipality of Killarney, 2015; HIFN, 2015d; Northeast Health Line, 2015).

Route B:

The Route B Transmission Line socio-economic study area is primarily serviced by health care facilities located in regional centres Parry Sound or Sudbury. Highway 69 provides access for ambulances along the highway based in the Town of Parry Sound, or at smaller ambulance bases such as the one (1) located in Noëlville. The nearest hospitals are located in the Town of Parry Sound and Sudbury with a night landing heliport located on the French River Reserve No. 13 to assist with emergency evacuations. A nursing station is available in Britt, and is part of the West Parry Sound Health Centre system. The station was established in 2012 and has a nurse practitioner on site.

Police services in the Route B socio-economic study area are provided by the Still River and Parry Sound detachments of the Ontario Provincial Police. Magnetawan First Nation and Shawanaga First Nation are served by Anishinabek Police Services (HIFN, 2015d; Anishinabek Police Service, 2015; Northeast Health Line, 2015)

4.5.7 Non- Renewable Resources

Route A & B:

The dominant landscape feature within both the Route A and B Transmission Line socio-economic study areas is the Canadian Shield and boreal forest. The Canadian Shield is known to yield bedrock for aggregate extraction, mineral and ore deposits for mining.

There are no known petroleum resources in development or operations within either the Route A or B Transmission Line socio-economic study areas.

Route A:

High quality aggregate deposits are not common within the Route A socio-economic study area and existing pits most commonly exploit glaciolacustrine deposits, which are too small in size to represent a significant economic resource. Quarrying of bedrock resources for road building materials also occurs throughout the Route A socio-economic study area. The location of nearby pits and quarries, regulated under the *Aggregate Resources Act*, has been included on **Figure 4-11**. The Route A Transmission Line does not transverse existing or abandoned pits and / or quarries.

A review of the Mineral Deposits Inventory published by the Ontario Geological Survey (2014) indicates discretionary occurrences of peat and uranium within the Route A Transmission Line socio-economic study area, however, these deposits do not intersect the alignment of the Route A Transmission Line.

There are no known operating mines within the Route A Transmission Line socio-economic study area. One (1) identified mine claim is located approximately 2.5 km north of the Route A Transmission Line.

Route B:

High quality aggregate deposits are not common within the Parry Sound region and existing pits most commonly exploit glaciolacustrine deposits, which are too small in size to represent a significant economic resource. Quarrying of bedrock resources for road building materials also occurs throughout the area. The location of nearby pits and quarries, regulated under the *Aggregate Resources Act*, has been included on **Figure 4-12**.

Table 4-22 authorized aggregate resources are located within the 1 km of the Route B Transmission Line ROW, as shown on **Figure 4-12**. Five (5) licensed resource extraction sites intercept the Route B Transmission Line ROW.

Table 4-22: Aggregate Resources

Area (ha)	Licence Class	Status	Distance from Transmission Line ROW (m)
11.4	CLASS B LICENCE <= 20000 TONNES	ACTIVE	96
31.0	CLASS A LICENCE > 20000 TONNES	ACTIVE	335
35.6	CLASS A LICENCE > 20000 TONNES	ACTIVE	286
40.9	CLASS A LICENCE > 20000 TONNES	ACTIVE	796
112	CLASS A LICENCE > 20000 TONNES	ACTIVE	317
11.1	MTO Permit		Intersects
15.3	MTO Permit		Intersects
22.7	MTO Permit		125
9.5	CLASS B LICENCE <= 20000 TONNES	SURRENDERED	592
112.6	CLASS A LICENCE > 20000 TONNES	ACTIVE	810
5.2	AGGREGATE PERMIT	ACTIVE	307
0.7	AGGREGATE PERMIT	ACTIVE	208
5.50101	AGGREGATE PERMIT	ACTIVE	Intersects
17.608279	AGGREGATE PERMIT	ACTIVE	Intersects
14.954	CLASS B LICENCE <= 20000 TONNES	ACTIVE	Intersects

Source: MNRF, 2015

A review of the Mineral Deposits Inventory published by the Ontario Geological Survey (2014) indicates fourteen records of mineral occurrences. There are no known operating mines within the Route B socio-economic study area, although there are 11 staked claims along the route. The total crossing length of these claims is 1.1 km (OGS, 2014).

4.5.8 Forestry Resources

Route A & B

Both the Route A and B Transmission Line socio-economic study areas are located within the jurisdiction of the French-Severn Forest Management Plan (FMP). The plan covers the entirety of the French / Severn Forest east of Georgian Bay and west to Algonquin Park. The French-Severn FMP was developed and is maintained by a non-

profit organization operating in the forest management plan area, Westwind Forest Stewardship. (MNRF / Westwind Forestry Management, 2009-2019).

4.5.9 Game and Fishery Resources

Routes A & B

As discussed in **Section 4.3.2** many of the watercourses throughout the study areas support sport fish and bait fish communities typical of central / northern Ontario. The results of the wildlife and wildlife habitat field investigations conducted by AECOM in spring and summer of 2015 are provided in the Route A Terrestrial Baseline Report (**Appendix B3**) *and* the Route B Terrestrial Baseline Report (**Appendix B4**). Further information on the species of fish found in the Routes A and B Transmission Line study areas can be found in the Route A Waterbodies, Fish Habitat and Aquatic Ecosystems Environmental Baseline Report (**Appendix B5**) and they Route B Waterbodies, Fish Habitat and Aquatic Ecosystems Environmental Baseline Report (**Appendix B6**).

Much of the land within both the Route A and B Transmission Line socio-economic study areas is Crown land, where hunting and fishing are typically permitted for individuals licenced by the Province. While other activities such as trapping require permits for specific geographic areas. Hunting seasons for most large game species such as moose and deer are typically in the fall season, while fishing and other activities may occur throughout the year (MNRF, 2015f; MNRF 2015g).

According to the MTCS, both the Route A and Route B Transmission Line socio-economic study area are located in Tourism Region 12 and hunting and fishing are considered common recreations activities for Routes A and B Transmission Line study areas (MTCS, 2015). The 2012 regional tourism profiles compiled by MTCS show that in Region 12 is home to 13 businesses related to hunting and fishing camps and has experienced approximately 755,000 visits from visitors participating in either hunting or fishing activities (MTCS, 2015).

Hunting and fishing are also considered traditional activities by Aboriginal communities. Signatories of the Robinson Huron Treaty (1850) and Williams Treaties (1923) have traditional rights to the lands in both Routes A and B Transmission Line study areas. This gives these First Nation communities the right to carry out traditional activities on their traditional land.

An agreement between the Métis Nation of Ontario (MNO) and MNRF, allows for Métis to fish and hunt for food, medicinal, social or ceremonial purposes within the Georgian Bay Traditional Harvesting Territory (MNO, 2011). The Georgian Bay Coastal Region is part of the Georgian Bay Traditional Harvesting Territory and lies west of the Route A and B Transmission Lines and is within the socio-economic study areas (MNO, 2015).

4.5.10 Agriculture and Soils

Route A:

Available landform and geology terrain mapping published by the Ontario Geological Survey indicates that the Route A Transmission Line overlies soils classified as a sandy glaciolacustrine delta deposit associated with bedrock knob landforms, with mainly low local relief, and mixed wet and dry soils (Mollard, 1981). Agricultural potential is assumed to be low, largely due to the lack of soils within the Route A Transmission Line.

Soil survey reports published by Agriculture and Agri-Food Canada have not been completed for the Route A socio-economic study area however, Canada Land Inventory mapping from NRCAN has all soils intersected by Route A Transmission Line to be class seven (7) soils. Class seven (7) soils are determined to have no capability for arable

culture or permanent pasture (NRCAN, 2015). No Canada Land Inventory Class 1-3 agricultural soils, speciality crop, locally significant agricultural lands or other agricultural areas were identified within the Route A study area.

Route B:

The southern 14 km of the Route B Transmission Line is included in the Soil Survey Report for Parry Sound District, which states that this segment as being dominated by the Rock-Monteagle Gravelly Sandy Loam soil complex, which is characterized as mainly rock with a thin covering of stony and gravelly material derived from granites and other hard rocks (Hoffman and Wicklund, 1962).

Soil survey reports published by Agriculture and Agri-Food Canada have not been completed for the entire Route B Transmission Line socio-economic study area, largely due to the lack of soil and minimal agricultural potential. However, NRCAN classifies the majority of soils intersected by the Route B Transmission Line as class seven (7) soils. Class seven (7) soils are determined to have no capability for arable culture or permanent pasture (NRCAN, 2015). A small portion of soil within the Route B Transmission Line study area is identified as a class four (4) soil which is known to have cumulative adverse soil characteristics (i.e., low permeability, low fertility, moisture limitations or salinity) which limit their capability for agriculture (NRCAN, 2015). No Canada Land Inventory Class 1-3 agricultural soils, speciality crop, locally significant agricultural lands or other agricultural areas were identified within the Route B study area.

4.5.11 Residential, Commercial and Institutional Land Use

Route A

The proposed Route A Transmission Line passes, exclusively, through Crown land which is designated as Recreation EMA under MNRF's Guide for Crown Land Use Planning. This land designation is applied to areas that have recreational use or value for activities including, but not limited to, trail use and canoeing and can be seen in **Figure 4-13** (MNRF, 2011).

Route B

The majority of the proposed Route B Transmission Line north of the Shawanaga First Nation Reserve No. 17, as well as a small portion of the corridor south of the Shawanaga First Nation Reserve No. 17, is designated as EMA, with small portions designated as Recreation EMAs, Remote Access EMAs, Great Lakes Coastal Area EMAs and General Use Areas (MNRF, 2011). Recreation EMAs and Remote Access EMAs may be used for recreational experiences with little to no motorized vehicle access. The Great Lakes Coastal Area EMA is the designation for the land and water along the shore of Georgian Bay (MNRF, 2011). South of the Shawanaga First Nation Reserve No. 17, Route B is predominately designated as General Use Area. Land designated as General Use Area accounts for the majority of crown lands and means that this land can be used for a large range of resource and recreational uses (MNRF, 2011). **Figure 4-14** shows the MNRF Crown land use classifications within Route B socio-economic study area.

Figure 4-13: Route A Land Classification

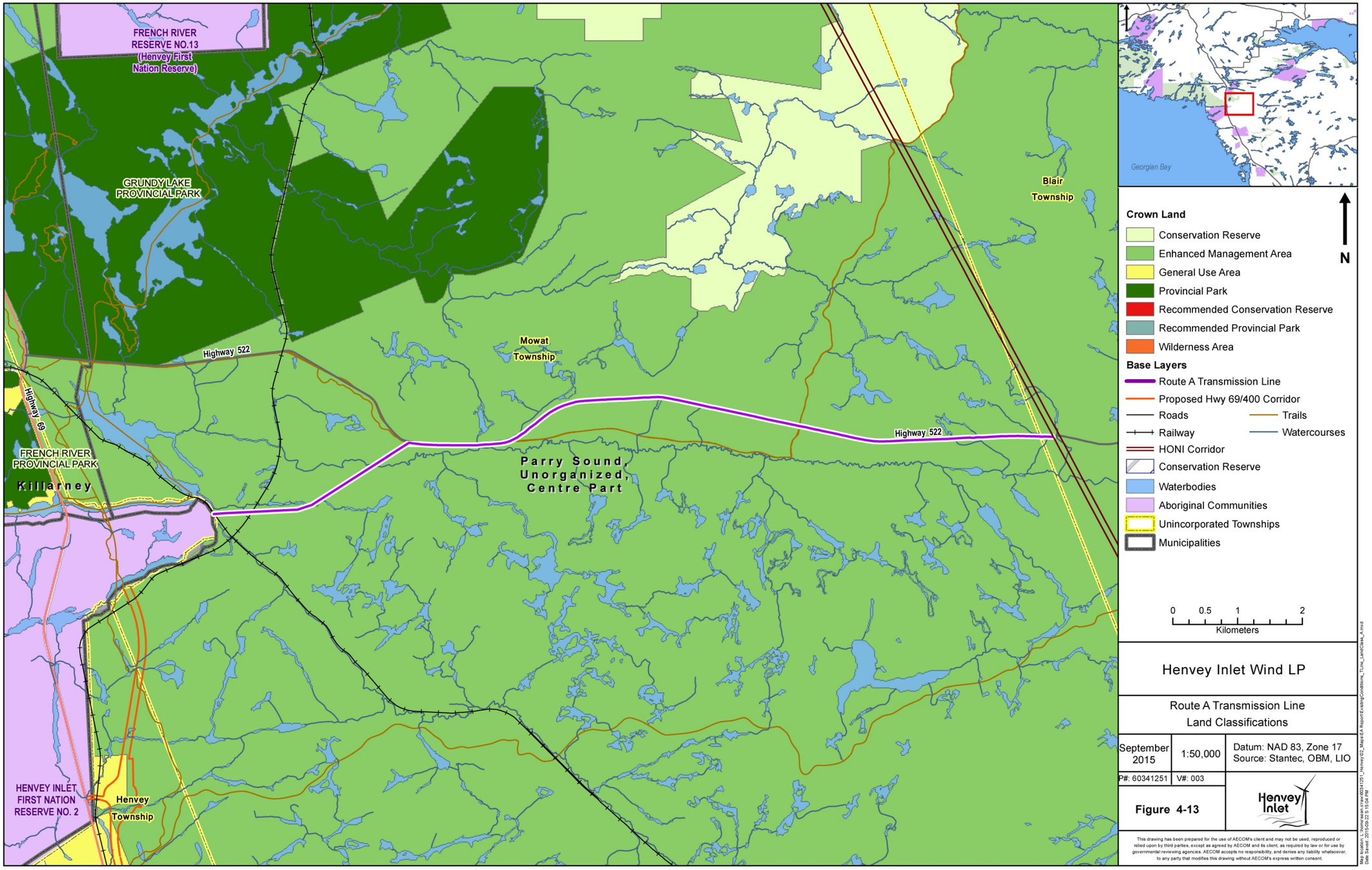
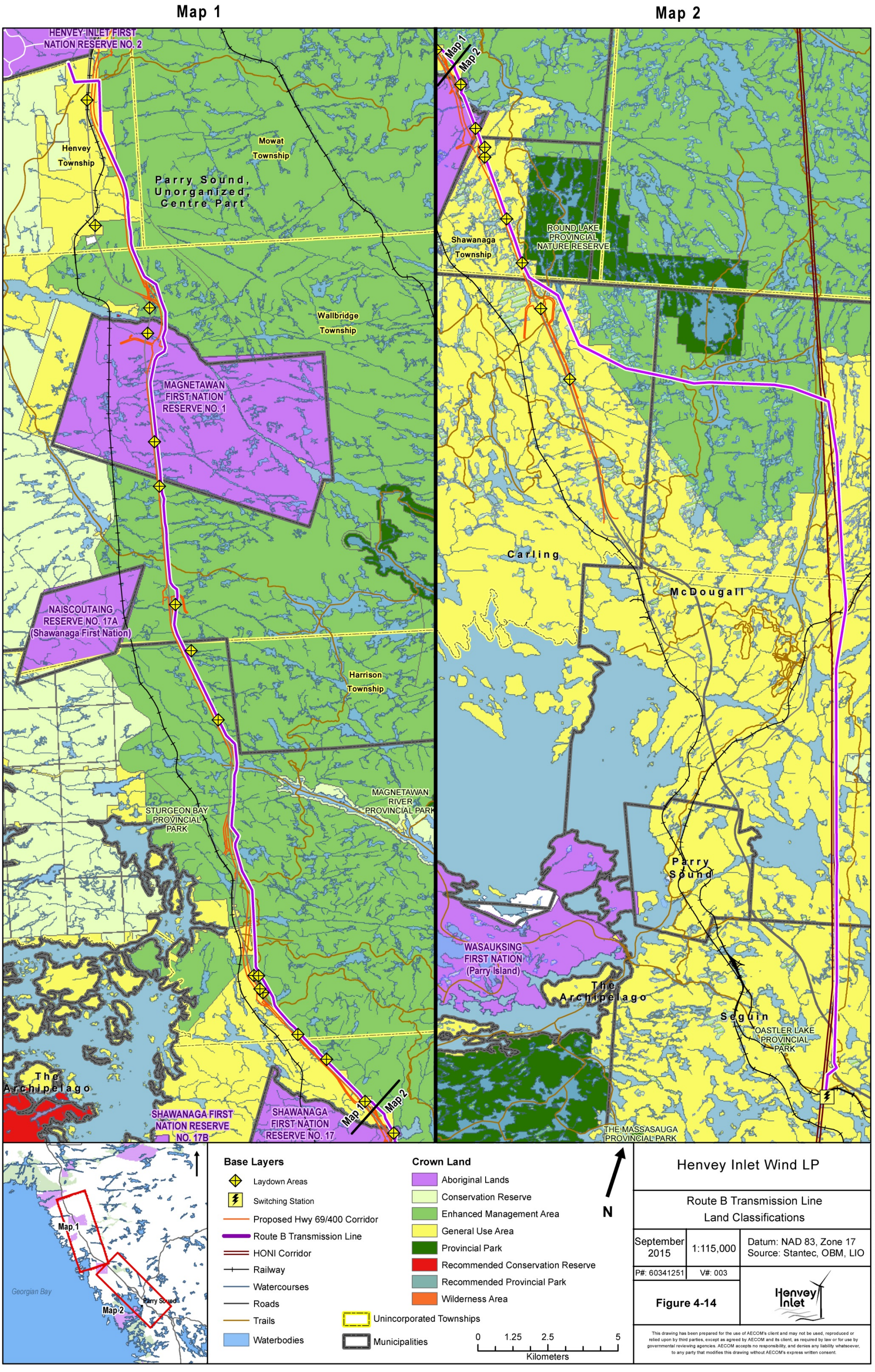


Figure 4-14: Route B Land Classification



4.5.11.1 Housing

Route A & B

Housing data from the National Household Survey for the Parry Sound District in 2011 is shown in **Table 4-23**. Based on these data, approximately 58% of the homes in the district are over 35 years old. Approximately 85% of homes are occupied by the owners, and 15% of the homes are rented. The District has a total of 80 reported First Nation band houses, a separate category as lands on-reserve are not severed and remains band controlled collective property.

Table 4-23: Key Dwelling Statistics, Parry Sound District (2011)

	Parry Sound District
Total Number of Occupied Private Dwellings	18,075
Total Number of Occupied Private Dwellings by Period of Construction	
1960s or before	4,995
1961 to 1980	5,420
1981 to 1990	3,125
1991 to 2000	2,190
2001 to 2005	1,295
2006 to 2011	1,045
Total Number of Private Households by Tenure	
Owner	15,305
Renter	2,690
Band Housing	80

Source: Statistics Canada, 2015

Route A:

There are 38 buildings located within a 1 km radius of the Route A Transmission Line. The Route A socio-economic study area is sparsely populated, with some residential and seasonal properties surrounded by Crown Land. The proposed Route A Transmission Line intersects five (5) private land parcels.

There are few homes located on HIFN I.R. #2. The Reserve is sparsely populated with only a few structures located along the Henvey Inlet shoreline and Bekanon Road. The community indicates there are 12 households on this Reserve (HIFN, 2015a).

Route B:

Although the proposed Route B Transmission Line is not located near residential settlement areas, there are several residences and businesses located along the proposed Highway 69/400 widening corridor and Highway 124. The residences along these routes are often distant from each other and are typically located on large private parcels surrounded by Crown Land.

There are few homes located on HIFN I.R. #2. The Reserve is sparsely populated with only a few structures located along the Henvey Inlet shoreline and Bekanon Road. The community indicates there are 12 households on this Reserve (HIFN, 2015a).

There are 347 buildings located within a 1 km radius of the Route B Transmission Line, many of which are residences along Highway 69. The proposed Route B Transmission Line crosses 97 private land parcels.

The main settlement area of Magnetawan First Nation is located to the west of the existing Highway 69 route at the Magnetawan River. There are some residential dwellings on the east side of the highway, although this is sparsely populated. The total on-Reserve population is 76 (AANDC, 2015). Housing data are provided from the National Household Survey for Magnetawan Reserve No. 1 and shown in **Table 4-24**.

Table 4-24: Key Dwelling Statistics, Magnetawan Reserve No. 1 (2011)

	Parry Sound District
Total Number of Occupied Private Dwellings	40
Total Number of Occupied Private Dwellings by Period of Construction	
1960s or before	0
1961 to 1980	10
1981 to 1990	15
1991 to 2000	10
2001 to 2005	10
2006 to 2011	0
Total Number of Private Households by Tenure	
Owner	20
Renter	15
Band Housing	0

Source: Statistics Canada, 2015

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 shown in **Table 4-25**.

Table 4-25: Key Dwelling Statistics, Shawanaga Reserve No. 17 (2011)

	Parry Sound District
Total Number of Occupied Private Dwellings	90
Total Number of Occupied Private Dwellings by Period of Construction	
1960s or before	0
1961 to 1980	20
1981 to 1990	20
1991 to 2000	30
2001 to 2005	10
2006 to 2011	0
Total Number of Private Households by Tenure	
Owner	60
Renter	10
Band Housing	15

Source: Statistics Canada, 2015

4.5.11.2 Non-Residential Land Uses

Route A & B

Table 4-26 provides a detailed inventory of the non-residential land uses present within the Route A and B Transmission Line socio-economic study areas.

Table 4-26: Non-Residential Land Uses within the Route A and B Socio-economic Study Areas

Name of Feature	Approximate Location	Type of Feature *(School, Hospital, etc.)*	Details
Ontario Provincial Police (OPP) – Still River	944 Highway 69 South, Henvey Township, ON	Police Station	OPP Detachment
Gas Station	182 Highway 69	Commercial	Construction activity and heavy machinery on-site
Unnamed Telecom Towers	Within approximately 500 m of the intersection of Highway 69 and Station Lane	Telecom Towers	There are four (4) telecom towers, which are accessible from Highway 69 and Station Lane.
Magnetawan Gas Bar & Store	1 Highway 529, Britt, ON	Commercial	Gas bar and convenience store
Moose Lake Trading Post and Lodge	Highway 69, Pointe au Baril, ON	Accommodations / Commercial	Moose Lake Trading Post is a gift shop which sells traditional First Nation goods, coffee and homemade desserts. The Moose Lake Lodge offers overnight accommodations and boat rentals.
The Haven Restaurant	1732 Highway 69, Pointe au Baril Station, ON	Restaurant	
Chip Wagon, Pointe Au Baril Restaurant and Deli, Ojibway (Real Estate), Shell Gas Bar, and Boat Storage Facility	Intersection of Highway 69 and South Shore Road	Commercial retail area	
LCBO, Captain Sammy's Fish & Chips, Beacon Marine (Boat Sales and services), E & R Tackle & Bait, Post Office and an Unnamed Convenience Store	Pointe au Baril	Commercial retail area	
C.C Kennedy Co. Ltd. and Home Hardware	31 Highway 644 PO Box 269, Pointe au Baril Station, ON	Commercial	Hardware and retail building supply store; and Groceries store.
Pointe Au Baril Information Centre	1650 Highway 69	Commercial / Government	Information kiosk
Unnamed Commercial Site	1604 Highway 69	Commercial	Farm machinery available on site
The Ironworker	1549 Highway 69	Industrial / Commercial	Steel and Aluminum Welding and fabricating business.
Unnamed feature	1526 Highway 69	Electric supply facility	
Shawanaga Gas, Variety and Restaurant	Intersection of Highway 69 and Shebeshekong Rd	Commercial	First Nation owned gas bar and retail location.
Parry Sound Area Industrial Park	Intersection of Highway 69 and Lagoon Road	Commercial and industrial businesses park	The Parry Sound Area Industrial Park offers serviced and un-serviced land, all of which is designated as Industrial (M1) zone under the Carling Township Zoning By-law. The site includes the following businesses: ▸ 2KM North America Inc., ▸ Bobcat of Parry Sound, ▸ Four Seasons Log Homes, ▸ Norse Brewery Inc., ▸ Paul The Breadman, ▸ Selkirk, and ▸ Urban Tree Salvage ▸ White Oaks Service & Supply (Wossco)

4.5.11.3 Provincial and Municipal Policies, Plans and Zoning By-laws

Route A:

The majority of Route A Transmission Line socio-economic study area is located within an unorganized territory geographically known as Mowat and Blair Townships. These are part of a larger area of unincorporated townships referred to as the geographic Unorganized Centre Parry Sound District. These townships have no municipal government or local service board. The Province has delegated authority under the *Planning Act* to The Archipelago Area Planning Board to make decisions on consent applications, requests for approval of plans of subdivision and on condominium developments within the Township of The Archipelago. The Planning Board also has the authority to grant consents within many of the Unincorporated Townships including Mowat and Blair (Township of The Archipelago, 2013).

With regard to electricity projects, the Township of The Archipelago Official Plan states:

> *"Existing energy and communication facilities and the development of new facilities will be permitted without amendment to this Plan, provided that the development satisfies the provisions of the Environmental Assessment Act and other relevant statutes, and is carried out having regard to the provisions of this Plan. Where energy or communication facilities are proposed, they will be designed and located so as to avoid potential adverse environmental, social, health and aesthetic impacts. In this regard, the following should be considered:*
>
> - *The co-location of facilities, where possible, to reduce overall numbers;*
> - *Locating facilities within or along existing utility or transportation corridors;*
> - *Setback from waterbodies and the impact of the structure on the lake horizon;*
> - *Construction of towers and antennas to heights below those requiring lighting devices in order to help preserve the night sky; and,*
> - *The impact on natural areas including fish and wildlife habitat and wetlands."*
>
> *(Township of The Archipelago, 2010).*

The majority of land within these townships is provincial Crown Land and therefore applicable land use guidelines and administration is the responsibility of the provincial government through agencies such as the MNRF and Ontario Ministry of Municipal Affairs and Housing (MMAH). **Figure 4-15** provides a map of the District of Parry Sound, which includes the district's unincorporated townships.

The unincorporated township of Henvey is adjacent to the Route A Transmission Line and, like Mowat and Blair, has no municipal government or local service board, and is also under the jurisdiction of the Archipelago Planning Board.

The Municipality of Killarney is the closest organized municipality and is located in the north end of Parry Sound District (or the South, end of Manitoulin or Sudbury Districts). The Municipality of Killarney is a single tier incorporated municipality with its own council and local level governance. The Municipal Council has six (6) members made up of a mayor, three (3) councillors from Ward one (1) and two (2)councillors from Ward Two (2), which is adjacent to the northern boundary of the socio-economic Transmission Line study are (Municipality of Killarney, 2015a). Land use planning within the Municipality of Killarney is under jurisdiction of the Sudbury East Planning Board and many municipal, social and emergency services are delivered by the Manitoulin-Sudbury District Services Board (DSB) (Municipality of Killarney, 2015b.c).

HIFN is located to the west of the Route A Transmission Line. HIFN has a band council, led by a Chief and Councillors voted by community members.

Route B:

The Route B Transmission Line socio-economic study area intersects a number of local jurisdictions including:

- HIFN I.R. #2;
- Unincorporated Township of Henvey;
- Unincorporated Township of Wallbridge;
- Magnetawan Reserve No. 1;
- Unincorporated Township of Harrison;
- Township of The Archipelago;
- Shawanaga Reserve No. 17;
- Unincorporated Township of Shawanaga;
- Carling Township;
- Municipality of McDougall; and
- Seguin Township.

The Province has delegated authority under the *Planning Act* to The Archipelago Area Planning Board to make decisions on consent applications, requests for approval of plans of subdivision and on condominium developments within the Township of The Archipelago. The Planning Board has the authority to grant consents within Henvey, Harrison and Wallbridge Townships (Township of The Archipelago, 2013).

With regard to electricity projects, the Township of The Archipelago Official Plan states:

> *"Existing energy and communication facilities and the development of new facilities will be permitted without amendment to this Plan, provided that the development satisfies the provisions of the Environmental Assessment Act and other relevant statutes, and is carried out having regard to the provisions of this Plan. Where energy or communication facilities are proposed, they will be designed and located so as to avoid potential adverse environmental, social, health and aesthetic impacts. In this regard, the following should be considered:*
>
> - *The co-location of facilities, where possible, to reduce overall numbers;*
> - *Locating facilities within or along existing utility or transportation corridors;*
> - *Setback from waterbodies and the impact of the structure on the lake horizon;*
> - *Construction of towers and antennas to heights below those requiring lighting devices in order to help preserve the night sky; and,*
> - *The impact on natural areas including fish and wildlife habitat and wetlands."*
>
> *(Township of The Archipelago, 2010).*

Similarly, the Municipality of McDougall Official Plan states:

> *"Existing energy and communication facilities and the development of new facilities will be permitted without amendment to this Plan, provided that the development satisfies the provisions of the Environmental Assessment Act and other relevant statutes, and is carried out having regard to the provisions of this Plan. Where energy or communication facilities or utilities are proposed, they will be designed and located so as to avoid potential adverse environmental, social, health and aesthetic impacts. In this regard, the following should be considered:*
>
> - *The location of facilities, where possible, to reduce overall numbers;*
> - *Locating facilities within or along existing utility or transportation corridors;*
> - *Setback from waterbodies and the impact of the structure on the lake horizon;*
> - *Construction of towers and antennas to heights below those requiring lighting devices in order to help preserve the night sky; and*
> - *The impact on natural areas including fish and wildlife habitat and wetlands.*

Proponents of energy and communication facilities shall consult with the Municipality regarding the location of new facilities and may be requested to consult with the public."

(Municipality of McDougall, 2004).

Just as the *Planning Act* gives the Archipelago Planning board jurisdiction over Henvey, Wallbridge and Harrison, the unincorporated Township of Shawanaga is under the jurisdiction of the Parry Sound Planning Board. Local service boards provide some services in communities such as Britt and Byng Inlet. The Township of The Archipelago, Carling Township, Municipality of McDougall and Seguin Township are all incorporated municipalities with their own municipal councils and land use control. **Figure 4-15** provides a map of the District of Parry Sound, which includes the district's unincorporated townships.

HIFN is located to the north of the Route B Transmission Line. HIFN has a band council, led by a Chief and Councillors voted by community members.

Magnetawan First Nation Reserve No. 1 and Shawanaga First Nation Reserve No. 17 are both intercepted by the Route B Transmission Line each other these First Nation communities have individual band councils, led by a Chief and councillors as voted by community members.

4.5.12 Aboriginal Land Use and Resources

4.5.12.1 First Nation Tribal Councils and Political Organizations

Route A & B

HIFN and Magnetawan First Nation are part of the Waabnoong Bemjiwang Association of First Nations, a tribal council organization established to provide technical services to member communities, but that does not have a political governance role. The members of this tribal council are located within a similar geographic area of Central Ontario. Tribal council groupings often have similar cultural, heritage and linguistic characteristics.

- HIFN and Magnetawan First Nation are members of the following political organizations:
  - Union of Ontario Indians (UOI): an organization of Anishinabek communities in Ontario. The UOI provides a number of programs and services, including: health, social services, education, intergovernmental affairs and treaty research.
  - Chiefs of Ontario (COO), an organization of chiefs from throughout the Province of Ontario. COO facilitates the discussion, planning, implementation and evaluation of all local, regional and national matters affecting the First Nations of Ontario.

Shawanaga First Nation is not part of any tribal councils or the UOI. It is a member of the COO organization.

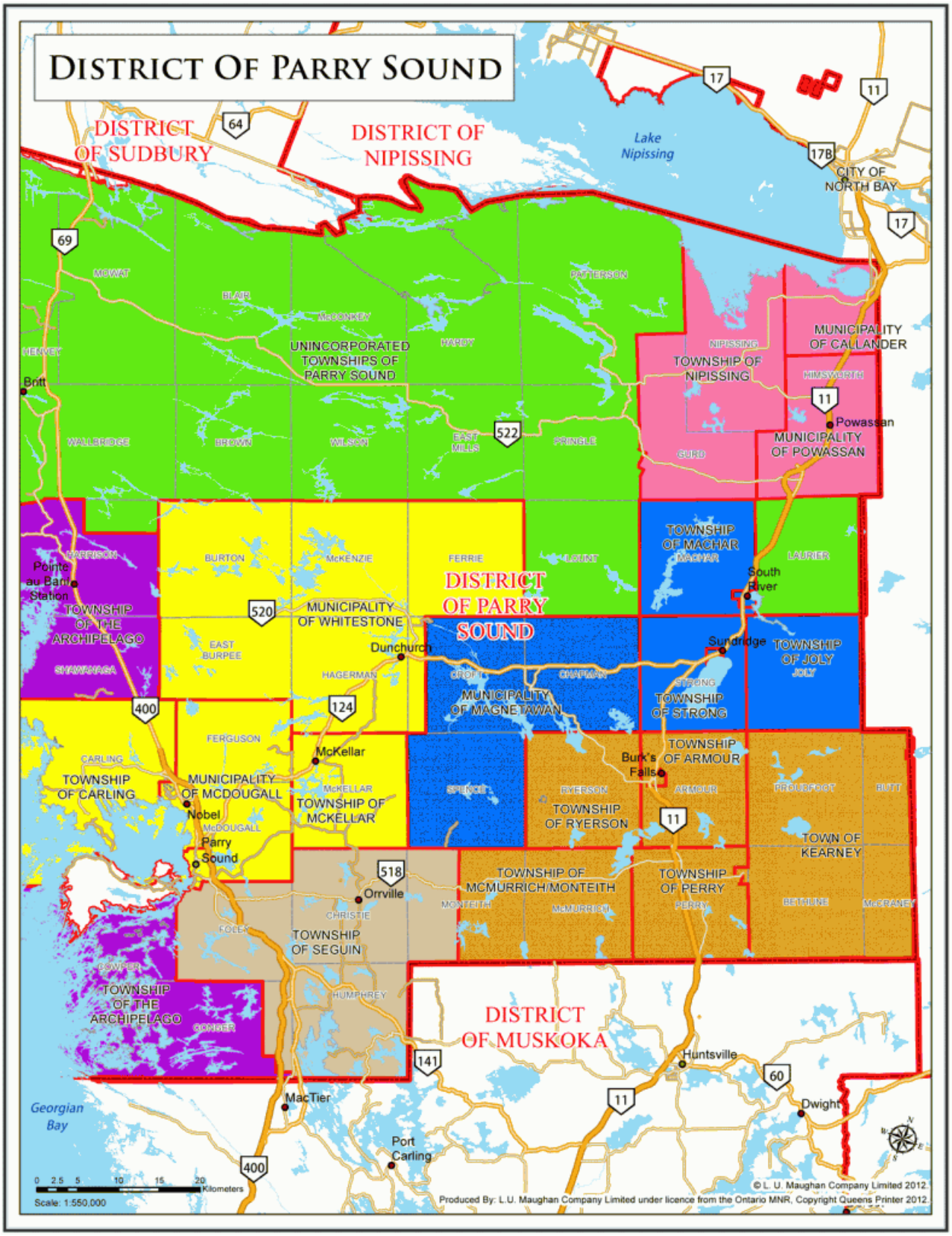
4.5.12.2 First Nations Land Management Act Policies

In 2006, HIFN became a signatory of the *First Nations Land Management Act*, and entered into a separate agreement in 2009 with the Minister of Indian Affairs and Northern Development (now AANDC). The community now has the authority to enact laws in relation to environmental assessment and environmental protection on its Reserve lands. The community has developed an environmental law covering the EA process.

Shawanaga First Nation and Magnetawan First Nation have also ratified land codes under the *First Nations Land Management Act*. Shawanaga First Nation ratified its land code agreement on May 20, 2015 as part of a

community ratification vote while Magnetawan First Nation ratified its land code agreement on June 20, 2015 (Shawanaga First Nation, 2015; Anishinabek News, 2015).

Figure 4-15: District of Parry Sound



Source: PSDSSAB, 2015

4.5.12.3 Aboriginal Land Use and Resources

Aboriginal Interests

On June 19, 2015, MOECC provided a list identifying the Aboriginal communities to be engaged regarding the proposed Transmission Line based on the potential for Aboriginal Rights and/or Treaty Rights enshrined under the Canadian *Constitution Act*, *1982*. This list of First Nations and Métis communities was also confirmed by MNRF on June 25, 2015. The list of First Nation and Métis groups to be engaged for this project included the following:

- Henvey Inlet First Nation
- Magnetawan First Nation
- Shawanaga First Nation
- Wasauksing First Nation
- Dokis First Nation
- Chippewas of Georgina Island First Nation
- Beausoleil First Nation (Christian Island) First Nation
- Chippewas of Rama First Nation
- Métis Nation of Ontario:
  - MNO Georgian Bay Métis Council
  - MNO Moon River Métis Council

The Métis are an Aboriginal people as enshrined by the Canadian *Constitution Act*, *1982* and as such have Aboriginal rights.

The Métis Nation of Ontario (MNO) provides services to many Métis groups throughout Ontario, and oversees a series of Community Councils which serve as an organizational hub for local Métis individuals. According to the MOECC list provide on June 19, 2015, the MOECC list therefore included two MNO community councils.

All communities on the MOECC list will continue to be engaged through notices, invitations to public events, and opportunities to provide information related to their Aboriginal Rights or Treaty Rights.

The following sections provide more detailed information pertaining to Aboriginal communities on the MOECC list that are within the Route A or Route B socio-economic study areas, i.e., those with reserve lands that are directly crossed by or adjacent to the Transmission Line infrastructure:

- Henvey Inlet First Nation (HIFN),
- Magnetawan First Nation (MFN), and
- Shawanaga First Nation (SFN).

Magnetawan First Nation and HIFN are members of the UOI (the Anishinabek Nation), a 39-member First Nation political organization that advocates for member interests, including lands and resources access. The organization asserts Aboriginal interests in water quality, trapping through an existing Trapping Harmonization Agreement with Federal and Provincial entities, Aboriginal participation in the forestry and mining sectors, as well as ongoing negotiations regarding resource benefit sharing. Many of these interests are expected to be shared by First Nations with membership in the organization. (Anishinabek Nation, 2015). Shawanaga First Nation is not a member of the Anishinabek Nation organization and has chosen to remain independent - despite being culturally an Anishinabek community.

Anishinabek and Métis Cultural History

The Robinson Huron Treaty and Williams Treaty signatory communities are considered Anishinabek peoples, a collective term meaning "First People." When the Anishinabek people first encountered European fur traders, there were many similar, but politically autonomous groups in what is now Ontario. Many of the Bands or Tribes were given different names despite sharing many common linguistic and cultural similarities. Some examples of these names are Algonquin, Ojibway, Odawa, Chippewa, and Mississauga.

Today, the concept of an Anishinabek Nation now links speakers of the Ojibway language. The Odawa (or Ottawa), occupied much of the north shore of Gregorian Bay and Manitoulin Island and Bruce Peninsula, where they bordered on the Huron and Petun communities (McMillan and Yellowhorn, 2004). Their role as intermediaries in the trade with these Iroquoian communities gave rise to calling them 'traders'. The Algonquian inhabited the Ottawa Valley and adjacent regions in the early contact period. They are all collectively referred to as Anishinabek or Ojibwa, because linguists determined they all speak the same language in different dialects (McMillan and Yellowhorn, 2004; Schmalz, 1991).

The Métis are the descendants of mixed European and Aboriginal ancestry that, over time, developed into a unique culture within Canada. Métis culture has many ties to the early fur trading practiced by French (as well as some English and Scottish) traders which were some of the first visitors to the interior of North America.

The region encompassing the Route A and B socio-economic study areas was first explored by Europeans in the early 1600s, French fur traders are known to have travelled the French River into Georgian Bay from the Ottawa River. This led to the development of fur trade posts in the area and the beginning of European settlement. The proximity of this trade route may suggest that Métis Councils could have Aboriginal interests pertaining to the Route A and B Transmission Lines.

Treaties and Agreements

Route A & B:

There are two (2) treaties that pertain to both the Route A and B Transmission Lines, namely:

- Robinson-Huron Treaty (1850)
- Williams Treaties (1923)

Robinson Huron Treaty (1950)

The first treaty signed within this region was the Robinson-Huron Treaty, a treaty signed between Crown representatives and the communities living along northern Georgian Bay and the North Shore of Lake Huron, which it called the "Ojibewa Indians of Lake Huron". The 1850 Robinson Huron Treaty was different from others negotiated in the southern portion of the Province in that they promised the creation of Reserves, annuities, and the continued right to hunt and fish on unoccupied lands. The boundaries of the treaty extended from the Lake Huron shore between the Sault Ste. Marie area and the southern end of Georgian Bay to the height of land, an ill-defined area inland that extended to the limits of the lake's watershed (AANDC, 2013b).

The Robinson Huron Treaty established reserve lands for the signatory bands, which included First Nations throughout the extensive territory. All First Nation reserves for HIFN, Magnetewan First Nation, and Shawanaga First Nation within the Route A and B socio-economic study areas were formed as a result of this treaty.

Williams Treaties (1923)

The Route A and B Transmission Lines also fall within the limits of the Williams Treaties signed in 1923, although HIFN, Magnetawan First Nation, and Shawanaga First Nation are not signatories. The original signatories of the treaty included the Chippewas of Lake Simcoe, Lake Huron and the Mississaugas of Rice Lake, Scugog, Curve Lake and Alderville in central Ontario. These communities have since given way to the modern name of the Williams Treaties communities, as identified on the MOECC list of Aboriginal communities:

- Chippewas of Rama First Nation;
- Chippewas of Georgina Island First Nation;
- Beausoleil First Nation; and
- Wasauksing First Nation

The Robinson Huron Treaty and Williams Treaties overlap. **Figure 4-16** identifies the Williams Treaties area as well as the Robinson Huron Treaty area. HIFN, Magnetawan First Nation and Shawanaga First Nation are signatories of the Robinson Huron Treaty shown as a green diamond symbol in **Figure 4-16**.

Figure 4-16: Pre-1975 Treaties, showing the Robinson Huron Treaty and the Williams Treaties

Source: AANDC, 2014

The MNO has a harvesting agreement with the MNRF, outlined in a 2004 MNO-MNRF Harvesting Agreement. The Métis Nation of Ontario 2011 Harvesting Policy based on this agreement allows for Métis citizens to harvest for personal use items such as plants, fish, wildlife and firewood gathered for heating, food, medicinal, social or ceremonial purposes (MNO, 2011). The MNO identifies that the Georgian Bay coastal areas are part of the Georgian Bay Traditional Harvesting Territory (MNO, 2015).

Land Claims

Route A

AANDC records list one (1) land claim within the proposed Route A socio-economic study area. The claim pertains to the illegal appropriation of land from HIFN I.R. #2 for the James Bay Railway in 1907. The Route A Transmission Line traverses railway lands at the western extent of the route which may be associated with this land claim negotiation process. The claimant (HIFN) agreed to negotiate in 2012. HIFN has identified that this land claim has been resolved.

Route B:

A list of existing and concluded claims presented by First Nations within the Route B Transmission Line socio-economic study area is shown in **Table 4-27**. The table includes their current status and consideration of potential relevance and to guide ongoing discussions with the communities. Notably, each community has asserted concerns about transportation (road and rail) and utilities (telephone and electricity) expropriations due to past activities in the region.

Table 4-27: Specific Land Claims – Route B

Claim	Status	Potential Relevance
HIFN		
James Bay Railway: Alleged illegal appropriation of land from the HIFN I.R. #2.	In negotiations. Claimant agreed to negotiate January 17, 2012	Yes. This claim refers to HIFN I.R. #2. Railway lands off-reserve may be associated with this claim. HIFN has identified that this claim, although present in AANDC records, has been resolved.
Magnetawan First Nation		
4 CPR Lines on IR 1: Alleges a breach of fiduciary duty while executing and managing Reserve lands during and after the construction of the CP Railway.	In negotiations	No. Focused on the CP Railway route through the community.
Boundaries of Magnetawan: Alleges a failure to properly set out the boundaries of Magnetawan Reserve No. 1 under the Robinson Huron Treaty.	In negotiations	Yes. Pertains to the Magnetawan Reserve No. 1 which is intersected by the Route B Transmission Line.
Highways: Alleges the Crown breached its obligations to the claimant with respect to the construction of four (4) roads on Reserve land between 1883 and 1958, the construction of a parking lot in 1936, a drainage ditch in 1959, and a 'visibility triangle' in 1963.	In negotiations	Yes. Pertains to the Magnetawan Reserve No. 1 which is intersected by the Route B Transmission Line.
Surrenders to Hydro Line IR 1: Alleges unlawful use and occupation of IR 1 from 1950; failure to provide adequate compensation and failure to provide services.	In negotiations	Yes. Pertains to the Magnetawan Reserve No. 1 which is intersected by the Route B Transmission Line. May be of special interest due to the connection and use of this line by the Route B Transmission Line, although the connection is far from the community.
4 CPR Lines on IR 1: Alleges a breach of fiduciary duty while executing and managing Reserve lands during and after the construction of the CP Railway.	In negotiations	No. Focused on the CP Railway route through the community.

Table 4-27: Specific Land Claims – Route B

Claim	Status	Potential Relevance
Shawanaga First Nation		
Ontario Hydro & Bell Canada Trespasses The Band alleges that the Hydro-Electric Power Commission of Ontario unlawfully occupies the Shawanaga FN's two (2) Reserves, and has never paid proper compensation for the lines. The Band further alleges that Bell Canada never received authorization to occupy the Reserves, nor did they pay any compensation. The Band claims that Canada breached provisions of the Indian Act and breached its fiduciary duty by failing to obtain proper compensation.	Concluded No lawful obligation found	No.
Robinson Huron Chiefs Treaty Rights Chiefs of the Robinson-Huron Treaty area asked that their treaty dated 1850 be renegotiated alleging that the Crown failed to meet certain commitments under the treaty specifically: Crown liability regarding Indian land, hunting / fishing rights.	Concluded No lawful obligation found	No. However, the request for a renegotiated treaty regarding hunting and fishing identifies the importance of these items to the communities involved, including Shawanaga First Nation.
HIFN and Magnetawan First Nation (as well as other communities)		
Treaty Rights: Chiefs of the Robinson-Huron Treaty area asked that their treaty dated 1850 be renegotiated alleging that the Crown failed to meet certain commitments under the treaty specifically: Crown liability regarding Indian land, hunting / fishing rights.	Concluded	No. However, the request for a renegotiated treaty regarding hunting and fishing identifies the importance of these items to the communities involved.
Anishinabek Nation UOI – Of which Magnetawan First Nation and HIFN are members)		
Self-Government Negotiations Anishinabek Nation UOI	Accepted for negotiations. Negotiations to finalize a treaty.	Potential. This is a general claim that may have some relevance for the management of Crown lands in this region, although no agreement has been reached.

Source: AANDC, 2015d

Regional Natural Environment Interests

HIFN, Magnetawan First Nation and Shawanaga First Nation are located within the French / Severn Forest. The French-Severn FMP governs the Route A and B Transmission Line socio-economic study areas, as well as forests east of Georgian Bay and west to Algonquin Park. The French-Severn FMP included the development of a Aboriginal Background Information Report prepared by Westwind Forest Stewardship, a non-profit organization operating in the forest management plan area who is the Sustainable Forest License holder (Ministry of Natural Resources / Westwind Forestry Management, 2009).

There are seven (7) First Nations that were involved in the development of the French-Severn FMP, all situated along the Highway 69 / 400 corridor. They include:

- HIFN;
- Magnetawan First Nation;
- Shawanaga First Nation;
- Wasauksing First Nation;
- Moose Deer Point First Nation;
- Wahta Mohawks; And
- Dokis First Nation (located on the border of the French / Severn Forest).

The Plan summarized the interests of First Nations in the area as tending towards Crown land when using land off-Reserve for hunting, fishing, gathering and spiritual/cultural practices. Some communities are interested in fisheries management and watersheds, renewable energy opportunities, economic development opportunities, interest in shared stewardship opportunities across the land base, and preserving Aboriginal cultural values.

The French-Severn FMP also identified Aboriginal interests in the following areas:

- **Forestry Compensation:** the issue most commonly articulated by Robinson-Huron Treaty signatory communities who feel strongly that Resource Benefit Agreements or revenue sharing (i.e., Crown dues) should be a fundamental part to their treaty rights.
- **Forest Harvesting:** Many First Nations continue to express interest in easy access to timber harvests within close proximity to their communities for personal / communal use (in accordance with Sappier / Gray), or commercial profit. There is growing interest in some communities in supporting emergent bio-energy opportunities through post-harvest processing (i.e., chipping).
- **Forest Spraying:** Early and ongoing communication throughout the FMP's life cycle is very important to many communities. With respect to spray programs, First Nations may have site specific values interests which need to be considered, or conversely may wish to participate in on-Reserve treatments at the same time as the nearby Crown forest.
- **Access:** With continued and growing pressures on access to resources by various third party interests, First Nations continue to be concerned that both physical access to Crown land and access to the resources themselves are threatened. In the case of Robinson-Huron Treaty signatories, this is acutely expressed as a potential threat to their treaty rights.
- **Values Protection:** this is perhaps the issue of greatest interest and discussion, as well as the most challenging. The protection of Aboriginal values throughout the planning cycle is of key importance to First Nations, MNRF, Westwind and their partners, and the Planning Team as a whole. Continuing to foster and build strong, trusting relationships between all parties is key in protecting Aboriginal values across the Forest.

Source: MNRF/ Westwind Forest Stewardship Inc., 2009

Reserve Lands

Reserve lands are those areas that were set aside under treaties for use by the descendants of the treaty signatory bands. The Reserve lands within the Route A and B Transmission Line socio-economic study areas are each the result of the Robinson Huron Treaty.

Route A:

The Route Transmission Line A socio-economic study area includes a portion of HIFN I.R. #2. This Reserve is on the northeast shore of Georgian Bay, approximately 90 km south of Sudbury on the west side of Highway 69 and 71 km north of Parry Sound, at approximately 40 degrees 50' north latitude and 80 degrees 40' west longitude. The Reserve has an area of 9,232.86 ha. No other First Nation Reserve lands are located within the Route A socio-economic study area.

Route B:

The Route B Transmission Line socio-economic study area also includes a portion of HIFN I.R. #2. From HIFN I.R. #2, the proposed Route B Transmission Line travels south through Magnetawan First Nation Reserve No. 1, close to the community settlement area at the Magnetawan River crossing of Highway 69. The main village of

Magnetawan First Nation community is on the west side of Highway 69, although some dwellings are located on the east side. The community is located 100 km southwest of North Bay and six (6) km east of Georgian Bay.

The Route B Transmission Line continues south outside the boundaries of Shawanaga First Nation's Naiscoutaing No.17A Reserve and intersects Shawanaga First Nation Reserve No. 17 south of Pointe au Baril. Shawanaga First Nation has a total of three (3) First Nation Reserves within the Route B socio-economic study area:

- **Naiscoutaing Reserve No. 17A** is located 100 km southwest of North Bay with an area of 1,059.10 ha;
- **Shawanaga First Nation Reserve No. 17** is located 105 km southwest of North Bay, 3 km east of Georgian Bay with an area of 3,376.30 ha; and
- **Shawanaga First Nation Reserve No. 17 B** is located 112 km southwest of North Bay with a total area of 73.40. The Reserve is known locally as Shawanaga Landing.

Shawanaga First Nation describes its traditional territory as bordering the Seguin River to the south, the Magnetawan River to the north and extending to Georgian Bay (including the 30,000 islands) and east to the Ottawa valley (Shawanaga First Nation, 2015). Each of these Reserves is shown on **Figure 4-12.** There may be additional Aboriginal current and traditional resources or land uses occurring in the Route A and B socio-economic study areas, such as from other First Nations communities or from Métis communities.

The EA team utilized the MOECC Aboriginal communities list to provide notices to other First Nation and Métis groups that the Crown identified may have had current or traditional Aboriginal resource use in the area. Other communities on the list have made no assertions regarding the Route A and B socio-economic study areas.

Traditional Land Use

Route A & B:

HIFN, Magnetawan First Nation and Shawanaga First Nation are Anishinabek communities located within the Route A and B socio-economic study areas, and have Aboriginal and Treaty Rights associated with traditional land uses in the areas. 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).

Traditionally, Anishinabek subsistence was based on the annual round of hunting, fishing and plant collecting. The winter was devoted to the pursuit of moose, deer, bear and other large game. In the spring, families would return from their hunting camps to rejoin others at their major fishing sites. Pickerel, pike and suckers could be caught throughout the summer, and autumn spawning brought whitefish, trout and sturgeon close to shore. The Anishinabek netted or speared large quantities of fish, and the fisheries became centres of community life and cultural interaction. (McMillan and Yellowhorn, 2004). Plant foods have always played an important role in Anishinabek economy; maples were tapped, berries collected, and wild rice harvested from the shallow waters of nearby lakes. In order to transport food stuffs and travel between different resource areas Anishinabek people utilized birch bark canoes. These canoes were tough, but lightweight, which allowed for easy portage between waterways (McMillan and Yellowhorn, 2004).

HIFN prepared the *Traditional Land Use Study Related to Proposed Four Lane Highway 69*. Community members and groups were interviewed to provide information on historic and current land uses within the community's traditional territory.

Due to the confidential nature of sensitive community information, a general summary is provided without identifying specific locations.

- **Food Sources:** Hunting, fishing, trapping, gathering as well as cultural practices, all of which occur within HIFN's traditional territory.
  - The community historically consumed much more fish than large game as fishing was far easier than hunting larger game.
  - Gathering for food included various species of naturally occurring berries.
  - Squash and corn were planted as a food source.
- **Animal Behaviours:** The knowledge level within the community was demonstrated as members identified locations on-Reserve that are particularly important for their traditional way of life, including fish spawning areas and deer crossing locations.
- **Gathering (Ceremonial):** Items gathered for their cultural and spiritual value included types of bark and plants added to teas or as part of smudging ceremonies. Sweet grass is of particular importance to the community.
- **Settlements:** The site of a historic village for the community was identified within Reserve lands, as well as former cabin and camp locations. These locations are typically associated with rivers and waterbodies that cross the community's traditional territory. Inland areas were not used for settlements, but rather were for hunting, trapping, gathering traditional medicines, and making syrup.
- **Sacred Locations:** Sacred locations included areas such as grave sites. Sacred areas are present, but the locations are particularly sensitive for community members. Many of these locations are not to be shared with individuals outside of the community. Identified burial locations include ceremonial locations (such as sweat lodges), and sacred areas which should be avoided by development.
- **Travel Routes**: These routes typically corresponded with access provided by rivers. Travel routes were identified as having economic, historical and cultural significance. Some built trails such as railway right of ways or other existing trails were also important to the community.
- **Landmarks:** Mapped built infrastructure or features on the land such as former hotels or camps, beach sites, or local landmarks that are important for the community's sense of place.
- **SAR:** The community has raised concerns about SAR, including the Blanding's Turtle.
- **Water:** Surface water and groundwater are important to the community. Water has important linkages to travel, drinking water, and cultural uses. (HIFN, 2013).

Magnetawan First Nation also completed an Aboriginal Traditional Land Use Study (TLUS) related to the Highway 69 expansion project. As with the HIFN study, the information contained within the report is considered sensitive and confidential. Permission was granted by Magnetawan First Nation to use the study for internal scoping purposes. Based on the review of the study, no traditional land use information was identified within the Route A study area.

Aboriginal traditional land uses are present within the Route B study area. A general summary is provided without identifying specific locations to maintain the confidential nature of the TLUS:

- **Cultural and Community Sites:** Areas associated with the community's cultural practices. These also include natural land forms that are of significance to the community, or important landmarks for navigation.

- **Hunting:** Hunting remains an important part of the way of life for many Magnetawan First Nation members. Primary species include moose, deer and partridge (ruffled grouse and spruce grouse).
- **Trapping:** Trapping for fur bearing animals historically took place in the region, however trapping has been less prevalent in recent years since it is harder to make a living on low fur prices.
- **Fishing:** Fishing remains an important land use for the people of Magnetawan First Nation within its traditional territory as a food source. The most commonly mentioned species of fish caught is pickerel/walleye, followed by bass, northern pike, and rainbow smelt.
- **Gathering:** Gathering sites are used to obtain natural medicines, plants for food sources, and items for ceremonies. Many community members are reluctant to share information on medicinal plants out of concern for their care and safe use. A local biologist on the study confirmed that none of the plants are regionally rare.
- **Trails:** Trails and portages are important for Magnetawan First Nation community members for accessing areas for traditional land uses.

A request has been made to Shawanaga First Nation for Aboriginal traditional land use information pertaining to Route A and Route B Transmission Lines. No traditional land use information has been obtained to date, although access was provided for archaeological study of the proposed route. The EA team will continue to work with Shawanaga First Nation should information become available pertaining to their Aboriginal interests.

The Métis Nation of Ontario has a harvesting agreement with the MNRF pertaining to harvesting (such as hunting, fishing, and gathering) for personal purposes. **Section 4.5.7.2** includes additional information on Métis interests and the MNO-MNRF harvesting agreement.

4.5.13 Waste

Route A & B

No waste disposal facilities were identified within the Route A or Route B Transmission Line socio-economic study areas.

4.5.14 Archaeology

Archaeological research has classified the various developments based on the technological, stylistic patterns, and cultural changes identified in artifacts over time. A pre-contact settlement chronology based on cultural and temporal history of occupations in Central Ontario is provided in the Stage 1 Archaeological Assessment Report found in **Appendix B7** and **B8**.

The effects of the Transmission Line on archaeological sites or material are evaluated during Stage 1 and 2 archaeological assessments. During the Stage 1 assessment, research areas of archaeological potential were identified in the Route A and B socio-economic study areas and a Stage 2 archaeological survey is ongoing. The Stage 2 archaeological assessment involves the physical survey of all areas with archaeological potential to determine if any archaeological resources are present within the Route A and B socio-economic study areas and will identify which areas are free of archaeological concerns. If archaeological resources are identified, mitigation measures and recommendations for further work will be included in the Stage 2 report.

4.5.14.1 Stage 1 Archaeology Assessment

Route A:

The Stage 1 archaeological assessment study area for Route A encompasses Route A socio-economic study area, and more, to accommodate uncertainty in the route at the time the study was initiated the Stage 1 archaeological assessment study area for Route A is located in the Unincorporated Townships of Henvey, Mowat and Blair in the District of Parry Sound as shown on **Figure 4-17**. The Stage 1 archaeological assessment study area extends from the eastern boundary of HIFN I.R. #2 east to the existing 500 kV HONI system.

The MNRF governs archaeological assessments on Crown land and requires that archaeological assessments meet the Standards and Guidelines established by the MTCS (Ontario Government, 2011b). Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property.

Criteria commonly used by the Ontario MTCS (Ontario Government, 2011b: 17-18) to determine areas of archaeological potential include:

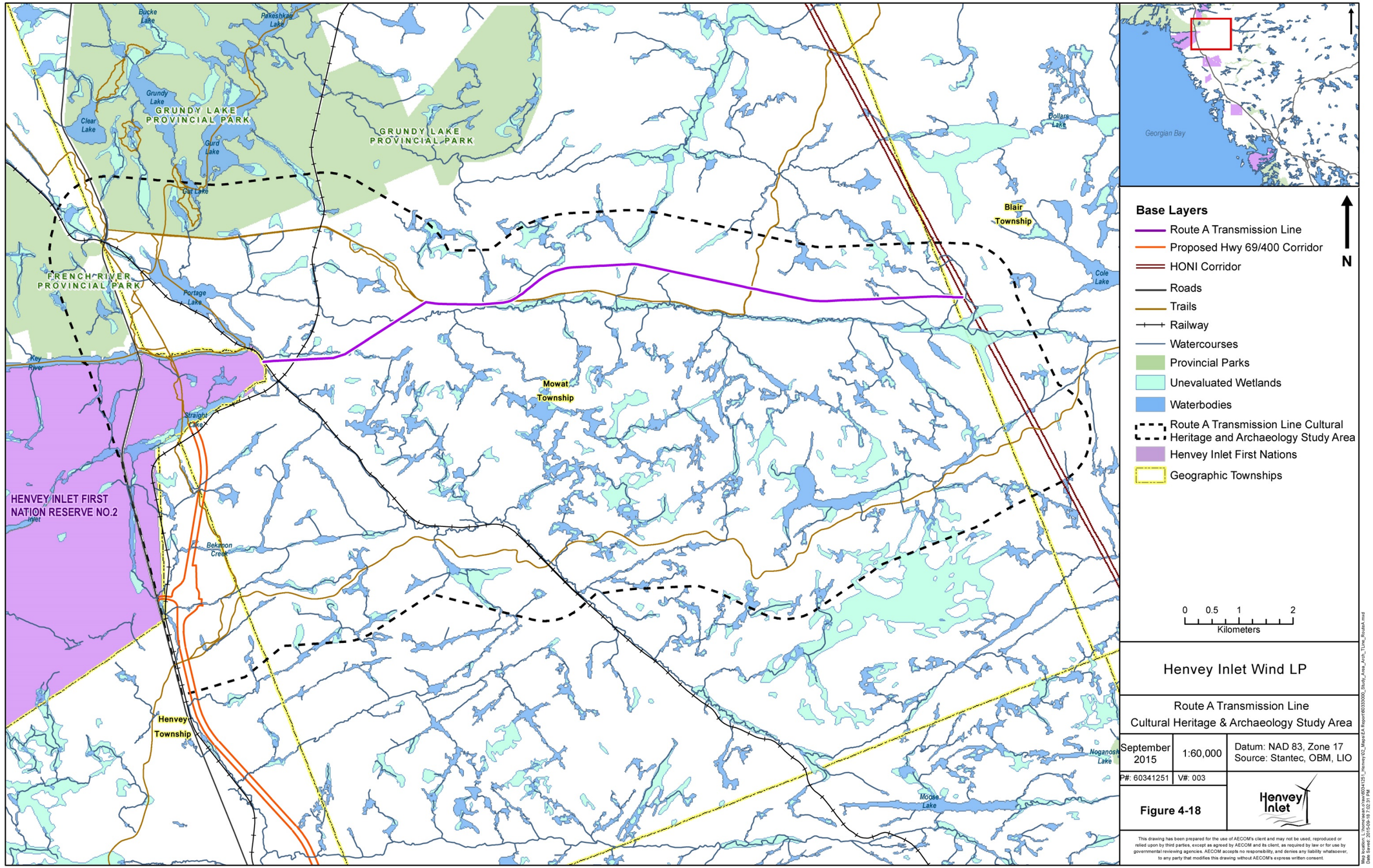
- Proximity to previously identified archaeological sites;
- Distance to various types of water sources;
- Soil texture and drainage;
- Glacial geomorphology, elevated topography and the general topographic variability of the area;
- Resource areas including food or medicinal plants, scarce raw materials and early Euro-Canadian industry;
- Areas of early Euro-Canadian settlement and early transportation routes;
- Properties listed on municipal register of properties designated under the *Ontario Heritage Act* (Government of Ontario 1990b);
- Properties that local histories or informants have identified with possible archaeological sites, historical events, activities or occupants; and
- Historic landmarks or sites.

Certain features indicate that archaeological potential has been removed, such as land that has been subject to extensive and intensive deep land alterations that have severely damaged the integrity of any archaeological resources. This includes landscaping that involves grading below the topsoil level, building footprints, quarrying, sewage and infrastructure development (Ontario Government, 2011b, Section 1.3.2).

4.5.14.1.1 Pre-contact Aboriginal and Contact Period Archaeological Potential

The potential for pre-contact and contact period Aboriginal archaeological resources within the Route A Stage 1 archaeological assessment study area is judged to be high within 50 m of modern watercourses, within 300 m of previously identified areas of cultural significance, and within 150 m of well-drained soil in close proximity to marshes, wetlands or watercourses (Ontario Government 2011b: Section 1.4). The presence of two (2) registered archaeological sites within the Route A Stage 1 archaeological assessment study area boundaries increases the potential for archaeological remains. It has been noted also, that multiple archaeological sites exist beyond the Route A Stage 1 archaeological assessment study area boundaries. Outside these designated proximities the potential for pre-contact Aboriginal archaeological resources is low; however there is moderate potential for archaeological materials that are not in the ground (i.e., pictographs and quarry sites). Additionally, the presence of multiple fur trade posts increases the potential for archaeological remains. Therefore, further Stage 2 archaeological investigation is recommended to clear Route A Transmission Line and ensure there are no impacts

Figure 4-17: Route A Archaeological and Cultural Heritage Study Area



to culturally significant sites that may not have been previously recorded. As no glacial shorelines are found within Route A Stage 1 archaeological assessment study area this type of feature does not impact the evaluation of pre-contact Aboriginal archaeological potential. Contact period resources in the Route A Stage 1 archaeological assessment study area consist of significant watercourses which would have been equally important to both Euro-Canadian and First Nations people during this time, and the possibility for raw material quarrying activities.

4.5.14.1.2 Euro-Canadian Archaeological Potential

The potential for Euro-Canadian archaeological resources is judged to be high within 150 m of historic transportation routes and areas of early Euro-Canadian settlement and industry (Ontario Government 2011b: Section 1.4). Outside of these designated proximities the potential for Euro-Canadian archaeological resources is low and no Stage 2 archaeological assessment is recommended.

Many early roads were not followed by modern highways, meaning areas of cultural heritage value or interest associated with historic roadways are now far removed from modern thoroughfares, often in remote areas or used as trails or logging roads. Therefore, archaeological potential is high within 150 m of these historic transportation routes. This includes existing and previous rail lines; the rail lines were the first form of transportation within this area of Ontario, and a large number of early communities sprang up along the lines to service the lumber industry. Historic communities within the study areas have contracted over time, each of them at their largest in the late 1800s to early 1900s, seeing a gradual decrease over time. Significant archaeological resources related to these communities may remain outside of their current limits. Archaeological potential has been determined to be high in proximity to the estimated locations of early roads, the post offices, and historic communities. Highways 69 and 522 are not considered to be historic transportation routes, and any cultural heritage value or interest associated with them has now been previously and extensively disturbed.

4.5.14.1.3 Areas Retaining No Archaeological Potential

The most common disturbance that has removed archaeological potential in the Route A Stage 1 archaeological assessment study area is the roadways and major highways that the Route A Stage 1 archaeological assessment study area follows. The road and road ROW, including gravel shoulders and associated drainage ditches, do not require Stage 2 archaeological assessment (Ontario Government 2011b; Section 1.3.2) as these areas have been subject to extensive land alterations that have severely damaged the integrity of any archaeological resources that may have been present.

Areas of steep slope and poor drainage are not considered to have archaeological potential and may be excluded from further assessment regardless of proximity to archaeological features. However, exceptions must be made for any areas of steep slope containing exposed bedrock cliff faces. These areas must be assessed and photo documented when warranted for the potential presence of rock art given the identification of pictograph sites in close proximity to the current Route A Stage 1 archaeological assessment study area. The exposed bedrock may also contain areas where previous quartz quarrying activities have been conducted, based on the proximity of the Route A Stage 1 archaeological assessment study area to similar locations along the eastern shore of Georgian Bay where these activities have been documented. These areas must be assessed and photo documented for potential quarrying. Numerous wetlands are scattered within the Route A Stage 1 archaeological assessment study area and these poorly drained areas do not retain archaeological potential and, therefore, do not require Stage 2 archaeological assessment. However, the presence of wetlands or marshes can elevate the archaeological potential of adjoining land if there are well drained areas of elevated topography adjacent to them.

4.5.14.1.4 Recommendations

Route A

The Stage 1 archaeological assessment has identified areas of archaeological potential within the Route A Stage 1 archaeological assessment study area limits and will therefore require a Stage 2 archaeological assessment to assist in determining where areas of archaeological potential or archaeological features are located within the Route A Stage 1 archaeological assessment study area.

As the Route A Stage 1 archaeological assessment study area is situated entirely in the Canadian Shield and includes a complex combination of land conditions, the strategy for Stage 2 assessment will follow Section 2.1.5 and Section 2.1.6 of the *Standards and Guidelines for Consultant Archaeologists* (Ontario Government 2011b).

The Stage 2 archaeological assessment will include:

- Property inspection
- Stage 2 Pedestrian Survey
- Stage 2 Test Pit Assessment

The MTCS will review the Stage 1 Archaeological Assessment report (available in **Appendix B3**), before accepting it into the provincial register of archaeological reports and providing a letter to the proponent indicating that the Ministry concurs with the recommendations provided within the report. In anticipation of the MTCS approval a Stage 2 archaeological assessment is currently underway for the Route A and B socio-economic study area, expected to be finalized in the fall of 2015.

Route B

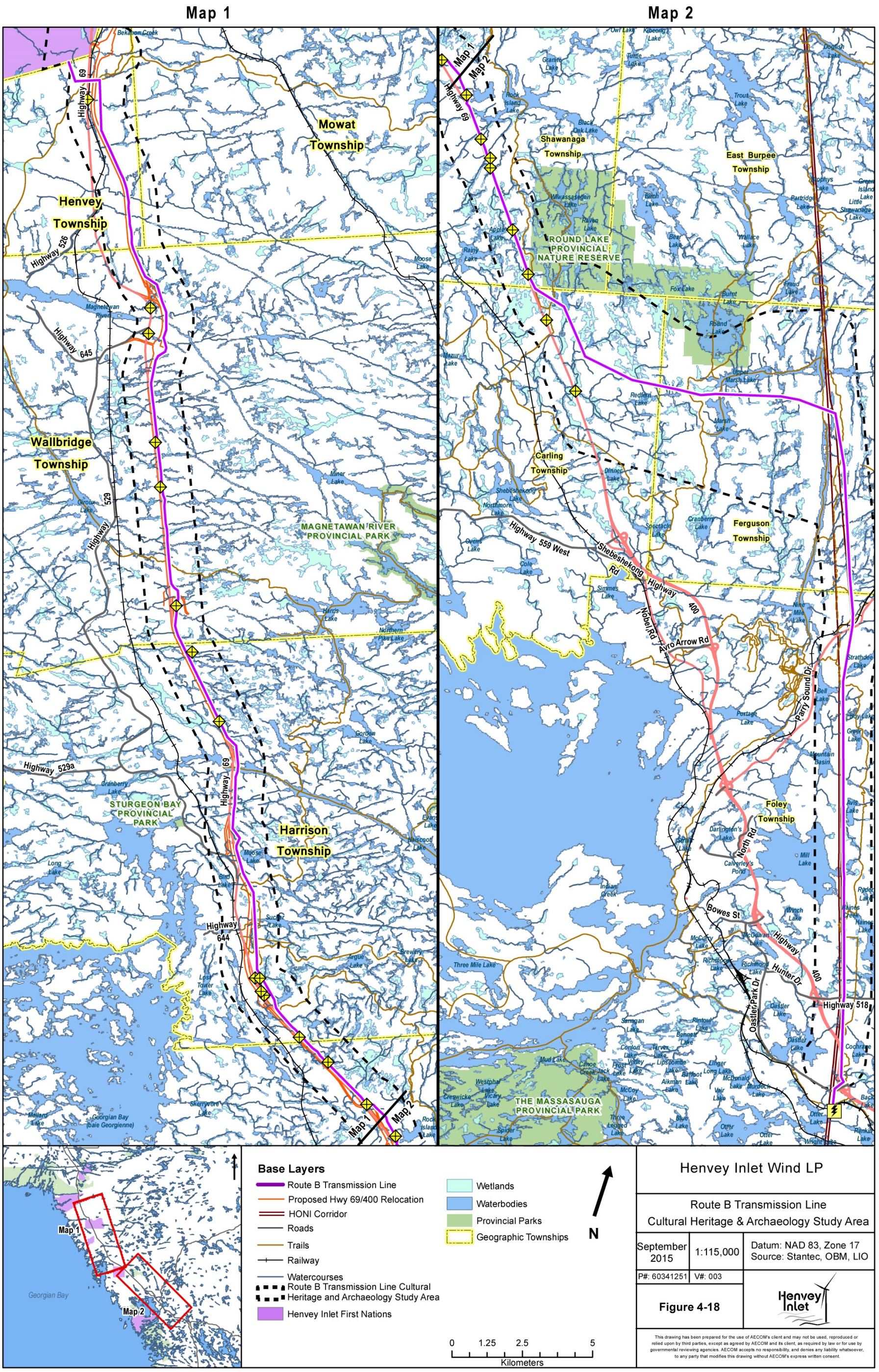
The Stage 1 archaeological assessment study area for Route B encompasses Route B socio-economic study area, and more, to accommodate uncertainty in the route at the time the study was initiated. The Stage 1 archaeological assessment study area for Route B runs through multiple townships east of Georgian Bay; Township of The Archipelago, Geographical Townships of Shawanaga and Harrison; Seguin Township, Geographical Township of Foley; Carling Township, Geographical Township of Carling; Municipality of McDougall, Geographical Township of McDougall and Ferguson; Municipality of Whitestone, Geographical Township of East Burpee; and the Unincorporated Townships of Henvey, Mowat, Shawanaga and Wallbridge and Harrison and extends from HIFN I.R. #2 south to approximately Woods Road where it travels east to the existing 500 kV HONI system. Route B then travels south parallel to the HONI 500 kV system to the HONI 230 kV system, east of the Parry Sound TS, near Oastler Park Drive. The Route B Stage 1 archaeological assessment study area location is provided in **Figure 4-18**.

The Route B Stage 1 archaeological assessment study area is primarily located on Crown-owned or managed lands. The MNRF governs archaeological assessments on Crown land and requires that archaeological assessments meet the Standards and Guidelines established by the MTCS (Ontario Government, 2011b). Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property.

Criteria commonly used by the MTCS (Ontario Government, 2011b: 17-18) to determine areas of archaeological potential include:

- Proximity to previously identified archaeological sites;
- Distance to various types of water sources.

Figure 4-18: Route B Archaeological and Cultural Heritage Study Area



- Soil texture and drainage;
- Glacial geomorphology, elevated topography and the general topographic variability of the area;
- Resource areas including food or medicinal plants, scarce raw materials and early Euro-Canadian industry;
- Areas of early Euro-Canadian settlement and early transportation routes;
- Properties listed on the municipal register of properties designated under the Ontario Heritage Act (Government of Ontario 1990b);
- Properties that local histories or informants have identified with possible archaeological sites, historical events, activities or occupants; and
- Historic landmarks or sites.

Certain features indicate that archaeological potential has been removed, such as land that has been subject to extensive and intensive deep land alterations that have severely damaged the integrity of any archaeological resources. This includes landscaping that involves grading below the topsoil level, building footprints, quarrying, sewage and infrastructure development (Ontario Government, 2011b, Section 1.3.2).

The small number of archaeological assessments in the area has resulted in a limited understanding of pre-contact First Nations occupation practices in this part of the Province; therefore, archaeological potential modeling is based on the requirements outlined in the *Standards and Guidelines for Consultant Archaeologists* (Ontario Government 2011b). While Section 1.4 in the *Standards and Guidelines for Consultant Archaeologists* outlines the conditions for recommendations for the reduction of test pit survey coverage, this is superseded for the Transmission Line Route B Stage 1 archaeological assessment study area by Section 2.1.5 as the land has been demonstrated to be situated entirely on Canadian Shield (Ontario Government 2011b).

4.5.14.1.5 Pre-contact Aboriginal and Contact Period Archaeological Potential

The potential for pre-contact and contact period First Nations archaeological resources within the Route B Stage 1 archaeological assessment study area is judged to be high within 50 m of modern watercourses, within 300 m of previously identified areas of cultural significance, and within 150 m of well-drained soil in close proximity to marshes, wetlands or watercourses (Ontario Government 2011b: Section 1.4). The presence of five (5) registered archaeological sites within the Route B Stage 1 archaeological assessment study area boundaries increases the potential for archaeological remains. It has also been noted that multiple archaeological sites exist beyond the Route B Stage 1 archaeological assessment study area boundaries. Outside these designated proximities the potential for pre-contact First Nations archaeological resources is low, however there is potential for archaeological materials that are not in the ground such as pictographs and quarry sites. Additionally, the presence of multiple fur trade posts increases the potential for archaeological material. Therefore, further Stage 2 archaeological investigation is recommended to clear the Route B Transmission Line and ensure there are no impacts to culturally significant sites that may not have been previously recorded. As no glacial shorelines are found within the Route B Stage 1 archaeological assessment study area, this type of feature does not impact the evaluation of pre-contact First Nations archaeological potential. Contact period resources in the Route B Stage 1 archaeological assessment study area consist of significant watercourses which would have been equally important to both Euro-Canadian and First Nations people during this time, and the possibility for extensive raw material quarrying activities.

4.5.14.1.6 Euro-Canadian Archaeological Potential

The potential for Euro-Canadian archaeological resources is judged to be high within 150 m of historic transportation routes and areas of early Euro-Canadian settlement and industry (Ontario Government 2011b: Section 1.4). Outside of these designated proximities the potential for Euro-Canadian archaeological resources is low and no Stage 2 archaeological assessment is recommended.

Many early roads were not followed by modern highways, meaning areas of cultural heritage value or interest associated with historic roadways are now far removed from modern thoroughfares, often in remote areas or used as trails or logging roads. Therefore, archaeological potential is high within 150 m of these historic transportation routes. Historic communities within the Route B Stage 1 archaeological assessment study area have contracted over time, each of them at their largest in the late 1800s to early 1900s, seeing a gradual decrease over time. Significant archaeological resources related to these communities may remain outside of their current limits. Archaeological potential has been determined to be high in proximity to the estimated locations of early roads, post offices, and historic communities. Highways 69 and 522 are not considered to be historic transportation routes, and any cultural heritage value or interest associated with them has now been previously and extensively disturbed.

4.5.14.1.7 Areas Retaining No Archaeological Potential

The most common disturbance that has removed archaeological potential in the Route B Stage 1 archaeological assessment study area is the roadways and major highways that the Route B Transmission Line follows. The road and road ROWs, including gravel shoulders and associated drainage ditches, do not require Stage 2 archaeological assessment (Ontario Government 2011b; Section 1.3.2) as these areas have been subject to extensive land alterations that have severely damaged the integrity of any archaeological resources that may have been present.

Areas of steep slope and poor drainage are not considered to have archaeological potential and may be excluded from further assessment regardless of proximity to archaeological features. However, exceptions must be made for any areas of steep slope containing exposed bedrock cliff faces. These areas must be assessed and photo documented for the potential presence of rock art given the identification of pictograph sites in close proximity to the current Route B Stage 1 archaeological assessment study area. The exposed bedrock may also contain areas where previous quartz quarrying activities have been conducted, based on the proximity of the Route B Stage 1 archaeological assessment study area to similar locations along the eastern shore of Georgian Bay where these activities have been documented. These areas must be assessed and photo documented for the potential quarrying. Numerous wetlands are scattered within the Route B Stage 1 archaeological assessment study area and these poorly drained areas do not retain archaeological potential and, therefore, do not require Stage 2 archaeological assessment. However, the presence of wetlands or marshes can elevate the archaeological potential of adjoining land if there are well drained areas of elevated topography adjacent to them.

4.5.14.1.8 Recommendations

The Stage 1 archaeological assessment has identified areas of archaeological potential within the Route B Stage 1 archaeological assessment study area limits and will therefore require a Stage 2 archaeological assessment to assist in determining where areas of archaeological potential or archaeological features are located within the Route B Transmission Line.

As the Route B Stage 1 archaeological assessment study area is situated entirely in the Canadian Shield and includes a complex combination of land conditions, the strategy for Stage 2 archaeological assessment will follow Section 2.1.5 and Section 2.1.6 of the *Standards and Guidelines for Consultant Archaeologists* (Ontario Government 2011b). The Stage 2 archaeological assessment will include:

- Property Inspection;
- Stage 2 Pedestrian Survey; and,
- Stage 2 Test Pit Assessment

Based on aerial photography, there does not appear to be any agricultural land in the Route B Stage 1 archaeological assessment study area; however, in the event agricultural land is identified it should be noted that

survey reductions are not permitted for agricultural fields. Agricultural land that can be ploughed must be ploughed, weathered and subject to full pedestrian survey at 5 m intervals (Ontario Government 2011b: Section 2.1.1). The MTCS will review the Stage 1 Archaeological Assessment report (available in **Appendix B7** and **B8**), before accepting it into the provincial register of archaeological reports and providing a letter to the proponent indicating that the Ministry concurs with the recommendations provided within the report. In anticipation of the MTCS approval, a Stage 2 archaeological assessment is currently underway for the Route A and B Transmission Line socio-economic study area, expected to be finalized in the summer of 2015.

Further information regarding the Stage 1 archaeological assessment, including development and historical context and recommendations, see **Appendix B7** and **B8**.

4.5.15 Built Heritage and Cultural Heritage Landscapes

Route A & B

The cultural heritage study area for Route A and Route B encompass the Route A and Route B socio-economic study area, and more, to accommodate uncertainty in the route at the time the study was initiated. The Route A and B cultural heritage study areas were first explored by Europeans in the early 1600s, who travelled the French River into Georgian Bay from the Ottawa River. This led to the development of fur trade posts in the area. During the period between 1670 and 1713, French traders began to leave established settlements and construct trading posts that enabled traders to make direct contact with the people living in the interior. The Nipissings, Odawa and Anishinabek in Northern Canada were referred to as the 'middlemen' of the trade all the way north to James Bay (Hunt 1940: 35, 45; Pollock 1999). An examination of the Atlas of Canada's map entitled, Posts of the Canadian Fur Trade, 1600-1870, indicates the presence of three (3) Fur Trade Posts in close proximity to the Route A and B cultural heritage study areas. The Hudson's Bay Company had a post at the mouth of the French River, and one (1) south called "Shawinaga", near Pointe au Baril. There were also multiple Independent Canadian posts in the surrounding area, but a large number of them were located around Lake Nipissing to the northeast.

Competition for resources between French and English led to alliances, such as the French-Huron alliance which began in 1615. The northern coasts of Georgian Bay and Lake Huron may have served as a transition zone or buffer between the Anishinabek and Iroquois, as it was sparsely occupied until the return of the Ojibway along the Georgian Bay and Lake Huron in the 1700s (Pollock, 1999). By the early 1800s, securing mining and other resources became increasingly important, and a driving force for Upper Canada to begin looking to northern territories. The treaty making process for the Robinson Huron Treaty of 1850 was established during this period.

The post-contact Aboriginal occupation of Ontario was heavily influenced by European diseases and population movements. Initial survey consisted of efforts confined to canoe through rivers and water ways. The Northern and Pacific Junction Railway was constructed in the 1880s to connect the railways of Southern Ontario to the new transcontinental line of the CP Railway. Communities like Britt and Key Harbour survived as CNR ports to unload coal and oil off tankers that were coming from Lake Superior and Lake Huron (Campbell, 2005). The Northern and Pacific Junction Railway became part of the Grand Trunk railroad system which opened up Parry Sound and Muskoka's isolation. The area remained relatively untouched until the Muskoka and Parry Sound Districts were surveyed between 1866 and 1870 (Campbell, 2005). Despite the surveyors reporting that the land was unfit for farming, the wealth in timber was deemed highly profitable. Communities on Georgian Bay, i.e., Killarney, Byng Inlet / Britt, Parry Sound, developed not as service centres for surrounding farmlands, which was the case in Southern Ontario, but as isolated ports, railway stops, or company mill towns (Campbell, 2005).

The French River was the main water artery from the St. Lawrence River to the Great Lakes from 1600 to the mid-1800s. The area prospered within the fur trade, as well as commercial logging and fishing. The French River Village

eventually was developed in the late 1880s as a result of the extensive logging industry. Timber cutting, logging and lumber mills sprang up in the area in 1873 until the 1930 depression era.

Colonization Roads served to increase access to logging, but also to provide a way north for early settlers, and facilitated transportation between the Ottawa Valley and Georgian Bay, known as the Ottawa–Huron Tract. The government built over 1,600 km of roads over two (2) decades. The Great North Road extended from Parry Sound northeast to Lake Nipissing. By 1955 the modern day Highway 69 connected Parry Sound and the Trans-Canada Highway (Highway 17) at Sudbury. The 1879 historical atlas of the Parry Sound District indicates Highway 69 appears to follow an early historic roadway through McDougall Township and approximately half way through Carling Township (Harrison and Rogers, 1979). Though extensive efforts were made to locate the material, there are no maps of Shawanaga or Harrison Townships in the historical atlas, and no roadway is indicated on the 1879 Parry Sound District map.

Aboriginal communities within the Route A and B cultural heritage study areas have been encouraged to provide information to the EA team regarding areas of their Aboriginal interests such as areas of cultural significance, past settlements and current settlements. Other stakeholders were also provided opportunities to identify areas of interest as part of the ongoing study.

In order to fully understand the potential effects of the proposed Transmission Lines on built heritage and cultural heritage landscapes, a Cultural Heritage Assessment Report is provided in **Appendix B9** and **B10**. This report includes background research on the land use history of the area to develop an understanding of the local historical context to assist in evaluating heritage resources; creation of an inventory of known cultural heritage resources and resources that have the potential to retain cultural heritage value; and, an evaluation of the proposed undertaking on identified heritage resources.

Ten (10) structures were determined to be more than 40 years old and, therefore, having potential cultural heritage value or interest. When the criteria from O. Reg. 9/06 were applied (see Appendix B10), the following four (4) structures were determined to have cultural heritage value or interest.

- Two vernacular cottages;
- a mid-20th century structure consistent with local vernacular bungalows; and
- Moose Lake Trading Post.

Given the substantial distance of most of these features from the study area boundaries, no direct or indirect impacts are anticipated during construction and decommissioning activities.

AECOM undertook ongoing consultation with Magnetawan First Nation as well as Shawanaga First Nation regarding cultural heritage and resource impacts for the study area. A review of the Magnetawan First Nation 2012 Traditional Land Use Study (Shared Value Solutions 2013) determined that there are important cultural and community sites identified by Magnetawan First Nation that could be within the Transmission Line Route B study area. Ongoing consultation between project personnel and Magnetewan First Nation community will continue with the aim of mitigating any negative effects. At the time of completion of this report, consultation was still ongoing with Shawanaga First Nation regarding cultural heritage related interests within the study area boundaries. The construction and decommissioning activities could cause damage or require relocation of any cultural and community sites identified within the Transmission Line Route B study area.

Much of the landscape is typical for this region and therefore not identified as culturally significant, however, the transmission line is proposed to run beside Highway 69 between the highway and the Moose Lake Trading Post complex of buildings and its addition will have a slight, indirect, impact on the character of the landscape in this

location as the proposed Transmission Line Route B would cast come shadows that may alter the appearance or visibility of this particular landscape.

No historical plaques were identified during the course of this research.

Route A

No listed, designated or otherwise recognized heritage features are present within the study area. In addition there are no historic plaques, cemeteries, national historic sites or properties protected by an Ontario Heritage Trust Easement. A property survey was undertaken to evaluate built heritage and cultural heritage landscapes present in the study area, and an inventory was created to identify and evaluate potential heritage resources.

The study area is primarily comprised of Canadian Shield landscape and transportation landscapes that are typical for this region of Ontario. These landscapes were evaluated against the criteria in *Ontario Regulation 9/06* and it was determined that they are not considered to retain cultural heritage value or interest due to their typical nature in the region.

Through the windshield survey, three sites 40 years of age or older were documented and evaluated according to *Ontario Regulation 09/06* and three structures were identified, including a residential structure and two outbuildings. Of these sites, the residence (Property #1) and one of the outbuildings (Property #2) were identified to have potential cultural heritage value or interest. Potential direct or indirect impacts to these cultural heritage resources were evaluated according to the criteria outlined in InfoSheet #5 in *Heritage Resources in the Land Use Planning Process, Cultural Heritage and Archaeology Policies of the Ontario Provincial Policy Statement 2005.* No negative impacts to cultural heritage resources are anticipated by the project.

As there are no impacts to heritage resources anticipated as a result of the project, mitigation is not required.

There are no listed, designated or otherwise recognized heritage features present within the study area. In addition there are no historic plaques, cemeteries, national historic sites or properties protected by an Ontario Heritage Trust Easement and the transportation and power landscapes, typical to this region, are not considered to retain cultural heritage value or interest.

Of the four (4) buildings determined to have cultural heritage value or interest, the Moose Lake Trading Post, and its complex of buildings, are the only structures within the proposed Transmission Line Route B study area that the construction and decommissioning activities have the potential to affect. There is potential that the storage of construction equipment and material stockpiles may obstruct views or alter the appearance of the Moose Lake Trading Post and its associated buildings.

4.5.15.1 Preliminary Cultural Heritage Evaluation

Route A:

A preliminary review of potential cultural heritage resources within the Route A cultural heritage study area was conducted as part of the formal cultural heritage evaluation process. A review of government and private agency records and the HIFN TLUS (URS, 2013) provided information on the properties and structures within the study area that require consideration in regard to Cultural Heritage planning.

The cultural heritage study area for Route A Transmission Line is located off-reserve in the unorganized Townships of Mowat and Blair in the District of Parry Sound. The HIWEC Transmission Line – Route A study area is comprised of a corridor of land 100 m wide and approximately 16 to 20 kilometres (km) east-west. The study

area extends from Highway 69 at HIFN I.R. #2 east to the existing 500 kV Hydro One Networks Inc. (HONI) transmission line; approximately 75% of the study area is adjacent to Highway 522. For the purposes of this CHAR, the term “study area” consists of the proposed Route A alignment plus a 100 m buffer, 50 m on either side of the proposed route.

During the preliminary review of cultural heritage resources for the Route A cultural heritage study area, no designated or listed heritage properties/structures were identified within the study area. Additionally, no historical plaques, National Historic sites, registered cemeteries, or unregistered cemeteries were identified. However, four (4) registered archaeological sites were identified within the current cultural heritage study area boundaries which will require consideration as part of the project planning process. Although the results of this preliminary study have identified four (4) cultural heritage resources for consideration, there remains the potential for the identification of additional properties or features with heritage significance within the cultural heritage study area during the formal heritage assessment process.

Route B:

A preliminary review of potential cultural heritage resources within the Route B cultural heritage study area was conducted as part of the formal cultural heritage evaluation process. A review of government and private agency records and the HIFN TLUS (URS, 2013) provided information on the properties and structures within the cultural heritage study area that require consideration in regard to Cultural Heritage planning.

The cultural heritage study area for Route Transmission Line study area is comprised of a corridor 100 m wide and approximately 90 km long, that extends from HIFN I.R. #2 south to approximately Woods Road where is travels east to the existing 500 kV Hydro One Networks Inc. (HONI) transmission line. Route B then travels south parallel to the HONI 500 kV transmission line to the HONI 230 kV transmission line, east of the Parry Sound Transformer Station, near Oastler Park Drive. The Transmission Line - Route B runs through multiple townships east of Georgian Bay; the Unorganized Township of Parry Sound, Centre Part, which is comprised of the Geographical Townships of Henvey and Wallbridge; Magnetawan Reserve No. 1; the Township of the Archipelago, Geographical Townships of Shawanaga and Harrison; Shawanaga Reserve No.17; the Township of Carling, Geographical Township of Carling; the Municipality of McDougall, Geographical Township of McDougall and Ferguson; and, the Township of Sequin, Geographical Township of Foley. For the purposes of this CHAR, the “study area” consists of the proposed Route A alignment plus a 100 m buffer, 50 m on either side of the proposed route. During the preliminary review of cultural heritage resources for the Route B Transmission Line corridor, no designated or listed heritage properties or structures were identified within the Route B cultural heritage study area. Additionally, no historical plaques, National Historic sites, registered cemeteries, or unregistered cemeteries were identified. However, five (5) registered archaeological sites were identified within the Route B cultural heritage study area boundaries as well as culturally/spiritually significant cultural heritage features located adjacent to HIFN I.R. #2 and on Magnetewan First Nation Reserve No. 1. Each of these five (5) archaeological sites as well as the culturally/spiritually significant features identified by HIFN and Magnetewan First Nation will require consideration as part of the project planning process. Although the results of this preliminary study have identified several cultural heritage resources for consideration, there remains the potential for the identification of additional properties or features with heritage significance within the cultural heritage study area during the formal heritage assessment process.

4.5.16 Landscapes and Views

Route A:

The proposed Route A Transmission Line extends approximately 14 km east from HIFN I.R. #2. The route ends at a connection point near the intersection of Highway 522 and the HONI 500 kV system. The majority of the route runs adjacent to the existing Highway 522, and, in the western end, crosses both a CN and CP rail lines.

Route B:

The proposed Route B Transmission Line travels south primarily parallel to sections of the existing and/or proposed Highway 69/400. The existing railway line, adjacent to sections of the existing Highway 69/400, also traverses portions of Route B. The central (west-east) portion of Route B diverts east from the existing Highway 69/400 for approximately 12 km into a primarily undeveloped area with the exception of some existing roads and trails throughout. From there Route B parallels the existing HONI 500 kV system to the connection point south of the Town of Parry Sound.

Except for the central portion of the alignment which is largely undisturbed, the majority of Route B Transmission Line is parallel to existing linear disturbances predominantly along the existing and proposed Highway 69/400 and the HONI 500 kV system.

5. Alternatives Assessment

The FIT contract awarded to Nigig in 2011 has an approved interconnection point south of Parry Sound (i.e., Route B connection point). In addition to the assessment of interconnection at the approved 230kV line south of Parry Sound (Route B), HIW in close consultation and discussions with IESO, Hydro One and expert consultants, conducted a technical and legal assessment of the possibility of amending the HIWEC FIT Contract to permit interconnection at the Hydro One 500kV circuit (Route A) to reduce the overall length of transmission required for the HIWEC. As part of that review, HIW conducted a comparative analysis of environmental criteria for each route alternative.

5.1 Route Evaluation Criteria

The alternative routes assessment considers both quantitative and qualitative criteria while evaluating the two (2) potential Transmission Line route alternatives. To identify the preferred route these general principles were used:

- Minimizing overall route length wherever possible;
- Aligning with existing linear disturbances (i.e., roads, trails, railways) wherever possible;
- Avoiding large waterbody crossings (>200 m) wherever possible;
- Avoiding wetlands wherever possible;
- Avoiding private property wherever possible;
- Avoiding existing buildings wherever possible; and
- Avoiding sensitive land uses (i.e., Provincial Parks, ANSIs, PSWs) wherever possible.

Using these general principles two route alternatives were chosen for the alternatives analysis. Detailed descriptions of the two route alternatives are provided in **Section 2**.

5.2 Alternative Route Evaluation Methodology

A route evaluation using both quantitative and qualitative methods was undertaken to compare the relative effects of each route with respect to the following environmental criteria:

- Wildlife and Wildlife Habitat;
- Vegetation;
- Species at risk;
- Wetlands;
- Air quality;
- Surface and groundwater;
- Socio-economic factors, including First Nations and other Aboriginal communities;
- Land use; and
- Any other factor that is relevant to the analysis.

A series of indicators for each criterion were developed to quantitatively assess the two routes (found in **Section 5.3.1**), and were based on the general principles described in **Section 5.1**.

MNRF's Land Information Ontario (LIO) data warehouse is the province's central repository for authoritative digital data. Environmental features from the LIO data warehouse and other available sources were mapped and relevant indicators measured to identify route preferences.

The quantitative analysis was supplemented by a qualitative route evaluation based on expert judgement with respect to the environmental criteria and the potential for each route to minimize potential environmental effects.

In order to assess the potential presence of Species at Risk within each of the proposed transmission line corridors, the following resources have been reviewed:

- Natural Heritage Information Centre's Biodiversity Explorer;
- Ontario Breeding Bird Atlas;
- Ontario Herpetofaunal Atlas;
- Atlas of the Mammals of Ontario;
- Conservation Ontario's Fish and Mussel Species At Risk Distribution Maps;
- Environment Canada and Canadian Wildlife Service; and
- Ministry of Natural Resources and Forestry – Land Information Ontario.

5.3 Alternative Route Evaluation

5.3.1 Quantitative Results

The table below provides a quantitative assessment the two route alternatives.

Table 5-1: Natural Environment Evaluation Criteria

Criteria	Indicator	Route A	Route B	Data Sources
Natural Environment				
Wildlife and Wildlife Habitat, Vegetation and Species at Risk	Total length of vegetation removal	13.2 km	86.7 km	LIO - OBM
	Length of potential fragmentation[4]	3.3 km	13.2 km	LIO - OBM
Wetlands	Total length of crossing	0.3 km	5.5 km	LIO - OBM
	Number of wetlands crossed	2	57	
	Number of crossings > 200 m	1	6	
	Number of Provincially Significant Wetlands (PSW) crossed	0	1	
Surface Water	Number of lake crossings	1	27	LIO - OBM
	Number of watercourse crossings	9	56	
	Number of crossings > 200 m	0	1	
Groundwater	Number of water wells within 1 km of route	2	171	MOECC water well database
Socio-Economic / Land Use / Aboriginal Communities				
Private Lands	Number of private land parcel crossings	5	97	TeraNet Parcel Fabric
	Total length of crossings	225 m	28,155 m	
Buildings	Number of buildings within 1 km of route	38	347	OBM
First Nation Reserves	Number of non-HIFN First Nation Reserves crossed	0	2	LIO
Provincial Park and Provincial Natural Reserve	Total length of crossings	0	0	LIO - OBM
Recreational Trails	Number of recreational trail crossings	3	11	LIO
Forest Resources	Area under sustainable forest license	100 ha	450 ha	Westwind Forest Stewardship Inc. Forest Management Plan: 2009-2019
Active Mine Claims	Number of active mine claims crossed	0	3	LIO

4. *Fragmentation includes areas where the transmission line is not parallel to an existing linear disturbance such as a road or transmission line crossing through relatively undeveloped areas.*

5.3.2 Quantitative and Qualitative Results

In this subsection, the quantitative results presented in subsection **5.3.1** are supplemented with a qualitative discussion of the potential environmental effects associated with each criterion.

5.3.2.1 Wildlife and Wildlife Habitat

Through the proposed development and installation of either transmission line route, natural habitat is proposed to be removed. The noise and habitat removal associated with the site preparation and construction phases of the transmission line have the potential to cause avoidance behaviour and/or temporary disturbance of local wildlife.

Based on the proposed transmission line route alternatives, suitable habitat for various avian, mammal, herpetofauna, and other wildlife individuals may be affected by the noise and activity of construction activity. Construction activities, including clearing and grubbing, crop removal and other disturbances also have the potential to cause direct mortality to resident and/or breeding populations of wildlife. The installation of transmission lines will also cause loss of habitat and habitat fragmentation that may hinder previous movement patterns of some species. The presence of newly established transmission lines also poses a collision risk to local and migratory bird species.

A review of the proposed transmission routes indicates that Route A will occur predominantly along the road ROW, where potential habitat fragmentation has already occurred through the installation of municipal infrastructure. Furthermore, Route A is shorter in length, reducing wildlife habitat disturbance and potential interactions with local wildlife. Route B primarily parallels Highway 69 and the HONI 500 kV corridor where potential habitat fragmentation has already occurred; however there are several areas that are undisturbed by development activities. This route will have a greater effect on wildlife species through habitat fragmentation, habitat loss, and potential disturbance during construction activity.

5.3.2.2 Vegetation

Clearing activity for the installation of transmission lines will affect vegetation communities so shorter routes and routes that minimize wetland crossings and vegetation removal are preferred. Effects on vegetation may include loss of vegetation, sedimentation and erosion into adjacent vegetation communities, soil compaction, spills, and the potential introduction of invasive and/or non-native species. Certain vegetation communities, such as wetlands, can be more susceptible to potential effects; however no infrastructure is proposed within wetlands so effects to wetlands are anticipated to be minimal for both route alternatives. Limiting the length of transmission within other vegetated communities such as woodlands will reduce potential effects to vegetation communities.

5.3.2.3 Species at Risk

Numerous SAR are known to occur in the areas surrounding both transmission line routes. SAR are afforded legal protection under the provincial *ESA* and federal *SARA*. SAR along the proposed transmission line routes utilize a wide variety of habitats, including wetlands, upland forests, aquatic resources, and other habitats that are indicative of natural environments. Although most species utilize natural habitats, a small number of species will also utilize habitats that are considered to be more closely associated with disturbed habitats, such as open fields, successional and edge habitat, or old buildings. Potential effects to SAR include habitat loss, fragmentation, and direct mortality during the construction phase. Based on the geographic ranges and habitat preferences of most of the Species at Risk in this area of the province, they have equal potential of occurring within either transmission line corridor; however their potential abundance will be dependent on the extent of suitable habitat that occurs within each corridor.

Based on the known presence of SAR in the general area of both routes and the preference for most SAR to utilize natural habitats, the preferred route will be one that has the least overlap with natural habitats. A summary of the potential impacts to generalized habitat types, including lists of representative species that may utilize those habitats, has been provided in Table 5-2 below.

Table 5-2: Species at Risk Impact Comparison

Habitat Type	Example Species	Route A	Route B	Preferred Route
Wooded Habitat	Eastern Whip-poor-will Canada Warbler Common Nighthawk Olive-sided Flycatcher Eastern Hog-nosed Snake Eastern Massasauga Little Brown Myotis Northern Myotis Tri-colored Bat	13.2 km of vegetation removal including 3.3 km of potential fragmentation	86.7 km of vegetation removal including 13.2 km of potential fragmentation	**Route A**
Wetland Habitat	Least Bittern Restricted Species Blanding's Turtle Eastern Foxsnake Eastern Massasauga Branched Bartonia	Two wetland crossings, totalling 0.3 km (no PSW)	Fifty-seven (57) wetland crossings, totalling 5.5 km (1 PSW)	**Route A**
Aquatic Habitat	Restricted Species Blanding's Turtle	One lake crossing and 9 watercourse crossings	Twenty-seven lake crossings and 56 watercourse crossings	**Route A**
Shrub/Successional Habitat	Golden-winged Warbler	Up to 9.9 km of edge habitat removal	Up to 73.5 km of edge habitat removal	**Route A**
Open Habitat	Common Nighthawk Eastern Hog-nosed Snake Eastern Foxsnake Eastern Massasauga	Up to 9.9 km of open habitat removal	Up to 73.5 km of open habitat removal	**Route A**
Urban Areas	Chimney Swift	No effects expected	No effects expected	**No Difference**

The linear footprint of Route A is shorter than Route B (14 km vs. 86 km) therefore reducing potential overlap with wildlife habitat and limiting potential interactions with local fauna.

5.3.2.4 Wetlands

As indicated in subsection **5.1**, the crossing of wetlands should be limited to the extent possible. Construction of transmission lines in wetlands can result in adverse environmental effects although effects can largely be mitigated with the implementation of standard mitigation measures and best management practices. Construction of transmission infrastructure and associated access trails in wetlands could result in negative environmental effects to those features, such as loss of ecological function, increased soil erosion and sedimentation, slope instability and/or flooding potential. Routes that cross fewer wetlands are preferred. Neither route will have infrastructure within wetlands and no wetland crossings are anticipated for temporary access roads. Although Route A crosses fewer wetlands than Route B, minimal effects to wetlands are anticipated based on the proposed avoidance measures and best management practices.

5.3.2.5 Air Quality

Activities associated with transmission line construction and maintenance such as dust and greenhouse gas emissions from operation of vehicles and construction equipment are the only activities expected to have an effect on local air quality. Due to the longer length of Route B, it is expected that Route B would have a slightly higher adverse effect on air quality. However, the overall magnitude of the adverse effect on air quality is expected to be relatively minor, temporary in nature, and can be further diminished with appropriate mitigation measures to control dust emissions during construction.

5.3.2.6 Surface Water

Transmission line construction near waterbodies can result in adverse environmental effects; however effects to waterbodies can largely be mitigated with the implementation of best management practices. Potential effects associated with construction of a transmission line near surface water features can include erosion and sedimentation, contaminant releases and changes to fish habitat however residual effects are anticipated to be minimal with the implementation of best management practices and avoidance of in-water works. Although Route A crosses fewer surface water features than Route B, minimal effects to surface water are anticipated based on the proposed avoidance measures and best management practices.

5.3.2.7 Groundwater

The proposed monopole design for both transmission line routes is unlikely to require substantial dewatering making the need to apply for a Permit to Take Water unlikely. Due to the lack of dewatering associated with the proposed monopole design and short term duration of construction for each monopole foundation, it is not anticipated that construction activities will adversely affect groundwater for either Route A or Route B.

5.3.2.8 Socio-Economic / First Nations and Aboriginal Interests / Land Use

5.3.2.8.1 Cottage Areas / Associations

Cottage areas / associations were identified based on a review of association websites and feedback from the public during the first round of Public Information Centres held in Britt and Parry Sound in March 2015. Based on input received to date, the number of cottage associations that identified concerns about an effect on their members was compared.

Representatives from a number of associations, including Nine Mile Lake Cottagers' Association, Otter Lake Ratepayers' Association, and Mill Lake Guardians' Association expressed concerns over Route B. Concerns raised by cottagers' associations were mostly related to expropriation of cottage and private lands, effects on property values, potential effects to recreational waters, potential effects to SAR, potential for additional vehicular traffic on and off-access roads and concerns about contamination. No cottage associations identified any concerns about effects on their members related to Route A.

5.3.2.8.2 Private Lands

Landowners may have concerns with the placement of transmission infrastructure on private lands. Private landowners may view transmission infrastructure as incompatible with the preferred land uses on their property. The transmission route with fewer private land crossings is preferred. Route A crosses 5 private land parcels, at a total length of 0.2 km, whereas Route B crosses 97 private land parcels, at a total length of 28.2 km.

5.3.2.8.3 Buildings

Local business and other stakeholders may have concerns with the placement of transmission infrastructure near existing buildings. There are 38 buildings located within 1 km of Route A, versus 347 buildings located within 1 km of Route B. As such, Route A would potentially affect fewer buildings.

5.3.2.8.4 First Nation Reserves

Both routes connect to the HIWEC on HIFN I.R. #2 and require transmission infrastructure on HIFN Reserve lands. The HIWEC has undergone a separate environmental assessment in accordance with HIFN requirements for the components of the HIWEC which are on-Reserve (refer to HIWEC EA). This document describes the proposed off-Reserve Transmission Line.

Transmission Line Route A does not cross any other First Nation Reserves, while Route B crosses two First Nation Reserves (Magnetawan First Nation Reserve No.1 and Shawanaga First Nation Reserve No. 17). Route A would not directly affect lands located within any non-HIFN Reserves.

5.3.2.8.5 Recreational Trails

Recreational trails are identified in the LIO database as designated paths available for recreational use, including hiking trails, snowmobile trails, cross-country ski trails and dog sled trails. Both routes occur within recreational areas and provide recreation and resource-based tourism within a remote forested setting (ONTLA, 2001). Recreation users in remote locations such as the transmission line study areas often value the remote nature of these areas and prefer fewer anthropogenic disturbances on the landscape. Transmission infrastructure may conflict with the wilderness based experience enjoyed by these groups.

Route A crosses three recreational trails, while the Route B crosses eleven recreational trails.

5.3.2.8.6 Forest Resources

The MNRF requires that anyone who wants to conduct forestry operations in a Crown forest must manage for the long-term health of the forest. The preparation of an FMP is a statutory requirement of the *Crown Forest Sustainability Act*. An FMP guides forest management operations to achieve sustainability objectives. Westwind Forest Stewardship Inc. is the Sustainable Forest Licence Holder for the French-Severn FMP which covers the entire study area for Routes A and B. Transmission Line development can affect the potential operations of the Sustainable Forest Licence Holder.

The total area under sustainable forest licence that would be affected by Route A is approximately 100 hectares, whereas the total area under sustainable forest licence that would be affected by Route B is approximately 450 hectares.

5.3.2.8.7 Active Mine Claims

The presence of a transmission line may have negative effects on active mining claim areas, as the claim area underneath the ROW may need to be removed. There are no active mine claims crossed by either route.

5.3.2.8.8 Archaeology and Cultural Heritage

Construction of a transmission line has the potential to affect archaeological and cultural heritage features. Results from Stage 1 archaeological assessments conducted to date indicate that there is potential for archaeological

resources in both Route A and Route B study areas. The actual presence of archaeological resources will be determined during Stage 2 archaeological assessments scheduled for spring/summer 2015. Any archaeological resources identified would be avoided and/or mitigated appropriately.

5.4 Summary of Alternative Analysis

Table 5-3 provides a summary of results from the quantitative and qualitative evaluation.

Table 5-3: Evaluation Criteria and Quantitative Results

Criteria	Route A	Route B
Wildlife and Wildlife Habitat	Preferred	Less Preferred
Vegetation	Preferred	Less Preferred
Species at Risk	Preferred	Less Preferred
Wetlands	Preferred	Preferred
Air Quality	Preferred	Preferred
Surface Water	Preferred	Less Preferred
Groundwater	Preferred	Preferred
Cottage Areas / Associations	Preferred	Less Preferred
Private Lands	Preferred	Less Preferred
Buildings	Preferred	Less Preferred
First Nation Reserves	Preferred	Less Preferred
Recreational Trails	Preferred	Less Preferred
Forest Resources	Preferred	Less Preferred
Active Mine Claims	Preferred	Preferred
Archaeology and Cultural Heritage	Preferred	Preferred

5.5 Preferred Alternative

The analysis of environmental criteria demonstrates advantages to developing Route A when compared to Route B; however there are additional technical and legal criteria that were assessed in parallel with the environmental analysis. The HIWEC FIT Contract amendment was not granted and in late August 2015, after review of the technical and legal assessment conducted by HIW in close consultation with IESO, HONI and expert consultants resulted in the conclusion that the current technically and legally viable interconnection point for the HIWEC is the connection point south of Parry Sound to the 230kV Hydro One system (Route B), and HIW will continue exclusive assessment and study of that interconnection point and the associated transmission line. **Section 6** provides a detailed assessment of the preferred alternative (Route B).

6. Effects Assessment

6.1 Interaction with Valued Ecosystem Components and Nishshing Aki

The following factors were used to determine if there was an interaction between the Transmission Line and the environment:

- input from Aboriginal communities;
- federal and provincial laws and guidelines;
- scientific or academic publications;
- input from the public, agencies and other stakeholders; and
- professional judgment of the environmental assessment practitioners, based on experience with similar projects.

The Transmission Line Environment Interactions Matrix is presented in **Table 6-1.** The Interactions Matrix provides a summary of potential interactions between Transmission Line activities occurring during construction/ decommissioning and operations with VECs. A discussion of the potential effects due to interactions between Transmission Line activities and VECs is provided in **Section 6.2**.

Nishshing Aki are located on HIFN I.R. #2 approximately 2 km from the Transmission Line which commences at the southeast boundary of HIFN I.R. #2. Since there are no potential interactions between Nishshing Aki and the Transmission Line due to their distance from any Transmission Line activities, Nishshing Aki are not included in the Interactions Matrix nor are they carried forward in the effects assessment.

The effects assessment in the following sections is structured based on the methods described in **Section 3**. First, potential environmental effects are discussed in **Section 6.2.** Second, mitigation of potential environmental effects and prediction of net environmental effects are presented in **Section 6.3**. Net environmental effects are characterized and their significance is evaluated in **Section 6.4.** Lastly, proposed monitoring and follow-up plans are discussed in **Section 8.**

6.2 Identification of Potential Effects

6.2.1 Soils, Sedimentation and Erosion

Construction and Decommissioning

Potential effects on soils during construction and decommissioning of the Transmission Line could include:

- Reduction in soil capability (quality) from admixing, compaction and rutting risk, and erosion; and,
- Reduction in soil thickness and change in soil distribution from wind and water erosion and soil handling;

Construction activities (e.g., excavation, use of heavy equipment, stockpiling of cleared materials, and dewatering discharge) have the potential to cause changes in soil quality through processes such as admixing, soil compaction and rutting, and erosion leading to an alteration of soil capability. Although topsoil is thin and / or not present at many locations throughout the study area, there will be an opportunity to salvage topsoil in the limited areas where topsoil will be removed (i.e. transmission pole locations and new access trails). In these limited locations, mixing of strippings and subsoil could occur during construction if soil handling occurs during wet or thawed ground conditions. Mixing of stripped material with spoiled piles could occur during site preparation if adequate separation of the piles is not ensured.

Table 6-1: Transmission Line Interaction with Valued Ecosystem Components[5]

	Soils, Sedimentation and Erosion	Contaminated Lands	Wildlife and Wildlife Habitat	Vegetation, Valued Ecosystems and Wetlands	Protected Areas	Species at Risk	Fish and Fish Habitat and Rare Aquatic Species	Surface Water	Groundwater	Hazard Lands	Air Quality	Noise	Economic Base, Employment Labour Supply and Local Businesses	Neighbourhood and Community Character	Community Services and Infrastructure	Traffic	Recreation, Cottaging and Tourism	Public Health and Safety	Non-Renewable Resources	Forestry Resources	Game and Fishery Resources	Residential, Commercial and Institutional Lands	Provincial and Municipal Policies, Plans and Zoning Bylaws	Aboriginal Land Use and Resources	Archaeological Resources	Built Heritage and Cultural Heritage Landscapes	Landscape and Views
Environmental Screening Criteria Categories under O.Reg. 116/01 (as presented in Table 3.1)	Surface and Groundwater	Land Use	Natural Environment	Natural Environment	Natural Environment	Natural Environment	Natural Environment	Surface and Groundwater	Surface and Groundwater	Land Use	Air and Noise	Air and Noise	Socio-economic	Socio-economic	Socio-economic	Socio-economic	Socio-economic	Socio-economic	Resources	Resources	Resources	Land Use	Land Use	Land Use	Heritage and Culture	Heritage and Culture	Heritage and Culture
Construction Phase																											
• Site preparation	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
• Installation of access roads	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
• Installation of watercourse crossings	√		√	√		√	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
• Transportation of equipment and materials	√	√	√			√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
• Installation of tower foundations (may include blasting), interconnect station (i.e. SS) and Transmission Lines	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
• Construction completion (includes reclamation of temporary construction areas, demobilization of construction works and ROW restoration)	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
Operation Phase																											
• Preventative and routine inspection of Transmission Line components and Switching Station			√	√		√	√	√	√			√	√	√	√	√	√	√	√	√	√	√	√	√		√	√
• Unplanned maintenance of the access roads and of the ROW		√	√	√		√	√	√	√			√	√	√	√	√	√	√	√	√	√	√	√	√		√	√
• Vegetation Management			√	√		√		√				√	√	√	√	√	√	√	√	√	√	√	√	√		√	√
Decommissioning Phase																											
• Power disconnection and decommissioning of service			√	√		√						√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
• Installation of access roads	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
• Transportation of equipment and materials			√	√		√			√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
• Disassembly and removal of Transmission Line components	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
• Decommissioning Completion (including reclamation of disturbed areas)	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
• ROW restoration	√	√	√	√		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	

[5] [5]As mentioned in Section 3.0 Nishing Aki are not impacted by the Transmission Line activities and therefore are not carried forward in the assessment

Inadequate stripping of topsoil and upper subsoil, or careless stockpiling can cause changes to soil thickness and quantity from soil loss. Reduced soil thickness can lead to reduced soil productivity resulting from reduced medium for plant growth. Reduced soil thickness also can negatively affect soil fertility status, and rooting zone. Degradation of soil structure may occur due to compaction if traffic and handling activities are completed when the soils are wet. Soil exposure during construction and reclamation might also lead to increased wind and water erosion risk.

Increased areas of impervious surfaces from construction areas may result in a change in direction, quantity and rate of surface run off. Inadequate control of surface runoff from construction areas and dewatering discharge has the potential to cause soil erosion resulting in a soil loss. Effects of water erosion on soil include changes in soil quality, structure, stability, and texture. Effects of soil erosion often have corresponding impacts to receiving waterbodies and/or wetlands as soils redistribute to these features.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on soils.

Operation

Additional disturbance to ground cover is not expected during the operating phase of the Transmission Line. Therefore; no potential effects are anticipated.

6.2.2 Contaminated Land

Construction and Decommissioning

Potential effects due to the disturbance of existing contaminated lands and the release of contaminants during construction and decommissioning of the Transmission Line could include:

- Reduction in soil and subsoil quality due accidental release of contaminants during construction and decommissioning; and,
- Reduction in soil and subsoil quality due the disturbance of existing contaminated lands resulting in a potential release of contaminants during construction.

A Contaminant Overview Study (COS) was completed to identify known and/or potential sources of contamination along the proposed Route B Transmission Line alignment. Potential sources of contamination may be associated with specific activities, industries or land uses. No records were identified for properties directly within the proposed Route B Transmission Line ROW. A total of 56 records were identified in the Ecolog report for properties located within 250 m of the proposed Route B Transmission Line ROW. Potential impacts from spills exists along Highway 69/400, however, the location of identified spills could not be accurately identified. The Transmission Line may encounter contaminated soils during excavation, stripping and stockpiling of soil or any other activities that result in the disturbance of the soil and/or subsoils.

Disturbance of contaminated soils and/or subsoils may result in an accidental release of contaminants to the environment due to erosion and sedimentation of contaminated soil stockpiles and/or the improper handling and disposal of contaminated soils. Signs of soil impacts (i.e. visual and/or olfactory indicators) should be managed according to standard industry best practices during construction and decommissioning activities. Soil classification prior to disposal or replacement of soils is recommended.

General construction activities such as vehicle and machinery operation and concrete truck rinsing have the potential to change soil quality through minor contaminant releases. Spills consisting of materials that constitute a contaminant (fuels, lubricating oils and other fluids) may affect soils and will therefore have to be managed.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects due to contaminated land.

Operation

Potential effects due to the disturbance of existing contaminated lands and the release of contaminants during operation of the Transmission Line could include:

- Reduction in soil and subsoil quality due accidental release of contaminants during operation

General operations activities such as vehicle and machinery operation have the potential to change soil quality through minor contaminant releases. Maintenance activity does not typically involve the use of large quantities of fuel so the only risk of contaminant release is from maintenance truck or other vehicles. Due to the very infrequent nature of maintenance activity on a transmission line, the risk of spills during operation is very low. Spills consisting of materials that constitute a contaminant (fuels, lubricating oils and other fluids) may affect soils and will therefore have to be managed.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects due to contaminated land.

6.2.3 Wildlife and Wildlife Habitat

Construction and Decommissioning

Potential effects on wildlife and wildlife habitat, including avi-fauna and Species of Conservation Concern, during construction and decommissioning of the Route B Transmission Line include:

- Habitat change;
- Change in mortality risk; and,
- Change in behaviour.

These potential effects are discussed in further detail in the following subsections.

Habitat Change

Construction and decommissioning activities of the Transmission Line, such as site preparation, clearing of natural vegetation and blasting operations (if required), will have direct effects on wildlife habitat availability. Such habitat loss may not only decrease the resources available to populations of wildlife, but also displace wildlife. For example, the removal of forested habitats, which are generally associated with a higher number of bird nests per hectare, would result in the displacement of greater numbers of breeding birds per hectare compared to other habitats such as grasslands or agricultural fields (Calvert, *et al.* 2013). Portions of Route B Transmission Line are heavily forested, which means that linear areas of wildlife habitat may be affected in the development of the Transmission Line, resulting in some fragmentation of wildlife habitat, though on a regional scale, habitat has already undergone some fragmentation to larger extent with respect to the Highway 69 corridor and impending widening / twinning (to the west) and the Hydro One Networks Inc. (HONI) twinned corridor to the east. In addition to many bird species, mammals and reptiles require these lands for cover, foraging and hibernation sites. Blasting, if necessary, and vegetation clearing has the potential to result in disturbance to wildlife, for example, to nearby den and hibernacula sites, and destroy potential sites hidden within bedrock, if blasting is occurring in these sites. The

clearing of habitat to create temporary access roads may also cause habitat fragmentation, which will negatively impact biodiversity (Kuvlesky Jr., *et al.* 2007), and potentially increase erosion and sedimentation in wildlife habitat.

Further construction activities (i.e. construction of temporary access roads and temporary laydown areas, delivery of equipment and materials, transmission line and tower installation, installation of switching station) and decommissioning activities of the Transmission Line also have the potential to cause habitat degradation. The use of heavy machinery may result in soil compaction , and create the risk of sedimentation in nearby habitat. The potential for accidental spills (oil, gasoline, grease, and other materials that may be used/stored on-site) have the potential to contaminate wildlife habitat. Construction may also alter land contours and drainage patterns, potentially flooding dry areas, thereby changing, even in short-term, the wildlife habitat in that particular area. The Transmission Line will be constructed at a rate of approximately 1 km per week. This limits the spatial and temporal extent of potential effects, localizing the activities which may incur the potential effects discussed above. Whereas, exact sequencing of construction activities has not been completed, consistent construction activities will not be completed in all areas during the period of the construction phase. There will be periods where the activities will move to the next portion, allowing the portions of the Transmission Line to remain unaffected, or to return to relatively undisturbed state, free of human activity.

Change in Behaviour

Construction activities may effect a change in behaviour due to disturbances associated with vegetation removal, blasting (if required), installation of towers and construction of temporary access roads. Such disturbances may change wildlife behaviour should they no longer find previously-available suitable habitat, or through avoidance of areas undergoing construction.

These disturbances may lead to changes in the behaviour of various species, though without potential implications for their overall fitness. Wildlife may be displaced during activities such as site preparation, construction of temporary access roads, delivery of equipment and materials, tower and transmission line installation, installation of switching station, disassembly and removal of transmission line and components. Birds can particularly be affected, with several adverse behavioural responses to construction-related disturbance. Disturbed nesting birds may spend more time off their nests, which could result in increased nest predation, exposure of nestlings to cold and wet conditions, under-fed chicks, premature fledging, and even nest abandonment (EC, 2014). Noise can interfere with auditory communication between and within species resulting in the disruption of normal social interactions, and compromise their ability to perceive important auditory cues from their environment (Hall, *et al.* 1998). The disruption of mating vocalizations (territorial singing) of songbirds, and lekking behaviour, by noise, including construction noise, is linked to decreased nesting success in impacted species (e.g., Habib, *et al.* 2007; Francis, *et al.* 2009, 2011, 2012; Blickley, *et al.* 2012). Construction-related disturbance has also been shown to decrease the densities (Burton, *et al.* 2002; Pearce-Higgins, *et al.* 2012), and nesting success of several species of birds (e.g., Stuart-Smith, *et al.* 2012). Given that construction will occur at an approximate rate of 1 km per week, the construction activities will not be located in one area over the duration of the construction period, with the exception of the construction of the switching station. Therefore, behavioural effects are not anticipated to be consistent and over the entire duration of the construction period or across the entire study area, simultaneously. Whereas, exact sequencing of construction activities has not been completed, consistent construction activities will not be completed in all areas during the period of the construction phase. There will be periods where the activities will move to the next portion, allowing the portions of the Transmission Line to remain unaffected, or to return to relatively undisturbed state, free of human activity.

Other documented instances of the adverse effects of construction disturbance on wildlife include abandonment of dens by bears if the disturbance is within 2 km of the den (Linnell, *et al.* 2000), and avoidance of construction areas ungulates (Dyer, *et al.* 2001; Weir, *et al.* 2007; Helldin and Alvares, 2011; Helldin, *et al.* 2012), habitat for which is wide-spread throughout Route B transmission line study area. As stated above, given that construction will occur at

an approximate rate of 1 km per week with the exception of the switching station, these effects may occur but are not anticipated to be consistent over the duration of the construction within each specific area.

Changes in Mortality Risk

Certain construction activities associated with the Route B Transmission Line such as, blasting for the installation of towers (if required), the construction of temporary access roads, the movement of vehicles and equipment and the clearing of vegetation could increase mortality in a range of wildlife, especially slow-moving species and species that feed and nest on the ground. These include amphibians, reptiles, and some species of birds. Vegetation removal for the Transmission Line and access road construction may destroy nests within the construction footprint together with eggs or young if conducted within peak breeding bird timing windows.

Increased vehicular traffic on temporary access roads during construction and / or decommissioning activities may increase mortality risk resulting from collisions with vehicles and heavy equipment. A range of scientific studies that have assessed the impacts of various types of roads on wildlife suggest that road-facilitated wildlife mortality can be a major source of mortality in vertebrates, and the leading cause of anthropogenic mortality (Forman and Alexander, 1998). Given that the Transmission Line will be constructed at a rate of approximately 1 km per week, the spatial and temporal extent of potential effects will be limited to the active work areas, localizing the activities which may incur the potential effects discussed above. Once a portion (e.g. pole installation) has been completed, the activities will move to the next area, allowing completed sections to return to relatively undisturbed state, free of human activity.

Herpetiles are probably the most affected by collisions with vehicles. Amphibians and reptiles not only come into contact with large numbers of vehicles when crossing roads, but are also unable to move away quickly enough to avoid collision. This is due to their nature as slower-moving wildlife (relative when compared to mammals and birds), (e.g., Fuellhass, *et al.* 1989; Kline and Swann, 1998). Among herpetiles, snakes experience the largest increase in mortality from vehicles because they are vagile, and tend to move fast across greater distances (Jochimsen, *et al.* 2004).

The Transmission Line will be constructed at a rate of approximately 1 km per week. This limits the spatial and temporal extent of potential effects, localizing the activities which may incur the potential effects discussed above. Once a 1 km portion has been completed, the activities will move to the next portion, allowing the rest of the Transmission Line to remain unaffected, or to return to relatively undisturbed state, free of human activity.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on wildlife and wildlife habitat.

Operations

Potential effects on wildlife and wildlife habitat, including avi-fauna and Species of Conservation Concern, during operation of the Route B Transmission Line include:

- Change in behaviour; and,
- Change in mortality risk.

These potential effects are discussed in further detail below.

Changes in Behaviour

Factors likely to cause changes in wildlife behaviour during the Operations phase include preventative and routine inspections of the Transmission Line components and the switching station, and right-of-way, and vegetation management (e.g., vegetation suppression through trimming by mechanical means).

Wildlife behaviour may be affected through disturbance such as noise from maintenance activity, for example, human activity and vehicle / machinery (for trimming) use. During maintenance activities, wildlife may avoid the area until workers have cleared away.

Changes in Mortality Risk

Change in mortality risk is possible due to possible collisions with the Transmission Line or poles, or during vegetation removal as part of routine maintenance in cases where wildlife were unable to avoid vegetation removal machinery. Collision with power lines, and electrocution, kills birds each year (Kuvelsky Jr., *et al.* 2007; Drewitt and Langston, 2008). In order for electrocution to occur, the bird must be large enough to touch two transmission wire or in the in the rare instance that protective sheathing on the line has been compromised due to environmental conditions. Studies from across North America and Europe have documented mortality in various groups of birds – waterfowl, passerines, raptors, and shorebirds – due to collision and electrocution from various types of transmission lines (Ferrer, *et al.* 1998; Erickson, *et al.* 2001; Haas, *et al.* 2003; Rubolini, *et al.* 2005), however the use of monopole structures is expected to substantially reduce the risk of collisions when compared to a lattice tower structure. Certain birds are known to be particularly prone to such mortality. For example, in Norway, populations of Tetraonids (i.e. grouse, partridge and quail) were strongly impacted by mortality from collisions with high-voltage transmission lines (Bevanger, 1995) which was significantly higher in areas where average tree height was low because birds tend to fly lower when canopy height is lower (Bevanger and Brøseth, 2004). Similar species can be found within the Route B Transmission Line study area, thus such an effect is possible. Cranes (Gruidae) and Raptors (Accipitridae) are also known be to prone to high levels of powerline-related mortality owing to their small binocular fields of vision, and consequent large blind areas, which render them unable to see transmission line cabling effectively (Martin and Shaw, 2010). Bats may also come into contact with power-lines, and suffer electrocution, (MNRF, 2011) in the rare instance that protective sheathing on the line has been compromised due to environmental conditions. Therefore, collision with transmission lines is a potential but unlikely source of mortality for bats and / or birds.

Vehicular traffic on access roads, during the maintenance of pole, cabling, and other infrastructure, may continue to pose a threat to various species of wildlife, particularly amphibians and reptiles during seasons of movement between microhabitats, (as mentioned in the previous section).

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on wildlife and wildlife habitat.

6.2.4 Vegetation, Valued Ecosystems and Wetlands

Construction and Decommissioning

Potential effects on vegetation and ecological communities during construction and decommissioning of the Route B Transmission Line include:

- Change in species composition;
- Change in species diversity; and,
- Change in wetland quantity and function.

These potential effects are discussed in further detail in the following subsections.

Change in Species Diversity

A range of construction activities, including but not limited to the manoeuvring of heavy machinery, excavation, and backfilling have potential effects on soil, including compaction and / or erosion of upper soil layers (Lovich and Bainbridge, 1999), and subsequent potential deposition of eroded matter into adjacent habitat. With sufficient amount of sediment loading, species diversity in that area could change due to a change in supporting conditions, through potential die-back, which may then allow successional or more resilient invasive species to take root.

Where erosion and sedimentation occurs, wildlife habitat can be degraded (Pimentel and Kounang, 1998; Pimentel, 2006). This effect is particularly relevant where the function of ecosystems, such as wetlands, may be disrupted by the addition of sediments (Ewing, 1996; Wardrop and Brooks, 1998; Werner and Zedler, 2002) through prolonged changes in surface water drainage patterns, as this may result in effects to soil moisture and hence, change to species composition of vegetation communities. While vegetation clearing throughout the Transmission Line corridor and excavating of soil at the pole locations and at the SS will occur, it is not anticipated that this effect would be continuous or widespread.

Construction activities may also increase dust release and thus, accumulation on plants may affect photosynthesis, respiration and transpiration, which are important processes required for plant survival (Farmer, 1993).

Change in Community Diversity (including Community Loss)

Site preparation for construction of The Route B Transmission Line will include clearing of vegetation resulting in permanent loss of forest cover (for at least the life of the Transmission Line), and potential damage to vegetation as a result of soil or water contamination, due to possible spills of oils, gasoline, grease and other construction equipment materials, as well as due to materials storage and handling. Damage to vegetation may result in die-back, changing the community type and altering community diversity, and potentially also incurring loss of that community type in a very local scale. The Transmission Line will pass through ecological mosaics wherein the interspersion of member vegetation communities makes for a landscape with high community diversity. Clearing vegetation for construction may result in change in community diversity, possibly to the extent of community loss within the right-of-way, where existing mature communities may be replaced by communities more commonly associated with right-of-ways, usually earlier-successional in nature. This may change the form and function of vegetation communities. See also **Section 6.2.3 Construction and Decommissioning** – for **Wildlife and Wildlife Habitat.**

Change in Wetland Quantity and Function

Machinery used in the construction of access roads, laydown areas, transmission line and ROWs can have the potential to discharge of contaminants, such as oils, gasoline, grease, of sufficient size into wetlands altering the biochemical function. A range of construction and decommissioning activities, including the manoeuvring of heavy machinery, excavation, and backfilling, can result in compaction and / or erosion of soil, sedimentation, and have the potential to compromise wetland function (see **Section 6.2.3 Construction and Decommissioning –** for Wildlife and Wildlife Habitat). Additionally the accumulation of dust onto wetland plants from machinery and blasting may damage wetland plants primarily through physical effects such as cell destruction and blocked stomata (Spellerberg, 1998). Dust accumulation on plants may also affect photosynthesis, respiration and transpiration, which are important processes required for plant survival (Farmer, 1993).

For large silt spills, the accumulation of sediments in wetlands can alter species composition and abundance by changing nutrient concentrations, which may reduce available dissolved oxygen (Tilman, *et al.* 1997). Enrichment of wetlands with nitrogen can lead to changes in plant species composition (Wetzel and Valk, 1998).

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on vegetation, valued ecosystems and wetlands.

Operation

Potential effects on vegetation and ecological communities during construction and decommissioning may include:

- Change in species diversity; and,
- Change in community diversity.

Change in Species Diversity

Potential change to species diversity may result from the unplanned maintenance of the access roads and right-of-way, and vegetation management. Potential changes to species include the introduction of invasive species due to the increased disturbance / edge effects associated with the new Transmission Line right-of-way and due to occasional vegetation trimming beneath the Transmission Line.

Change in Community Diversity

Infrequent maintenance, which will include trimming vegetation and movement and operation of equipment, may result in changes in community diversity. As vegetation communities begin to regenerate and return to their pre-construction state, they will require management via mechanical trimming on occasion, when their height may begin to interfere with the Transmission Line. This trimming will return the vegetation communities to early successional stages, thus not allowing those communities in the right-of-way to mature.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on vegetation, valued ecosystems and wetlands.

6.2.5 Protected Areas (ANSIs, ESAs or Other Significant Natural Areas)

Construction and Decommissioning

Refer to Section 6.2.3, 6.2.4 and 6.2.6 for construction and decommissioning potential effects on protected areas.

Operation

Refer to Section 6.2.3, 6.2.4 and 6.2.6 for operations potential effects on protected areas.

6.2.6 Species at Risk

Construction and Decommissioning

Potential effects of Construction and Decommissioning of Route B Transmission Line on SAR (including Eastern Meadowlark, Bobolink, Eastern Whip-poor-will, Least Bittern, Little Brown Bat, Northern Myotis, Eastern Small-footed Myotis, Blanding's Turtle, Eastern Hog-nosed Snake, Eastern Massasauga Rattlesnake and Mountain Lion) include:

- Changes in habitat;
- Changes in mortality risk; and
- Changes in behaviour.

These potential effects are discussed generally under the Wildlife and Wildlife Habitat VEC above (**6.2.3 Construction and Decommissioning**). Additional details specific to SAR are described in the subsections that follow.

Changes in Habitat

Bird SAR

Vegetation clearing for site preparation and construction of the Route B Transmission Line has the potential to affect habitat availability and quality for SAR birds, both through direct loss of habitat within the construction footprint and fragmentation of the remaining habitat within the Route B Transmission Line study area. The bird SAR present within the Route B Transmission Line study area, including Chimney Swift, Least Bittern, Loggerhead Shrike and Eastern Whip-poor-will have some level tolerance to human disturbance of their habitat, Least Bittern being the least tolerant to disturbance; these species can all be found in open areas such as agricultural fields or in case of Eastern Whip-poor-will, forest stands regenerating after human disturbances such as logging (COSEWIC, 2009a; COSEWIC, 2011; COSEWIC, 2010).

Suitable habitat, or potential suitable habitat, for all of these species is present in the Route B Transmission Line study area and therefore alternative breeding sites may be available during the construction phase when vegetation will be initially cleared..

The Least Bittern (*Ixobrychus exilis*) is a habitat specialist with strict requirements for breeding habitat that include marshes with relatively stable water levels, which are are dominated by emergents (usually *Typha* spp.), and are interspersed with areas of open water (COSEWIC, 2009b). This species also appears to prefer habitats that are part of larger complexes (> 5-10 ha) rather than small patches with little or no contiguity with other wetlands (Gibbs, *et al.* 1992; Hay, 2006). Therefore vegetation clearing in wetlands for site preparation and construction of the Route B Transmission Line may result in the loss of Least Bittern habitat. However, this effect will be localized both spatially and temporally as both the Route B Transmission Line are proposed to be constructed at a rate of approximately 1 km per week, with intermittent disturbance.

Bat SAR

Vegetation clearing for site preparation and construction of the Route B Transmission Line has the potential to affect habitat availability and quality for SAR bats, both through direct loss of habitat within the construction footprint and fragmentation of the remaining habitat within the Route B Transmission Line study area. The bat SAR observed within the Route B Transmission Line study area, including Little Brown Bat (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and the Eastern Small-footed Myotis (*Myotis leibii*), form maternity colonies where females give birth and raise pups in the cavities of large (typically > 25 cm diameter-at-breast-height) trees that are generally in the middle stages of decay and located in open areas within mature forests (COSEWIC, 2013, Fenton and Barclay, 1980). Therefore, the removal of suitable cavity trees during vegetation clearing for construction of the Route B Transmission Line could result in a reduction of suitable maternity colony or roosting habitat for these species. However, the Route B Transmission Line study area and surrounding region are heavily forested; therefore cavity trees suitable for maternity colonies are likely not limiting to local bat populations (MNRF, personal communication, June 25, 2015). In addition, small openings in forest canopies created by human disturbances such as harvesting are used by foraging bats, whereas large openings such as clear-cuts are generally avoided by bats

as these create unfavourable windy conditions, different prey abundance, and may increase predation risk to bats (COSEWIC, 2013).

Turtle SAR

Development activities for the Route B Transmission Line study area, including site preparation and construction of temporary access roads, have the potential to result in a loss, degradation, and fragmentation of habitat for SAR turtles. The turtle SAR present in the Route B Transmission Line study area include Blanding's Turtle and Eastern Musk Turtle.

Blanding's Turtle utilize a variety of wetland habitats including but not limited to lakes, ponds, creeks, rivers, man-made channels, marshes, marshy meadows, and coastal areas; however the preferred habitats are characterized by shallow water with an organic substrate and high density of aquatic vegetation (Kofron and Schreiber 1985; Petokas 1986; Rowe 1987; Ross and Anderson 1990; Rowe and Moll 1991; Pappas and Brecke 1992; Ernst et al. 1994; Power et al. 1994; Herman et al. 1995; Joyal et al. 2001; Gillingwater and Brooks 2001, 2002).

Wetland habitat is abundant throughout the Route B Transmission Line study area. Where suitable habitat for Blanding's Turtle may be affected, it is usually along the edge or removal of a small portion of a greater wetland polygon, which would continue to provide habitat for turtle species located within proximity to the affected area.

Snake SAR

Development activities for the Route B Transmission Line study area, including site preparation and construction of temporary access roads, have the potential to result in a loss, degradation, and fragmentation of habitat for SAR snakes. Snake SAR present in the Route B Transmission Line study area include Massasauga Rattlesnake and Eastern Hog-nosed snake.

Massasauga Rattlesnakes have three essential habitat requirements: gestation sites, hibernation sites and foraging habitat (Johnson, *et al*. 2000). In general, Massasauga Rattlesnake can inhabit a wide variety of communities including wet prairie and old fields to peatlands, bedrock barrens, and coniferous forests (COSEWIC, 2012). Meanwhile, Eastern Hognose snake utilize open woods, brushlands and / or forest edges with loose or sandy soil (COSEWIC, 2007). Generally speaking, the preferred habitat of the Eastern Hog-nosed Snake consists of loose or sandy well drained soil, with open vegetation cover that is close to water (Platt, 1969). Therefore construction activities, including but not limited to blasting or vegetation clearing in open habitats, peatlands, forested habitats and / or in close proximity to the shoreline could result in loss of SAR snake habitat.

Of these two snake species, Massasauga Rattlesnake was observed throughout the Route B Transmission Line study area. Development activities for Route B Transmission Line, including site preparation and the construction of temporary access roads, have the potential to result in a loss, degradation and fragmentation of habitat associated with areas suitable for gestation and hibernation. Gestation and hibernation sites are dictated by the habitat available (COSEWIC, 2012). Within the Route B Transmission Line study area, gestation and hibernation sites would generally be within the areas of rock barren and isolated peatland respectively. Given that Massasauga Rattlesnake have a home range of 1-135ha and are known to hibernate/gestate within 40-100m of previous year locations (COSEWIC, 2012), loss of a particular gestation site or hibernation site should not have detrimental effects on an individual of the species since gestation and hibernation habitat is found throughout the Route B Transmission Line study area.

<u>Change in Mortality Risk</u>

The main factors associated with increases in the mortality risk faced by SAR are nesting disturbance due to vegetation removal, blasting and collisions with vehicles on temporary access roads. Collision with vehicles on

temporary access roads can pose a threat to several species of wildlife, including the SAR reptiles recorded within the proposed Transmission Line landscape (as described above in **Section 6.2.3 Construction and Decommissioning** – **Wildlife and Wildlife Habitats**).

Bird SAR

Route B Transmission Line construction activities, particularly vegetation removal, may increase the risk of mortality to bird SAR recorded in the Route B Transmission Line study area including Eastern Meadowlark, Bobolink, Eastern Whip-poor-will and Least Bittern. Both Eastern Meadowlark and Bobolink breed in open grassland habitats such as prairies or pastures (COSEWIC, 2011; COSEWIC, 2010). Eastern Whip-poor-wills prefer to nest in semi-open forests with clearings such as barrens or regenerating forests (COSEWIC, 2009a). Finally, Least Bittern nests strictly in marshes with stable water levels and high levels of interspersion (COSEWIC, 2009b). Disturbance to nest sites for these species during construction of the Route B Transmission Line, including through vegetation clearing, excavation or blasting, could result in the mortality of adult and juvenile bird SAR, if suitable habitat and species are present within the blasting zone or the area of vegetation to be cleared.

Bat SAR

Route B Transmission Line construction activities may increase the risk of mortality to bat SAR recorded in the Route B Transmission Line study area including Little Brown Bat, Northern Myotis and the Eastern Small-footed Myotis, particularly if vegetation removal includes cavity trees which contain active maternity roosts. Little Brown Bats roost in warm sites including buildings, under bridges, in rock crevices, or in cavities trees (COSEWIC, 2013). Northern Myotis roost in large diameter (25-44 cm DBH) trees (COSEWIC, 2013). Eastern Small-footed Myotis are most often found in and around man-made structures although they can also be found in tree hollows, under bark and with rock crevices (Fenton and Barclay, 1980). In general, both the Little Brown Bat and the Northern Myotis roost in open areas of mature forest within tall, large diameter snags that are in early to moderate stages of decays (Jung, et al. 2004). Disturbance to active roost sites, including maternity colonies, of these species during construction of the Route B Transmission Line through vegetation clearing, could result in the mortality of bat SAR, if active maternity roosts are present within the area of vegetation to be cleared.

Turtle SAR

Construction activities for the Route B Transmission Line, especially vegetation removal and blasting, may increase the risk of mortality to SAR turtles known to occur in the study area, including Blanding's Turtle and a Restricted Species.

Nesting Blanding's Turtle females are attracted to the gravel along roadways (Standing, *et al.* 1999, Congdon, *et al.* 2000). Increases in road density and vehicular traffic, resulting from construction, lead to greater mortality not only for nesting females but also hatchlings. Nesting success and, therefore, overall fecundity, increases with age (Congdon, *et al.* 2001). Consequently, the loss of older females from the population can have a disproportionately large effect on population growth trends, compared to mortality in younger age classes. Blanding's Turtle may exhibit some tolerance to disturbance as they have been observed nesting in disturbed areas, such as road sides.

Disturbance to turtle nesting sites during the nesting period, or hibernation sites during the overwintering period, could result in the mortality of SAR turtles.

Snake SAR

Construction activities for the Route B Transmission Line, especially vegetation removal and blasting, may increase the risk of mortality to SAR snakes known to occur in the study area, including Eastern Massasauga Rattlesnake and Hog-nosed Snake. The federally Threatened Eastern Hog-nosed Snake is known to be a particularly vagile but slow snake, and therefore vulnerable to collisions with vehicles (COSEWIC, 2007). The network of temporary

access roads to be constructed within the proposed Transmission Line landscape is likely to contribute to the mortality rates of this SAR snake.

Mortality from roads is an important factor associated with the decline of the Threatened Eastern Massasauga Rattlesnake (in recent years (COSEWIC, 2012), and continues to be a major threat to already declining populations of this species (Middleton and Chu, 2004). Population Viability Analyses suggest that high levels of adult mortality (relative to population size) can eliminate Massasauga populations (Miller, 2005). The construction of temporary access roads will not be a barrier to movement but could increase mortality in the species due to collisions.

Disturbance to gestation sites and / or nesting sites during the spring, or hibernacula during the hibernation period, could result in the mortality of SAR snakes.

Changes in Behaviour

Construction activities such as site preparation, construction of temporary access roads, delivery of equipment and materials, tower and transmission line installation and installation of switching station, as well as future decommissioning and disassembly and removal of the Transmission Line and its components have the potential to cause change in behaviour in the various SAR in the area. Generally, where human activity is unusual and thus disruptive, wildlife will change their routine behaviour and will wish to avoid the area. Construction and decommissioning will occur at a rate of 1 km per week and intermittently, ensuring that such potential effects will be limited in spatial and temporal extent.

Bird SAR

Construction activities for the Route B Transmission Line, such as vegetation removal and blasting, may result in change in behaviour due to disturbance by bird SAR, including Least Bittern, Bobolink, Eastern Meadowlark, Eastern Whip-poor-will, and Chimney Swift. Birds will be most vulnerable to construction-related disturbance effects during the nesting and young-rearing times in spring / early summer. Disturbance to SAR birds during construction or decommissioning activities in the breeding season may result in decreased breeding success of nesting birds (EC, 2014). Birds disturbed during the breeding season may spend more time off of the nest, which can lead to increased nest predation, exposure of nest and its occupants to cold temperatures and wet conditions, malnourished chicks, premature fledgling, and nest abandonment (EC, 2014).

Bat SAR

The bat SAR recorded within the Route B Transmission Line study area, including Little Brown Bat, Northern Myotis and Tri-colored Bat, form maternity colonies where females give birth and raise pups in the cavities of large (typically > 25 cm diameter-at-breast-height) trees that are generally in the middle stages of decay and located in open areas within mature forests (COSEWIC, 2013). Therefore, the removal of suitable cavity trees during vegetation clearing for construction of the Transmission Line could result in a reduction of suitable maternity colony or roosting habitat for these species. However, the Route B Transmission Line study area and surrounding region are heavily forested; therefore cavity trees suitable for maternity colonies are likely not limiting to local bat populations (MNRF, personal communication, June 25, 2015). In addition, small openings in forest canopies created by human disturbances such as harvesting are used by foraging bats, whereas large openings such as clear-cuts are generally avoided by bats as these create unfavourable windy conditions, different prey abundance, and may increase predation risk to bats (COSEWIC, 2013).

Turtle SAR

Construction activities such as vegetation removal, blasting creation of temporary access roads and temporary access road use by construction vehicles, through a perceived increase in nesting habitat may result in a change of behaviours exhibited by turtle SAR recorded in the Route B Transmission Line study area including Blanding's

Turtle. Turtles will be most vulnerable to disturbance from construction activities while nesting and travelling to nesting sites in the spring and early summer. In general, little is known regarding overwintering requirements of Blanding's Turtle, however they are known overwinter in pools or slow moving streams approximately one (1) m in depth (COSEWIC, 2005). Blanding's Turtle may exhibit some tolerance to disturbance as they have been observed nesting in disturbed areas including roadways, however, disturbance to nesting sites during the nesting period, or hibernation sites during the overwintering period, could result in changes in behavior through avoidance of particular areas, or potentially the inability to nest successfully or be disrupted during hibernation.

Snake SAR

Construction activities, particularly blasting and vegetation removal may cause disturbance to SAR Snakes, resulting in change in behaviour. The snake SAR present in the study area include Massasauga Rattlesnake and Eastern Hog-nose snake. Eastern Hog-nosed Snake appear intolerant of anthropogenic disturbance as the species is documented to experience higher mortality rates in or near urban areas (COSEWIC, 2007). SAR snakes in the Route B Transmission Line may exhibit change in behavior due to disturbance during construction and decommissioning activities during the gestation, nesting and hibernation periods.

See also **Section 6.2.3 Construction and Decommissioning** – **Wildlife and Wildlife Habitat**.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on SAR.

Operations

Potential effects on SAR during operations of the Route B Transmission Line may include:

- Habitat Change;
- Change in Behaviour; and,
- Change in Mortality Risk.

Habitat Change

Potential effect in the form of habitat change may occur as a result of preventative and routine inspections of the Transmission Line components and of the switching station, the unplanned maintenance of the transmission line right-of-way, and, moreso, during vegetation management (e.g. vegetation trimming through mechanical means). Habitat change will largely have occurred during the construction phase (see **Section 6.2.5.2 Operations** – **Wildlife and Wildlife Habitat**), however, as vegetation below the transmission lines will regenerate after initial disturbance and grow, it will require periodic trimming to maintain it at a level such that it will not interact with transmission lines. As the vegetation is regenerating, it progresses to a return to the habitat type available to SAR prior to disturbance; however, trimming the vegetation will negate that, resulting in a mild recurring change in habitat each time. As SAR will have already been impacted by the primary habitat change effects during construction, the effect during operations is present albeit at a reduced scale, relatively.

Changes in Mortality Risk

As in the case of the Construction and Decommissioning phase (see **Section 6.2.3 Construction and Decommissioning** – **Wildlife and Wildlife Habitat**), the two main sources of mortality during the Operations phases are collision with power-lines and other infrastructure and electrocution , and collision with vehicles along the permanent access roads (see **Section 6.2.3 Operations** – **Wildlife and Wildlife Habitat**). In order for electrocution to occur, the bird must be large enough to touch two transmission wire or in the in the rare instance that protective sheathing on the line has been compromised due to environmental conditions. The former source of mortality is expected to impact mainly birds, including the threatened Canada Warbler, Least Bittern, Chimney

Swift, and Loggerhead Shrike, and to a much lesser extent, bats including the Little Brown Bat, Eastern Small-footed Bat, and the Northern Myotis. The latter source, permanent access road-related mortality, is more relevant to reptiles, including the Threatened Blanding's Turtle, Eastern Hog-nosed Snake, and Eastern Massasauga Rattlesnake.

Bird SAR

Change in mortality risk for birds is a potential effect resulting from collision with the transmission line infrastructure and, at times, electrocution. Collision with power lines has been documented as causing mortality in various species of birds in Canada each year (Rioux, et al. 2013). Although collision with power lines is expected to increase mortality in all the bird and bat SAR within the proposed Transmission Line landscape, studies show that Least Bittern might be particularly vulnerable. The Least Bittern is known to suffer mortality due to collision with various man-made structures, particularly in the vicinity of wetlands (COSEWIC, 2009b).

Bat SAR

Although no statistics specific to mortality due to collision with power lines is available for bats, particularly the three (3) SAR bats found within the proposed Transmission Line landscape, by virtue of being aerial species, the possibility of their coming into contact with power lines, in flight, does exist. The Little Brown Bat, Northern Myotis, and Eastern Small-footed Myotis may, thus, be impacted by the installation of the Transmission Lines through their habitat.

Changes in Behaviour

Change in behaviour is an effect resulting from potential avoidance of areas during operations due to disturbance, e.g. during preventative and routine inspections of the transmission line components and the switching station, and during the vegetation management via mechanical trimming. Whereas these factors apply to wildlife, in general, there is no empirical evidence to suggest that any of the SAR being discussed here will be adversely impacted by them to a significant scale. The SAR may avoid a particular area when increased human activity / presence is detected, though such maintenance will be infrequent in nature and short in duration.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on SAR.

6.2.7 Fish and Fish Habitat and Rare Aquatic Species

6.2.7.1 Fish and Fish Habitat

Construction and Decommissioning

Potential effects on fish and fish habitat during construction and decommissioning of the Transmission Line include:

- Changes in fish habitat (including habitat for other aquatic biota such as invertebrates)
- Changes in fish mortality risk (including other aquatic biota such as invertebrates)

Under the Fisheries Act, fish habitat is defined as "spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life process" (Government of Canada, 1985). Potential effects on fish and fish habitat resulting from construction/decommissioning activities are primarily related to erosion and sedimentation into waterbodies. Construction and installation of access roads, the switching station, laydown areas, tower foundations, and transmission lines will require equipment access for site preparation. Disturbance to surficial soils associated with clearing of riparian vegetation in close proximity to waterbodies can result in an increased risk of erosion. Changes to suspended sediment concentrations caused by

water runoff from disturbed waterbody banks and riparian areas can lower the productivity of aquatic systems and have detrimental effects on the health of fish (DFO, 2010a).

While all tower foundations, temporary work areas, and the switching station will be located above the high-water mark, there remains a potential for alteration or permanent loss of available fish habitat at locations where access roads are proposed across waterbodies. At these locations, the permanent footprint of water crossing structures (e.g., culverts) replaces available fish habitat on the streambed and watercourse banks. Additionally, removal of riparian vegetation reduces the amount of organic matter input to waterbodies, which in turn may reduce the amount of available food and shelter for aquatic species (DFO, 2010b).

Changes in fish habitat may result due to increased contaminants in surface water and on waterbody banks. Where construction vehicles and machinery are in operation within 30 m of a waterbody there is potential for minor contaminant releases due to fuel and engine fluid leaks, accidental spills and equipment washing (e.g., concrete trucks).

Changes in fish mortality risk may occur due to blasting vibration near waterbodies, although unlikely, during the construction of the tower foundations, access roads, and installation of towers and Transmission Lines. Blasting and its resulting vibration have potential to cause harm to fish and eggs, due to release of high velocity particles, dust, and blast residues (DFO, 2014). No in-water blasting will occur during construction.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on fish and fish habitat.

Operation

General operations activities such as such as the accidental release of contaminants from vehicles and machinery have the potential to change fish habitat through minor contaminant releases.

Natural build-up of debris at existing access road water crossings (e.g., culverts) that require upgrades during construction can cause flooding and may change local drainage patterns resulting in changes to fish habitat (e.g., barriers to movement).

During the operation stage of the Transmission Line, a change in fish mortality risk is not anticipated.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on fish and fish habitat.

6.2.7.2 Rare Aquatic Species

Construction and Decommissioning

Potential effects on rare aquatic species, such as the provincially protected Lake Sturgeon, during construction and decommissioning of the Transmission include:

- Changes in rare aquatic species habitat
- Changes in rare aquatic species mortality risk

Potential effects on Lake Sturgeon, Silver Lamprey and Northern Brook Lamprey are primarily associated with erosion and sedimentation into waterbodies with records of the species (i.e., for Lake Sturgeon these waterbodies are: Key River, Magnetawan River, Giroux River, Naiscoot River; whereas Silver and Northern Brook Lamprey may potentially be found in Key River, Still River, Magnetawan River, Naiscoot River and Shebeshekong River). While no in-water work is proposed for these waterbodies, it is possible that work above the high-water mark could result

in decreased soil stability resulting in erosion and sedimentation. Potential effects on fish habitat as previously discussed in **Section 6.2.7.1** also apply to Rare Aquatic Species.

Transmission Line tower foundations could require blasting for installation, which presents a mortality risk to fish, larvae and their eggs, as they are sensitive to vibration and sudden changes in pressure. Effects from blasting without appropriate measures to reduce vibration and projections of blast rock and dust could result in increased mortality risk for Lake Sturgeon, Silver Lamprey and Northern Brook Lamprey if they are nearby during these activities. A discussion of changes in fish mortality risk associated with the Transmission Line is found in **Section 6.2.7.1**.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects due to rare aquatic species.

Operation

See **Section 6.2.7.1** for potential effect on rare aquatic species during operations.

6.2.8 Surface and Groundwater

6.2.8.1 Surface Water

Construction and Decommissioning

Potential effects on surface water during construction and decommissioning of the Transmission Line include:

- Changes in surface water quality
- Changes in surface water quantity

Changes to surface water quality could occur wherever erosion is possible. Erosion of soils into nearby watercourses could occur as a result of dewatering discharge, installation of water crossings, and equipment use. Site preparation activities near watercourses such as vegetation clearing, soil grading, and blasting may result in unstable soils susceptible to erosion (DFO, 2010a). Blasting of bedrock that may be required to support construction of the Transmission Line also has the potential to release high velocity particles, dust, and blast residues, and may change surface water quality through sedimentation (DFO, 2014).

In addition to changes in levels of suspended sediment, contamination of surface water could occur through accidental spills from vehicle and machinery operation near waterbodies and watercourses. Other activities potentially resulting in contaminant release to surface water include equipment washing (e.g., concrete trucks). Construction dewatering during access road water crossing installation and excavations of tower foundations has the potential to change surface water quantity. Where dewatering occurs, water levels may be temporarily lowered during construction. Changes to surface water quantity during construction resulting from grading, blasting and rock removal, placement of fill, and temporary stockpiling at or near watercourses have the potential to change surface water drainage patterns. However, grading, blasting, rock removal, placement of fill and stockpiling only has the potential to occur at transmission tower locations and at temporary access road installations and blasting requirements are considered unlikely and will only be required as a last resort if preferred tower installation techniques such as drilling into rock for foundation installation proves unfeasible at some sites. Overland surface water flow direction and volume could change as a result of loss of vegetation, changes in surficial topography, and changes in surficial soils.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on surface water.

Operation

Potential effects on surface water during operation phase of the Transmission Line include:

- Changes to surface water quality

During the operations phase of the Transmission Line, maintenance vehicles travelling along access roads have the potential to change surface water quality through minor contaminant spills and air and dust emissions.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on surface water.

6.2.8.2 Groundwater

Construction and Decommissioning

Potential effects on groundwater during construction and decommissioning of the Transmission Line could include:

- Changes in groundwater quantity;
- Changes in groundwater quality; and

The creation of impervious surfaces through the construction of roads and vegetation clearing has the potential to reduce groundwater recharge quantities and rates. There will be very few new impervious surfaces associated with construction of the transmission line. Construction of the SS, tower foundations and potential compaction along new temporary access roads are the only areas where new impervious surfaces could occur. Increased areas of impervious surfaces from construction areas may result in a change in direction, quantity and rate of surface run off, however this potential effect is anticipated to be very small.

Blasting of bedrock that might be required to support construction of the transmission line structures also has the potential to change groundwater quantity and quality. In rare cases, vibrations from blasting in bedrock can alter the fracture geometry, open new fractures, change the aperture of existing fractures, or permanently change local groundwater flow patterns. Groundwater quality may also be affected through agitation of subsurface conditions and the potential release of fine particulate and/or soluble substances. Five (5) MOECC water well records are located within the proposed Transmission Line ROW. Three (3) of which are wells used for domestic and public supply purposes. Thirty-six MOECC water well records are located within 100 m of the Transmission Line and new temporary construction access roads, of which 87% of the wells are for domestic or commercial supply purposes, while the remaining 13% of wells have no recorded well use. In the event a groundwater supply well is located within the area where ground vibration results from blasting activities, groundwater supply wells may become physically damaged and result in a reduction in well yield and/or water quality.

General construction activities such as vehicle and machinery operation and concrete truck rinsing have the potential to change groundwater quality through minor contaminant releases. Spills consisting of materials that constitute a contaminant may affect groundwater and will therefore have to be managed.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on groundwater.

Operation

Potential effects on groundwater during operation of the Transmission Line could include:

- Changes in groundwater quality

General operations activities such as vehicle and machinery operation have the potential to change groundwater quality through minor contaminant releases. Spills consisting of materials that constitute a contaminant may affect groundwater and will therefore have to be managed.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on groundwater.

6.2.8.3 Hazard Lands[6]

Construction and Decommissioning

Potential effects due to geological hazards during construction and decommissioning of the Transmission Line could include:

- Increased risk for soil and/or rock instability (rock falls, landslides, geological hazards).

Geological hazards that may occur along the proposed Transmission Line include rock instability and seismic activity. Rock stability is controlled by several processes, including; geological discontinuities (faults, joints and bedding planes), weathering caused by groundwater and surface water movement, strength of the soil/rock, geotechnical parameters, method of construction activities (shovel or blasting), dynamic forces (seismic activity, blasting) and geometry of the slope (height and angle of slope) (Patton and Deere, 1970) . During construction and decommissioning of the Transmission Line the use of heavy machinery may increase pressure on existing weaknesses within the rock structure, resulting in slope failure or rock falls. Blasting activities required for the installation of transmission line poles may introduce dynamic forces on the rock and result in slope failure or rock falls. Blasting of bedrock during Installation of access roads has the potential to change topography and increase the risk for slope instability.

Natural changes in topography along the Transmission Line occurs frequently and results in changing conditions in slope stability. The Transmission Line may encounter land with compromised rock and/or soil stability where an increase in slope angle occurs or where the Transmission Line transects relatively high elevation bedrock knobs. Operating heavy machinery in these areas may result in slope failure resulting in rock falls. Clearing of vegetation on slopes can result in either increased rates of erosion or higher frequencies of slope failure. Conversely, constructing in relatively low elevation areas near overhanging rock walls that are susceptible to rock falls from higher elevations poses a health and safety risk to workers.

The probability of substantial seismic activity to occur is considered low; therefore, no potential effects are anticipated.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on hazard lands.

Operation

Blasting of bedrock or the use of heavy machinery will not be required during operations; therefore, there is no effect expected during the operating phase of the Transmission Line.

As discussed previously, the probability of substantial seismic activity to occur is considered low; therefore, no potential effects are anticipated.

6. *Hazard Lands are unstable lands subject to erosion*

6.2.9 Air Quality

Construction and Decommissioning

Potential air quality effects during the construction and decommissioning phases of the Route B Transmission Line include:

- Vehicle and equipment combustion emissions contributing to a reduction in local air quality; and
- Nuisance effects related to dust generation from vehicle access and construction activity contributing to a reduction in local air quality.

Vehicle and equipment emissions and dust generated by construction and decommissioning activities will contribute to GHGs (e.g., methane, and carbon dioxide), nitrogen dioxide, sulphur dioxide and particulate matter. The emissions levels will fluctuate through the various construction and decommissioning related activities, with access road construction / reclamation, site grading, and preparation / reclamation of staging and laydown areas having the highest potential for emissions because of increased construction or decommissioning equipment activities during this time. Emissions from construction activity are not anticipated to result in a measureable increase in local or regional air quality parameters.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on air quality.

Operation

Potential effects on air quality are not anticipated during the operation phase of Transmission Line.

6.2.10 Noise

Construction and Decommissioning Effects

Disturbance from noise and vibration from heavy machinery related to the transportation and installation of Route B Transmission Line components is discussed under **Section 6.2.3 Wildlife and Wildlife Habitat**, **Section 6.2.12 Neighbourhood and Community Character, Section 6.2.15 Recreation, Cottaging and Tourism, Section 6.2.19 Game and Fishery and Section 6.2.22 Aboriginal Land Use and Resources.**

Operation

Disturbance from noise associated with the operation phase, including operation of the Route B Transmission Line infrastructure and maintenance activities such as vegetation trimming throughout the Route B Transmission Line ROW, is discussed under **Section 6.2.3 Wildlife and Wildlife Habitat**, **Section 6.2.12 Neighbourhood and Community Character, Section 6.2.15 Recreation, Cottaging and Tourism, Section 6.2.19 Game and Fishery and Section 6.2.22 Aboriginal Land Use and Resources.**

6.2.11 Economic Base, Employment and Labour Supply, and Local Businesses

Construction and Decommissioning

Potential effects on the economic base, employment and labour supply and local businesses within the Route B Transmission Line socio-economic study area are anticipated as a result of the activities during construction and decommissioning phases. These potential effects, which are described in further detail below, include:

- Positive effect on the economic base, specifically for the "construction" and "retail" industries as a result of revenue generation;
- Positive indirect and induced economic benefits based on a small increase of the local workforce for the construction and decommissioning phases;
- Job creation for local workers;
- Positive effect on local businesses (specifically construction suppliers and services); and
- Increased demand for local goods and services.

Two of the largest industry sectors within the Parry Sound district are "construction" and "retail"; these sectors make up 40% of Parry Sound's economic base (Statistics Canada, 2011g). There will be a positive effect on the construction industry as it is expected that local construction suppliers and skilled tradespeople will service the Transmission Line during construction and decommissioning activities. Similarly, the retail industry may experience positive effects as there is potential for increased spending by the local workforce.

Construction and decommissioning activities will create approximately 85-115 jobs at the peak of construction activity. This will provide an opportunity for increased local and First Nation employment within the Route B Transmission Line socio-economic study area. This increase of employment opportunity to the local population and the small increase of workers from outside of the socio-economic study area will result in small, but positive direct, indirect and induced effects to the local economy. The direct effect will be job creation, specifically employment for road construction, site remediation activities and decommissioning / abandonment activities. Additionally, there will be an increased demand for goods and services related to construction needs, specifically for road construction, equipment and supplies, vehicle rental, site remediation activities, housing and decommissioning / abandonment activities. Local businesses (specifically construction suppliers and services) are expected to benefit from the small increase of local workforce demand for services during the construction and decommissioning phases. Local municipalities within the study area will benefit by maximizing local employment and procurement of local goods and services. Indirect effects of employment will benefit service industries, including suppliers for materials. Induced effects will occur as workforce spending for local goods and services is also expected to increase during the construction phase.

No potential adverse effects on local institutions and public facilities are anticipated during construction and decommissioning activities as these facilities are located more than 1 km from the proposed Route B Transmission Line.

No potential adverse effects on the economy are anticipated during construction and decommissioning activities for the Route B Transmission Line.

Operation

No potential effects on economic base, employment and labour supply, and local businesses are expected during the operation phase. There will not be an increase in local workforce during the operation phase.

6.2.12 Neighbourhood and Community Character

Construction and Decommissioning

Potential effects on neighbourhood and community character are anticipated during the construction and decommissioning phases for Route B Transmission Line. These potential effects, which are described in further detail below, include:

- Disturbance to local permanent and seasonal residents due to noise and vibration generated during construction and decommissioning phases.

Communities (including the Aboriginal communities of Magnetawan Reserve No. 1 and Shawanaga Reserve No. 17) within the Route B Transmission Line study area may be affected by the visual evidence of construction and decommissioning activities. Removal of vegetation for the creation of the Transmission Line ROW, access roads and laydown areas, and short term storage of construction equipment and materials on private land (including land on First Nation Reserves) may affect some permanent and seasonal residents in communities throughout the Route B Transmission Line study area.

Potential noise and vibration could be caused by construction activities such as site preparation and blasting for the installation of access roads, Transmission Lines, SS and temporary construction areas. Potential noise and vibration could also be caused by decommissioning activities such as removal of Transmission Line infrastructure, including the tower, aboveground cables / poles, and otherwise restoring the premises to a condition similar to what existed prior to the Route B Transmission Line.

Temporary construction noise from vehicles and other equipment have the potential to be heard within 1 km of active construction areas and may be audible beyond 1 km for blasting activities (MOECC, 2008). Vibration from construction, including blasting, should not be evident beyond 500 m from the vibration source (MOECC, 1985). It is expected that the construction for approximately every four (4) towers will take no longer than one (1) week to complete. As such, disturbance from noise and vibration to permanent and seasonal residents from construction and decommissioning activities will be short term in duration and specific to each construction site. Local residents in many communities throughout the Route B Transmission Line study area currently experiences anthropogenic noise from the existing Highway 69/400.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on neighbourhood and community character.

Operation

Potential effects on neighbourhood and community character are anticipated as a result of the operation phase for the Route B Transmission Line. These potential effects, which are described in further detail below, include:

- Disturbance to local permanent and seasonal residents due to noise from maintenance activities;
- Disturbance to local permanent and seasonal residents due to noise associated with SS operation; and
- Effect on the visual character of some communities as perceived by permanent and seasonal residents on private lands or community spaces within the Route B Transmission Line study area.

Both routine and unplanned maintenance activities are anticipated to be infrequent and short in duration; however, some communities (including Aboriginal communities) may be affected by the intermittent noise from maintenance activities (e.g., mechanical vegetation control).

In addition operational noise from the SS may be audible in close proximity. Estimated sound levels will be determined during detailed design and will be within provincial guidelines at all noise-sensitive land uses. Residents near the SS location currently experience anthropogenic noise from Highway 400 and other regional roads.

Vegetation control and the presence of Transmission Line towers on private land and in community spaces will affect the visual character of some communities as perceived by permanent and seasonal residents. Communities (including Aboriginal communities of Magnetawan Reserve No. 1 and Shawanaga Reserve No. 17) may be affected by the visual presence of the transmission towers and wires throughout the operation phase of the Route B Transmission Line.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on neighbourhood and community character.

6.2.13 Community Services and Infrastructure

Construction and Decommissioning

Potential effects on the community services and infrastructure within the Route B Transmission Line socio-economic study area are anticipated as a result of the activities during construction and decommissioning phases. These potential effects, which are described in further detail below, include:

- Increased demand on medical services in Parry Sound and Sudbury

The majority of the approximate 85-115 jobs expected to be created at the peak of construction activity will likely be performed by local workers while a small amount of workers may relocate to the Route B Transmission Line socio-economic study area. As the number of non-local workers is expected to be small and it is considered unlikely the workers would relocate their families for seasonal employment, it is not expected that community services, such as daycares will be affected. However, there is potential that the workforce carrying out construction and decommissioning activities may affect the demand on emergency services and health care facilities within the nearest municipalities.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on community services and infrastructure.

Operation

No potential adverse effects are expected on community services and infrastructure during the operation phase as there will not be an increase in local workforce to increase the demand of community services and infrastructure.

6.2.14 Traffic

Construction and Decommissioning

Potential effects on traffic are anticipated as a result of the activities during construction and decommissioning phases for Route B Transmission Line. These potential effects, which are described in further detail below, include:

- Delays in traffic during construction and decommissioning phases.

The number of workers commuting to active construction sites daily and the delivery and removal of construction equipment, materials and waste increases the potential for traffic related incidents on the highways and regional roads within the Route B Transmission Line study area. These potential incidents, as well as traffic slowing to enter and exit access roads from the highway and regional roads, may contribute to delays in traffic.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on traffic.

Operation

No potential effects on traffic are anticipated during the operation phase of Route B Transmission Line. There will be a very small workforce working on an intermittent basis. The smaller workforce and associated vehicles are not anticipated to have any effect on existing traffic conditions.

6.2.15 Recreation, Cottaging and Tourism

Construction and Decommissioning

Potential effects on recreation, cottaging and tourism are anticipated during the construction and decommissioning phases of the Route B Transmission Line. These potential effects, which are described in further detail below, include:

- Avoidance of recreational areas near the Route B Transmission Line due to noise and vibration;
- Avoidance of recreational areas near the Route B Transmission Line due to dust; and,
- Temporary disruption of access to existing recreational trails that will be used for construction access.

Potential noise and vibration could be caused by construction activities such as site preparation and blasting for the installation of access roads, Transmission Line towers, the SS and temporary construction areas. Potential noise and vibration could also be caused by decommissioning activities such as removal of access roads, removal of Transmission Line towers and the SS and restoring the premises to a condition similar to what existed prior to the Route B Transmission Line. It is expected that the construction for approximately every four (4) towers will take no longer than one (1) week to complete. As such, disturbance from noise and vibration to recreational users, cottagers and tourists will be intermittent, site specific and limited to the construction and decommissioning phases at each construction site.

Temporary construction noise from vehicles and other equipment has the potential to be heard within 1 km of active construction sites and may be audible beyond 1 km for blasting activities (MOECC, 2008). Additionally, temporary vibration from construction and decommissioning activities has the potential to affect some cottagers, tourists and recreational users within 500m of active construction sites (MOECC, 1985). Many of the recreational land users, cottagers and tourists within the Route B Transmission Line study area currently experience anthropogenic noise from Highway 69.

Dust is expected to increase during construction and decommissioning activities due to increased operation of construction vehicles and equipment throughout both phases. Blasting activities will also result in an increase of dust. Dust may cause temporary avoidance of recreational areas near active construction sites.

New temporary access roads will be constructed to enter areas where existing roads / trails do not reach the Route B Transmission Line ROW and in areas where the ROW crosses an impassable feature (e.g. waterbody, wetland, cliff face) to allow construction equipment access to the Route B Transmission Line. The intent of these access roads is to avoid, or mitigate to the best feasible extent, effects on water resources and wetlands. No full closures of trails are anticipated; however, existing trails used for recreational purposes (i.e., ATV and snowmobile use,

hunting and fishing) may be temporarily disrupted due to the upgrading of existing access road and trails or creation of new roads and trails.

Potentially affected trails in the area include: multiple snowmobile trails maintained by the North East Georgian Bay Snowmobile Club, Carling Trailblazers Snowmobile Club and South Seguin Snowmobile Club.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on recreation, cottaging and tourism.

Operation

Potential effects on recreation, cottaging and tourism are anticipated during the operation phase of the Route B Transmission Line. These potential effects, which are described in further detail below, include:

- Disturbance to recreational users, cottagers and tourists due to noise related to maintenance activities;
- Disturbance to recreational users, cottagers and tourists due to noise related to SS operation;
- Avoidance of nearby recreational areas by tourists and other recreational users due to the changes to the landscape and views ; and

The noise created by maintenance activities is associated with periodic vegetation management and other irregular maintenance activity and will be temporary and infrequent. Operational noise from the SS may be audible in close proximity to the SS; estimated sound levels will be determined during detailed design and will be within provincial guidelines at all noise-sensitive land use areas and receptors. Recreational land users, cottagers and tourists near the SS location currently experience anthropogenic noise from Highway 400 and other regional roads.

The operation activities (such as infrequent maintenance of vegetation) may result in changes that affect the local landscape as currently perceived by cottagers, tourists, and recreational users. The perceived changes in landscape could cause avoidance of the nearby recreational areas within the proposed Route B Transmission Line socio-economic study area.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on recreation, cottaging and tourism.

6.2.16 Public Health and Safety

Construction and Decommissioning

Potential effects on public health and safety within the Route B Transmission Line study area are anticipated as a result of construction and decommissioning phases. These potential effects, which are described in further detail below, include:

- Increased potential for traffic related incidents on Highway 69/400 and regional roads.

Public health and safety effects on surrounding communities will be low and temporary. There is potential for a local risk to public safety for community members accessing Magnetawan Reserve No. 1, Point Au Baril, Shawanaga Reserve No. 17, the Town of Parry Sound and other entrances from Highway 69/400 due to the ingress and egress of traffic onto Highway 69/400 as a result of transportation of equipment and materials to the construction site. This effect will be intermittent throughout the construction and decommissioning phases.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on public health and safety.

Operation

No potential adverse effects on public health and safety are anticipated from the Transmission Line during the operation phase, including from electromagnetic fields (EMF). EMFs are a combination of invisible electric and magnetic fields that are often a point of public concern. The Hydro One statement on EMFs states: "Both national and international health agencies, including Health Canada and the World Health Organization, have concluded that the scientific research does not demonstrate EMFs cause or contribute to adverse public effects." (Hydro One, 2008). In addition, Health Canada states that any warning to the public to avoid living near or spending time in proximity to power lines is not required. The Transmission Line infrastructure will comply with applicable regulatory requirements to ensure public safety.

6.2.17 Non-Renewable Resources (Minerals, Aggregates and Petroleum)

Construction and Decommissioning

Potential effects on mineral and / or aggregate resources are anticipated as a result of construction and decommissioning activities such as site preparation, Installation of access roads and blasting (if necessary). These potential effects include:

- Reduction in the licensed area and the quantity of extractable resources.

There are five (5) licensed resource extraction sites that the Transmission Line ROW intercepts. These sites are intersected by the proposed Highway 69/400 corridor so the addition of the Transmission Line will not result in substantial additional interference with these sites. These resource operations may not be able to fully extract potential mineral and / or aggregate deposits within the construction footprint of the proposed Transmission Line ROW throughout the construction and decommissioning phases. Removal of minerals and / or aggregate deposits will be restricted to areas outside of the proposed Route B Transmission Line ROW.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on non-renewable resources.

Operation

Potential effects on mineral and / or aggregate resources are anticipated as a result of the operation of the Route B Transmission Line and SS. These potential effects include:

- Reduction in the quantity of prospect extractable resources (future pit / quarry / mineral operations).

As mentioned above, five (5) licensed resource extraction sites exist adjacent to the Route B Transmission Line ROW. These sites may not be able to fully access potential mineral and / or aggregate deposits within the Route B Transmission Line ROW throughout the operation phase as the act of removing such resources will be restricted to areas outside of the proposed Route B Transmission Line ROW.

No potential adverse effects on petroleum resources are anticipated during the operation phase.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on non-renewable resources.

6.2.18 Forestry Resources

Construction and Decommissioning

Potential effects on forestry within the Route B Transmission Line study area are anticipated as a result of construction and decommissioning activities such as site preparation and construction of access roads. These potential effects, which are described in further detail below, include:

- Loss of harvestable forest resources due to vegetation clearing.

Harvestable timber will be removed to clear the Transmission Line ROW, access roads and temporary work, storage and laydown areas, removing these harvestable forest resources from the study area.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on forestry resources.

Operation

Potential effects on forestry are anticipated as a result of the operation phase such as operation of Transmission Line infrastructure and the repair and maintenance of Route B Transmission Line infrastructure. These potential effects, which are described in further detail below, include:

- The sustainable forest license holder may experience access restrictions (physical and/or administrative) to existing silviculture plots due to the presence of Transmission Line infrastructure; and

The presence of the Transmission Line infrastructure could impede access to the sustainable forest license holder's current and future timber harvesting areas. This may have effects associated with timing constraints and costs to the sustainable forest license holder.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on forestry resources.

6.2.19 Game and Fishery Resources

Construction and Decommissioning

Potential effects on game resources are anticipated as a result of construction and decommissioning activities such as site preparation, Installation of access roads, transportation of equipment and materials to construction site as well as all other construction and decommissioning activities resulting in the creation of noise and vibration above existing levels. These potential effects, which are described in further detail below, include:

- Decline in available game resources for recreational hunters due to sensory disturbance of wildlife and loss of wildlife habitat; and

Noise associated with construction and decommissioning activities of the Route B Transmission Line have the potential to disturb wildlife, resulting in change to wildlife behaviour. As it is anticipated that the construction of every four (4) towers or approximately every kilometer is expected to take no longer than one (1) week to complete, disturbance from noise and vibration to wildlife will be intermittent, site specific and limited to the construction and decommissioning phases at each construction site.

Removal of vegetation for the purposes of access roads, temporary laydown areas and the Transmission Line ROW and SS will result is a loss of habitat for wildlife. This has potential to alter wildlife behaviour throughout the

construction and decommissioning activities. Temporary access roads and lay down areas will be reinstated for operation phase but the absence of vegetation within the Route B Transmission Line ROW will be maintained throughout the life of the Transmission Line.

No effects on fishery resources are anticipated as a result of construction and decommissioning phases.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on game and fishery resources.

Operation

No potential adverse effects on Game and Fishery Resources are anticipated during the operation phase of the Transmission Line as preventative maintenance will occur very infrequently and unplanned maintenance is anticipated to be very short in duration. The noise receptors near the SS currently experience existing noise from Highway 400 and other regional roads.

6.2.20 Residential, Commercial and Institutional Lands

Construction and Decommissioning

Potential effects on residential, commercial and institutional lands are anticipated as a result of construction and decommissioning activities. The potential effects, which are described in further detail below, include:

- Change in land use on private property.

A portion of private land will be removed as a result of construction and decommissioning activities. Although easements will be developed for landowners to access their lands, the original use and function of these portions of lands will be altered for the Transmission Line.

To mitigate effects on residential, commercial and institutional lands, the mitigation measures listed in **Table 6-2** will be implemented.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential on land use.

Operation

No potential adverse effects on residential, commercial and institutional lands are anticipated as a result of operation activities.

6.2.21 Provincial and Municipal Policies, Plans and Zoning Bylaws

Construction and Decommissioning

No potential adverse effects on provincial, municipal and First Nation policies, plans and zoning bylaws are anticipated during the construction and decommissioning phases of Route B Transmission Line

The Route B Transmission Line is consistent with the Provincial Policy Statement (PPS), Places to Grow Act (2005), the proposed provincial Growth Plan for Northern Ontario (2009) and MNRF's Guide to Crown Land Planning (Ministry of Energy and Infrastructure and MNDM, 2009; MAH, 2013; MAH, 2014; MNRF, 2011). The ER

has also considered compatibility of the proposed Transmission Line with the municipal Official Plans of the municipalities and Land Codes of the Reserves that are intersected by the Transmission Line. Prior to the commencement of construction, all permits will be obtained to ensure consistency with municipal land use policies, plans and zoning bylaws. To ensure consistency with the Magnetawan First Nation and Shawanaga First Nation land codes, HIW will be required to lease the Reserve land the Route B Transmission Line will be constructed on. This lease will be procured prior to the commencement of construction (Magnetawan First Nation, 2015b; Shawanaga First Nation, 2015b).

Operation

No potential adverse effects on provincial municipal and First Nation policies, plans and zoning bylaws are anticipated as a result of the operation phase of the Route B Transmission Line. The Route B Transmission Line is consistent with provincial plans and policies. The maintenance and monitoring activities during this phase are not anticipated to conflict with the current provincial, municipal and First Nation land policies, plans or zoning by-laws.

6.2.22 Aboriginal Land Use and Resources

Construction and Decommissioning

Potential effects on Aboriginal land use and resources are anticipated during the activities of the construction and decommissioning phases. These potential effects, which are described in further detail below, include:

- Disturbance to current users of traditional lands (including cultural sites) from construction / decommissioning noise and vibration;
- Loss of available lands used for Aboriginal traditional activities due to loss of wildlife habitat and disturbance to wildlife.

Noise and vibration from heavy machinery related to the transportation and installation of the Route B Transmission Line components may disturb current users of traditional lands. Temporary construction noise from vehicles and other equipment has the potential to be heard within 1 km of active construction areas and may be audible beyond 1 km for blasting activities (MOECC, 2008). Vibration from construction, including blasting, should not be perceived beyond 500 m from the vibration source (MOECC, 1985). Therefore, vibration from construction, including blasting, will not be perceived beyond 500 m of the Route B Transmission Line active construction area. . It is anticipated that the construction for approximately four (4) towers will take no longer than one (1) week to complete; however, disturbance from noise and vibration may affect the traditional land uses nearby active construction sites.

A cultural site was identified within 500 m of the Route B Transmission Line and disturbance from noise and vibration may also affect the use of this site as well as the enjoyment of other traditional activities by land users within 1 km of active construction. Noise and vibration effects during construction / decommissioning activities will be localized and occur for short durations intermittently throughout the construction period. Traditional land users in these areas currently experiences anthropogenic noise from the existing Highway 69.

With the clearing of vegetation from 46 ha of land for the construction of the access roads, temporary laydown areas and Transmission Line infrastructure there will be a loss of wildlife habitat. This loss of habitat, human presence and noise and vibration associated with the activities for both construction and decommissioning phases is expected to disturb wildlife, therefore affecting the traditional activities such as hunting and trapping of species such as Moose, Deer and Muskrat on traditional lands.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on Aboriginal land use and resources.

Operation

Potential effects on Aboriginal Land Use and Resources are anticipated during the operation phase of Route B Transmission Line. These potential effects, which are described in further detail below, include:

- Disturbance to land users of traditional lands due to noise associated with maintenance;
- Disturbance to land users of traditional lands due to noise associated with the SS; and
- Loss of available lands used for Aboriginal traditional activities and cultural site.

Disturbance to current users of traditional lands and wildlife may occur from noise associated with the operation phase, including the noise from infrequent maintenance activities such as vegetation trimming and non-routine repairs to the infrastructure and the operation of the SS. Maintenance vehicles and other equipment during operations have the potential to be heard within 1 km (MOECC, 2008) and disturbance from this noise may affect users of traditional lands. Operational noise from the SS may be audible in close proximity. Estimated sound levels will be determined during detailed design and will be within provincial guidelines at all noise-sensitive land use areas. Land users near the SS location currently experience anthropogenic noise from Highway 400 and other regional roads.

The presence of the Transmission Line ROW and Transmission Line infrastructure will result in the loss of available lands currently used for Aboriginal traditional activities and use of cultural sites. Noise and the presence of personnel during routine and unplanned maintenance will result in disturbance to wildlife, further affecting the use of these lands as areas for traditional activities such as hunting and trapping of species such as Moose, Deer and Muskrat. Maintenance activities are anticipated to occur infrequently and, the effects due to noise and human presence due to maintenance will be minimal.

To minimize effects to First Nations and Other Communities during operations phase activities, mitigation measures outlined in **Table 6-2** will be implemented.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on Aboriginal land use and resources.

6.2.23 Waste

Construction and Decommissioning

Waste materials will be generated as part of construction activities. If waste materials are not managed properly, it will contribute to an increase in waste material on the landscape. Mitigation measures are proposed in **Section 6.3** to avoid potential effects related to waste.

Operation

Waste materials will be generated as part of operational activities. If waste materials are not managed properly, it will contribute to an increase in waste material on the landscape. Mitigation measures are proposed in **Section 6.3** to avoid potential effects related to waste.

6.2.24 Archaeological Resources

Construction and Decommissioning

Potential effects on Archaeological Resources are anticipated during the construction and decommissioning phases of the Route B Transmission Line. These potential effects, which are described in further detail below, include:

- Discovery or disturbance to archaeological resources, previously unknown within the Route B Transmission Line ROW

A Stage 1 Archaeological Assessment (contained in **Appendix B8**) is a desktop exercise to identify potential areas with archaeological resources. The findings of the Stage 1 Archaeological Assessment recommended that a Stage 2 archaeological field investigation is conducted which has, to-date, resulted in three archaeological sites identified within the Route B Transmission Line study area. These sites will be subject to Stage 3 and, if required, Stage 4 archaeological assessments. The known archaeological sites will be fully removed from the study area in order to preserve the information for future research; however there is always the potential for unanticipated archaeological sites to be disturbed during construction and decommissioning activities.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on archaeological resources.

Operation

No potential adverse effects on Archaeological Resources are anticipated during the operation phase of the Route B Transmission Line as no excavation resulting in unearthing artifacts will be completed during operations.

6.2.25 Built Heritage and Cultural Heritage Landscapes

Construction and Decommissioning

The Cultural Heritage Assessment (contained in **Appendix B10**) determined that no potential adverse effects on Built Heritage and Cultural Heritage Landscapes are anticipated during the construction and decommissioning phases of the Route B Transmission Line. The only heritage feature of value or interest within the Route B Transmission Line study area, the Moose Lake Trading Post complex, will not be affected by the proposed construction and decommissioning activities.

Operation

Potential effects on Built Heritage and Cultural Heritage Landscapes are anticipated during the operation phase of the Route B Transmission Line. These potential effects, which are described in further detail below, include:

- Effect on the cultural heritage landscape character of Moose Lake Trading Post.

The transmission line is proposed to run beside Highway 69/400 between the highway and the Moose Lake Trading Post complex of buildings and its addition will have a slight, indirect, impact on the character of the landscape. If there are significant changes to the study area alignment it is possible that there may be indirect impacts to cultural heritage features and the landscape on which they are situated, specifically minimal land disturbance, obstruction or shadows.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on cultural heritage landscapes.

6.2.26 Landscapes and Views

Construction and Decommissioning

Potential effects on landscape and views are not anticipated during the construction and decommissioning phases of Route B Transmission Line.

Operation

Potential effects on landscape and views are anticipated as a result of the presence of the Transmission Line. These potential effects, which are described in further detail below, include:

- Effects on the existing landscape and views as perceived by permanent and seasonal residents and users of the recreational land and trails.

During the operation phase, the loss of existing vegetation and the presence of the Route B Transmission Line will be visible to recreational land and trail users, as well as to permanent and seasonal residents. However, the landscape and visual effects will be minimal as the Route B Transmission Line will travel adjacent to the existing and/or proposed Highway 69/400 or the 500kV Transmission Line for the majority of the route. Effects to the landscape and views will be minimal where Route B Transmission Line diverts east from Highway 69/400 for approximately12km into a primarily undeveloped area. Where possible monopole Transmission Line towers will be used. This design of tower will be less intrusive than other available tower structures (i.e., lattice structures) further minimizing the effects to landscape and views.

To mitigate temporary effects to landscape and views, the mitigation measures listed in **Table 6-2** will be implemented.

Mitigation measures are proposed in **Section 6.3** to avoid or minimize potential effects on landscape and views.

6.3 Proposed Mitigation Measures and Net Effects

Construction and Decommissioning

To minimize effects during construction / decommissioning, the following mitigation measures will be implemented; any net environmental effects after mitigation is applied are also identified in the **Table 6-2**:

Operations

To minimize effects during operations, the following mitigation measures will be implemented; any net effects after mitigation is applied are also identified in the **Table 6-3**:

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
Soils; Sedimentation and Erosion	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Station (Switching Station) • Construction /decommissioning completion • Disassembly and removal of Transmission Line components • ROW restoration	*Change to soil quality* *Change to soil quantity* • Reduction in soil quality and quantity due to erosion, sedimentation and compaction resulting from excavation, use of heavy equipment and stockpiling of cleared materials.	• Develop and implement an Erosion and Sediment Control Plan. • Utilize erosion blankets, sediment control fencing, straw bale etc. for construction activities in areas where there is erosion and sedimentation potential near a wetland, woodland or waterbody. • Utilize sediment logs (compost filter sock) in areas where bedrock is exposed at surface or trenching and securing of erosion control fencing is not possible. • Maintain undisturbed buffer strips greater than 30 m in width around watercourses, where possible, except where access roads approach water crossings. • Store stockpiled material at least 30 m from a wetland or waterbody. • Monitor to ensure erosion and sedimentation control measures are in good repair and properly functioning prior to conducting daily work and re-install or repair as required prior to commencing daily construction activities for the duration of construction/decommissioning activity. • Minimize the size of cleared areas to limit the area of exposed soil. • Re-vegetate or stabilize exposed sites as soon as possible following disturbance using species native to the area to limit the duration of soil exposure. • Divert access road runoff through drainage ditches directed into vegetated areas or through environmental protection measures (such as sediment traps, rock flow check dams, sediment barriers etc.) to ensure that exposed soils or road materials are not transported into watercourses or wetlands. Ditches >5% in slope may require lining with appropriate sized rip rap to protect against erosion and also slow the flow velocity. • Grade disturbed / remediated slopes or stockpiles to a stable angle to avoid slope instability and reduce erosion. • Grade soil stockpiles by mechanical means to compact the soil and limit the erosion. Tracks of machinery should be perpendicular to the slope of the pile to reduce the flow velocity of rainfall over the stockpile. • Keep all equipment within identified work areas to minimize disturbance of adjacent soils. • Restrict construction equipment to designated controlled vehicle access routes to minimize the potential for soil compaction and to minimize vehicle traffic on exposed and/or sensitive soils.	*Net effect on soil quality and soil quantity* • Reduction in soil quality due to erosion and sedimentation would be minimized through the implementation of an Erosion and Sediment Control Plan (including implementation of proposed mitigation measures); however, disturbance to soils within construction areas cannot be avoided and a minor net reduction in soil quality and quantity in these areas will remain. • Reduction in soil quality and/or quantity due to compaction and removal of soils within construction areas would be minimized with the implementation of mitigation measures; however removal and compaction of soils within construction areas may still occur.
		Change to soil quality • Reduction in soil quality due to mixing of topsoil and subsoils.	• Strip and store topsoil (where present) from temporary work areas separately from subsoils and maintain for reclamation use after construction. • Where topsoil quality has been compromised, import topsoil for reclamation activities (according to the Restoration Plan). • Ensure adequate separation of the piles to avoid mixing of tripped material with spoiled piles	*Net effect on soil quality* • Reduction in soil quality due to mixing of topsoil and subsoils would be minimized following mitigation; however, some mixing of topsoil and subsoil may still occur.
Contaminated Lands	• Site preparation • Installation of access roads • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	*Change to soil quality* • Reduction in soil quality due accidental release of contaminants during construction, heavy equipment and vehicle use, and concrete truck rinsing, etc.	• Develop and implement a Spill Prevention and Response Plan outlining steps to prevent and contain any chemicals and to avoid soil contamination. This plan will include, for example: – In the event of a contaminant spill all work will stop until the spill is cleaned up. – Spill control and containment equipment/materials shall be readily available on site. – Protocols for access to additional spill clean-up materials if needed. – Contaminated materials to be handled in accordance with relevant federal and provincial guidelines and standards. – Include Material Safety Data Sheets (MSDS) which provides information on proper handling of chemicals readily available for the types of chemicals that will be used on-site. – Proper training of operational staff on associated emergency response plan and spill clean-up procedures. – Spills to be cleaned up as soon as possible, with contaminated soils removed to a licenced disposal site, if required. – Materials contained in spill clean-up kits are restocked as necessary. – Any soil encountered during excavation that has visual staining or odours, or contains rubble, debris, cinders or other visual evidence of impacts to be analyzed to determine its quality in order to identify the appropriate disposal method. – To include reporting procedures to meet provincial and local requirements (e.g., reporting spills and verification of clean-up) (federal requirements if on federal land), emergency contact and project management phone numbers. • Apply the following general mitigation measures to avoid soil contamination: – Ensure machinery is maintained free of fluid leaks. – Site maintenance, vehicle maintenance, vehicle washing and refuelling to be done on spill pads in specified areas at least 30 m away from natural features (wetlands and/or waterbodies). – Store any stockpiled materials at least 30 m away wetlands and/or waterbodies. – Store any potential contaminants (e.g., oil, fuels and chemicals) in designated areas using secondary containment, where necessary. • Ensure that concrete in construction is used in accordance with relevant provincial guidelines and standards. • Undertake waste management in accordance with relevant provincial guidelines and standards and construction site to be kept clear of garbage and debris. • Ensure that wash water used for the cleaning of cement construction materials does not come in contact with the ground. Deposit waste water in a concrete washout container that allows evaporation and hardening for easier disposal or recover and recycle wash water back into cement truck.	*Net effect on soil quality* • Reduction in soil quality due 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. .

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
		Change to soil quality • Change in soil quality due to disturbance and remediation of existing contaminated land.	• Workers will be trained to look for areas of staining, cinder piles etc. and report them to the Environmental Monitor who will notify the landowner and manage accordingly. • If contaminated sites are encountered during construction, HIW will avoid the placement of transmission line towers and access road in those areas, where possible. • Land owners will be notified in the event contaminated properties are encountered and known contamination poses a risk to the natural environment or personal health resulting from construction activities associated with the Transmission Line. • In the event contaminated soil is encountered follow applicable steps outlined in the Spill Prevention and Response Plan. • Also refer to mitigation measures for "*Reduction in soil quality due accidental release of contaminants during construction, heavy equipment and vehicle use, excavation, and concrete truck rinsing, etc.*" under the **Contaminated Lands** VEC for additional proposed mitigation measures.	*Net effect on contaminated lands* • Positive net effect on contaminated lands following effective remediation.
Wildlife (including Avifauna) and Wildlife Habitat	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Station (Switching Station) • Construction Completion • Power disconnection and decommissioning of service • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	• Habitat change – Disturbance to wildlife due to construction activities, including noise and vibration from sub-surface excavation activities (e.g., blasting). • Change in mortality risk – Disturbance to wildlife due to construction activities, including noise and vibration from sub-surface excavation activities (e.g., blasting). • Change in behaviour – Disturbance to wildlife due to construction activities, including noise and vibration from sub-surface excavation activities (e.g., blasting).	• Reduce blasting footprint to the extent possible and undertake blasting operations in accordance with relevant provincial guidelines and standards on land under provincial jurisdiction and relevant federal guidelines and standards on land under federal jurisdiction. • Blasting will be undertaken within vegetated habitats that have been removed. • Provide suitable blasting timing windows to be included in a Blasting Plan. The Blasting Plan will include standard BMPs to minimize extent of habitat change, mortality risk and adverse noise, vibration and slope instability from blasting: – Complete pre-blasting searches of wildlife by a qualified Biologist, and adjust activities according if wildlife are encountered (i.e., delay blasting activities, relocate wildlife, etc.); – Follow proper drilling, explosives handling, and loading procedures; – Implement safe handling and storage procedures for all materials, including soluble substances used for blasting; – Use blasting mats over top of holes to minimize scattering of blast debris around the area; – Ensure wildlife (e.g., birds flying over) are not in the blasting zone prior to detonation. If wildlife is encountered in the blasting zone, postpone detonation until the wildlife has vacated the area; – Remove all blasting debris and other associated equipment / products from the blast area.	*Net effect on habitat change* • Effects on habitat change can be minimized through implementation of the recommended mitigation measures; however, construction activities (e.g., blasting) may result in some habitat change, resulting in a potential net effect. *Net effect on Change in mortality risk* • Change via increase in mortality risk can be minimized through implementation of recommended mitigation measures; however, construction activities (e.g., blasting) may result in some isolated wildlife mortality, resulting in a potential net effect. *Net effect on Change in behaviour* • Effects on wildlife behaviour via disturbance can be minimized through implementation of recommended mitigation measures; however, construction activities (e.g., blasting) may result in change in behaviour as some wildlife are expected to exhibit avoidance behaviour during such activities, resulting in a potential net effect.
		• Habitat change – Fragmentation and / or loss of wildlife habitat due to construction.	• Limit vegetation removal to within the construction footprint area. The construction footprint will be clearly defined. • Vegetation removal will be minimized to the extent possible. • Rehabilitation will be initiated within all temporary construction / decommissioning areas as appropriate to the type of habitat that was removed (e.g., replant forested areas using native stock) within one (1) year of completion of the construction / decommissioning phase. • Where construction activities occur within 30 m of a SWH, install and maintain construction fencing (or similar delineation device) to clearly define the construction disturbance area and prevent accidental damage to vegetation. • Fell trees toward the construction footprint area to reduce damage to adjacent vegetation being retained where feasible.	*Net effect on habitat change* • Effects on habitat change can be minimized through implementation of the recommended mitigation measures; however, some wildlife habitat must be removed, and thus some remaining habitat will be fragmented, resulting in a net effect.
		• Change in mortality risk, Change in behaviour – Disturbance and possible mortality to terrestrial wildlife due to vegetation clearing during construction.	• If vegetation must be removed during the overall bird nesting season of April 1 to August 31, the following mitigation will apply, in accordance with the Migratory Birds Convention Act (MBCA): – A qualified Avian Biologist will be on-site during clearing activities to oversee vegetation removal and conduct nest surveys as required; – Within complex habitats*, removal of all vegetation is proposed to occur outside the core bird nesting season of May 1 to July 28 as per Environment Canada's Nesting Calendar for Zone C3 (EC, 2014b). – Nest surveys will be conducted in areas defined as simple habitat* immediately prior to vegetation clearing; and – If an active nest or confirmed nesting activity is found, a buffer area will be implemented around the nest or nesting activity. The radius of the buffer will range depending on the species, level of disturbance and landscape context which will be confirmed by a qualified Avian Biologist (EC, 2014b). The nest itself will not be marked using flagging tape or other similar material as this increases the risk of nest predation, however the outer limits of the buffer can be marked (EC, 2014b) and UTM coordinates will be taken. • Within those areas that provide confirmed and / or likely turtle nesting habitat (i.e. within sandy habitats, shorelines, or wetlands where turtle nesting activity has been observed or suitable habitat is within an area with concentrated turtle observations) and that are identified to be cleared of vegetation: – Construction will avoid nesting areas where possible;	*Net effect on change in mortality risk* • Change via increase in mortality risk can be minimized through implementation of recommended mitigation measures; however, some isolated wildlife mortality is still possible due to vegetation clearing activities during construction, resulting in a potential net effect. *Net effect on change in behaviour* • Effects on wildlife behaviour via disturbance can be minimized through implementation of recommended mitigation measures; however, disturbance due to vegetation clearing may result in change in behaviour as some wildlife are expected to exhibit avoidance behaviour during such activities, resulting in a potential net effect.

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
			– In areas that are unavoidable, exclusionary fencing will be installed prior to the turtle nesting / hatching period of June 1 to September 15 (GBBR, n.d.); – In the rare case where construction initially avoided an area and exclusionary fencing had not been installed prior to the turtle nesting period, a qualified Biologist will complete area searches immediately prior to construction to identify any potential nesting areas and nesting activity during the turtle nesting / hatching period of June 1 to September 15 (GBBR, n.d.); – If an active nest or confirmed nesting activity is found, a buffer area will be implemented around the nest or nesting activity. The radius of the buffer will range depending on the species, level of disturbance and landscape context, which will be confirmed by a qualified Biologist. The nest itself should never be marked using flagging tape or other similar material as this increases the risk of nest predation, however the outer limits of the buffer can be marked and UTM coordinates will be taken; and – Once the Biologist has cleared the area, install turtle appropriate exclusionary fencing during construction / decommissioning within areas of concentrated turtle activity to limit road and construction-related mortality. • Stockpile areas placed prior to June 30 (turtle egg laying period; GBBR, n.d.) will be assessed by a qualified Biologist to determine if they are suitable turtle nesting habitat, and exclusionary fencing will be installed where necessary. Stockpiles placed after June 30 do not require assessment or installation of exclusionary fencing as this is after the typical period for turtle egg laying. • Removal of natural vegetation using heavy machinery within suitable turtle and / or snake hibernating habitat is proposed to occur outside the winter turtle and snake hibernation season, from October 15 to April 30 (GBBR, n.d), within aquatic habitats or wetlands. • Conduct construction and decommissioning activities during daylight hours for increased visibility as well as to avoid light pollution effects during the night, whenever possible. • Rehabilitation will be initiated within all temporary construction/decommissioning areas as appropriate to the type of habitat that was removed (e.g., replant forested areas using native stock) within one (1) year of the completion of the construction/decommissioning phase. * NOTE: • Complex habitats refer to habitats that contain many likely nesting spots. For instance forest communities may contain nesting spots within the canopy, sub-canopy, shrub layer and ground layer. • Simple habitats refer to habitats that contain few likely nesting spots or a small community of migratory birds, such as open rock barrens or other sparsely vegetated habitats.	
		• Change in mortality risk – Mortality to wildlife as a result of vehicles using access roads during construction / decommissioning activities.	• Clearly post speed limit signage along new / temporary access roads (30 km/hr), consider installing speed bumps within areas of concentrated wildlife activity, and instruct all staff to be vigilant for wildlife while driving on site. • Conduct construction and decommissioning activities during daylight hours for increased visibility as well as to avoid light pollution effects during the night, whenever possible. • Ecopassages or designated movement corridors should be considered in areas of high reptile activity or abundance, in order to limit road mortality. • Develop and implement a reporting and tracking system for turtle and snake sightings as well as any wildlife mortality on access roads, which could be used to inform adaptive management for mortality, if required. • Install exclusionary fencing in areas of high turtle and / or snake crossing activity or wildlife mortality. Monitor locations where fencing is installed to ensure that it is in good repair.	*Net effect on change in mortality risk* • Change via increase in mortality risk can be minimized through implementation of recommended mitigation measures; however, some isolated wildlife mortality is still possible due to vehicles using access roads during construction / decommissioning, resulting in a potential net effect.
		• Habitat change – Increased erosion and sedimentation into wildlife habitat resulting from construction / decommissioning activities. – Disturbance of topsoil, and increased soil compaction within wildlife habitat from manoeuvring of heavy machinery, and other activity during construction / decommissioning.	• Limit vegetation removal to within the construction footprint area. The construction footprint will be clearly defined. • Refer to mitigation measures for “Reduction in soil quality and quantity due to erosion, sedimentation and compaction resulting from excavation, use of heavy equipment and stockpiling of cleared materials” under the Soils and Terrain VEC.	*Net effect on habitat change* • Effects on habitat change can be minimized through implementation of the recommended mitigation measures; however, some degradation of wildlife habitat may result from construction / decommissioning activities, resulting in a potential net effect.
		• Habitat change – Damage to wildlife habitat as a result of accidental soil or water contamination (including groundwater) by oils, gasoline, grease, and other materials from construction/decommissioning equipment, and materials storage and handling.	• Refer to mitigation measures for “ Reduction in soil quality due to accidental release of contaminants during construction, heavy equipment and vehicle use, excavation, concrete truck rinsing, etc.” under the Soils and Terrain VEC.	*Net effect on habitat change* • Effects on habitat change can be minimized through implementation of the recommended mitigation measures; however, some damage to wildlife habitat may result from construction / decommissioning activities, resulting in a potential net effect

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
		• Habitat change – Change in surface water drainage patterns or obstruction of lateral flows in surface water to wildlife habitat in wetlands (including the Haines Lake PSW) resulting from Change in land contours during construction.	• Refer to mitigation measures in "Change in surface water drainage patterns or obstruction of lateral flows in surface water to wetlands resulting in effects to soil moisture and species composition of vegetation" under Vegetation and Ecological Communities VEC. • Refer to mitigation measures for "Soil contamination Reduction in soil quality due to accidental release of contaminants during construction, heavy equipment and vehicle use, excavation, concrete truck rinsing, etc." under Soils and Terrain VEC. • Refer to mitigation measures for "Changes to groundwater quantity, reduction in groundwater recharge quantities due to increases in impervious surfaces" under Groundwater VEC.	*Net effect on habitat change* • Effects on habitat change can be minimized through implementation of the recommended mitigation measures; however, some degradation of wildlife habitat may result from construction activities, resulting in a potential net effect
Vegetation and Ecological Communities, Wetlands and Protected Areas	• Site preparation • Installation of access roads • Installation of watercourse crossings • Delivery of equipment and materials • Installation of access roads • Transportation of equipment and materials • Installation (of towers and transmission lines) • Installation of Interconnect Station (Switching Station) • Construction Completion • Power disconnection and decommissioning of service • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	• Change in community diversity – Permanent loss of forest cover.	• The area of disturbance will be delineated to ensure that work does not occur outside the construction footprint. • Vegetation removal will be minimized to the extent possible. • Fell trees toward the construction footprint area in order to reduce damage to the adjacent vegetation being retained, where feasible. • Rehabilitation will be initiated within all temporary construction / decommissioning areas as appropriate to the type of woodland that was removed (e.g., replant forest areas using native stock) within one (1) year of the completion of the construction / decommissioning phase. • Where excavation for construction of new / temporary access roads, or Transmission Line poles, is required within the rooting zone of trees (i.e., within 1 m of the dripline), implement proper root pruning measures to protect tree roots. • Also refer to mitigation measures under the Species at Risk VEC for additional species-specific mitigation measures.	*Net effect on change in community diversity* • Effects on community diversity can be minimized through implementation of the recommended mitigation measures; however, some permanent loss of forest cover may still occur during construction activities, resulting in net effect.
		• Change in species diversity, Change in community diversity. – Change in surface water drainage patterns or obstruction of lateral flows in surface water to wetlands resulting in effects to soil moisture and species composition of vegetation.	• Ensure BMPs are used to maintain current drainage patterns, including: – Minimize paved surfaces and design roads to promote infiltration; – Limit Change in land contours to the maximum extent possible; and – Ensure roadway culverts are designed and installed to maintain existing drainage patterns. • Where the installation of a flow-equalizing culvert is proposed, appropriate erosion control measures (e.g., rip rap, seeding) will be installed at the ends of each culvert to prevent erosion, which can change land contours. • Also refer to mitigation measures in "Reduction in groundwater recharge quantities due to increases in impervious surfaces" under Groundwater VEC	• *Net effect on change in species diversity* • Effects on species diversity can be minimized through implementation of the recommended mitigation measures; however, some Change in hydrological effects on wetlands may occur, resulting in a potential net effect. *Net effect on change in community diversity* • Effects on community diversity can be minimized through implementation of the recommended mitigation measures; however, some change in hydrological effects on wetlands may occur, resulting in a potential net effect.
		• Change in community diversity and Change in wetland quantity and function – Increased erosion and sedimentation resulting from construction activity.	• Install and maintain sediment and erosion control measures such as silt fence barriers, rock flow check dams, compost filter socks, or approved alternatives along the edge of the construction footprint area if within 30 m of a wetland in order to minimize potential sediment loading to the feature. • Refer to mitigation measures for "Reduction in soil quality and quantity due to erosion, sedimentation and compaction resulting from excavation, use of heavy equipment and stockpiling of cleared materials" under the Soils and Terrain VEC.	*No net effect on change in community diversity* • Effects on community diversity can be mitigated through implementation of the recommended mitigation measures, resulting in no net effect. *No net effect on change in wetland quantity and function* • Effects on wetland quantity and function can be mitigated through implementation of recommended mitigation measures, resulting in no net effect.
		• Change in community diversity and Change in wetland quantity and function – Damage to vegetation as a result of soil or water contamination (including groundwater) by oils, gasoline, grease, and other materials from construction equipment, and materials storage and handling during construction / decommissioning activities.	• Refer to mitigation measures for "Reduction in soil quality due to accidental release of contaminants during construction, heavy equipment and vehicle use, excavation, concrete truck rinsing, etc." under the Soils and Terrain VEC. • Also refer to mitigation measures for "Reduction in groundwater quality due to the accidental release of contaminated construction dewatering discharge in areas of substantial groundwater recharge" under the Groundwater VEC.	*No net effect on change in community diversity* • Effects on community diversity can be mitigated through implementation of the recommended mitigation measures, resulting in no net effect. *No net effect on change in wetland quantity and function* • Effects on wetland quantity and function can be mitigated through implementation of recommended mitigation measures, resulting in no net effect.

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
		• Change in species diversity and Change in wetland quantity and function – Damage to wetland vegetation due to increased dust accumulation.	• Use water as a dust suppressant along areas where construction activities are located within 5 m of a wetland. • In the event that dust accumulates on leaves of wetland plants, which may reduce photosynthesis, water will be used to wash dust off of vegetation. • Also refer to mitigation measures for "Dust generation from vehicle use and construction activity contributing to a reduction in local air quality" under the Air Quality VEC.	*No net effect on change in community diversity* • Effects on species diversity can be mitigated through implementation of the recommended mitigation measures, resulting in no net effect. *No net effect on change in wetland quantity and function* • Effects on wetland quantity and function can be mitigated through implementation of recommended mitigation measures, resulting in no net effect.
		• Change in community diversity, and Change in wetland quantity and function – Damage to adjacent vegetation while operating equipment, and the introduction of non-native or weed species during construction / decommissioning activities.	• Delineation of construction footprint areas: – Delineate areas requiring construction work. – Ensure that no construction activities occur outside the construction footprint area. – Keep vegetation removal to a minimum, to the extent possible. – Ensure removal of all temporary fencing upon completion of work in those areas. • Where excavation for construction of new / temporary access roads or poles is conducted within the rooting zone of trees (i.e., within 1 m of the dripline), implement proper root pruning measures in order to protect tree roots. • Within the ROW, limit vegetation removal and leave shrubs and herbaceous weedy species in place in order to maintain some naturalized cover for wildlife, and prevent soil erosion, where possible. • Rehabilitation is to be initiated within all temporary construction / decommissioning areas as appropriate to the type of wetland or vegetation community that was affected (e.g., replant affected areas using native stock) within one (1) year of the completion of the construction / decommissioning phase.	*No net effect on change in community diversity* • Effects on community diversity can be mitigated through implementation of the recommended mitigation measures, resulting in no net effect. *No net effect on change in wetland quantity and function* • Effects on wetland quantity and function can be mitigated through implementation of recommended mitigation measures, resulting in no net effect.
Avian SAR	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Station (Switching Station) • Construction Completion • Power disconnection and decommissioning of service • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	• Habitat change – Including possible damage or destruction of avian SAR residences or avian SAR habitat. • Change in behaviour – due to disturbance of SAR • Change in mortality risk – including harm Chimney Swift (*Chaetura pelagica*) Least Bittern (Ixobrychus exilis) Bobolink (*Dolichonyx oryzivorus*) Eastern Meadowlark (*Sturnella magna*) Whip-poor-will (*Caprimulgus vociferous*)	• If vegetation must be removed during the overall bird nesting season of April 1 to August 31, the following mitigation will apply, in accordance with the Migratory Birds Convention Act (MBCA): – A qualified Avian Biologist will be on-site during clearing activities to oversee vegetation removal and conduct nest surveys as required; – Within complex habitats*, removal of all vegetation is proposed to occur outside the core bird nesting season of May 1 to July 28 as per Environment Canada's Nesting Calendar for Zone C3 (EC, 2014b). – Nest surveys will be conducted in areas defined as simple habitat* immediately prior to vegetation clearing; and – If an active nest or confirmed nesting activity is found, a buffer area will be implemented around the nest or nesting activity. The radius of the buffer will range depending on the species, level of disturbance and landscape context which will be confirmed by a qualified Avian Biologist (EC, 2014b). The nest itself will not be marked using flagging tape or other similar material as this increases the risk of nest predation, however the outer limits of the buffer can be marked (EC, 2014b) and UTM coordinates will be taken. • Blasting will be not undertaken within vegetated habitats until vegetation has been removed. • Develop and implement a SAR Blasting Plan, to be submitted to MNRF for review, that might include, but will not be limited to: – Pre-blast search and species relocations; – Suitable blast timing windows; and – Appropriate blasting setbacks to turtle habitat. – Mitigation to minimize blast effects (i.e. use blasting mats over top of holes to minimize scattering of blast debris around the area; – Reduce blasting footprint to the extent possible; and – Remove all blasting debris and other associated equipment / products from the blast area). • Limit vegetation removal to within the construction footprint area. The construction footprint will be clearly defined. • Vegetation removal will be minimized to the extent possible. • Rehabilitation will be initiated within all temporary construction / decommissioning areas as appropriate to the type of habitat that was removed (e.g., replant forested areas using native stock) within one (1) year of the completion of the construction / decommissioning phase. • Conduct construction and decommissioning activities during daylight hours for increased visibility as well as to avoid light pollution effects during the night, wherever possible. • Clearly post speed limit signage along new / temporary access roads (30 km/hr), consider installing speed bumps within areas of concentrated wildlife activity and instruct all staff to be vigilant for wildlife while driving on site. • Develop and implement a Sighting Response Protocol which will include: – Education of all on-site staff about SAR species that may be encountered; – Immediate stop in construction activity within 10 m of an observation of SAR until a qualified Biologist can confirm the species has vacated the area. In lieu of calling a Biologist, work can be resumed after a 24 hr period if no evidence of the species exists within the immediate area of previous observation. If the species still exists within the immediate area after 24 hr, a qualified Biologist will be contacted to provide appropriate direction;	*Net effect on habitat change* • Effects on SAR bird habitat change can be minimized through implementation of the recommended mitigation measures; however, construction activities (e.g., vegetation removal) may result in habitat change, resulting in net effects for these SAR birds. *Net effects on change in behaviour* • Change in SAR bird behaviour can be minimized through implementation of recommended mitigation measures; however, construction activities (e.g., blasting) may result in some Change in behaviour, resulting in net effects for these SAR birds. *Net effects on change in mortality risk* • Change via increase in mortality risk can be minimized through implementation of recommended mitigation measures; however, construction activities (e.g., vegetation removal) may result in some isolated wildlife mortality, resulting in net effect for these SAR birds.

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
			– For animals in immediate danger, handling procedures will be established for designated personnel (i.e., construction monitor, qualified Biologist) in the event that a SAR needs to be moved out of potential harm; – Maintain a species observation log to track species observations during the construction / decommissioning phase of the project so that adaptive management can be applied based on species concentrations; – All required permits under ESA will be obtained prior to handling SAR; – Reporting procedures to MNRF; and – Post Species at Risk Fact Sheets in areas where on-site staff can become familiar with possible species encounters. – An Environmental Monitor will be on-site during all construction activities. Additional Environmental Monitors will be present during key construction activities including vegetation removal, and blasting, and as required to ensure compliance with environmental requirements. * NOTE: • Complex habitats refer to habitats that contain many likely nesting spots. For instance forest communities may contain nesting spots within the canopy, sub-canopy, shrub layer and ground layer. Simple habitats refer to habitats that contain few likely nesting spots or a small community of migratory birds.	
Turtle SAR	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation (of towers and transmission lines) • Installation of Interconnect Station (Switching Station) • Construction Completion • Power disconnection and decommissioning of service • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	• Habitat change – Including possible damage or destruction of turtle SAR residences or turtle SAR habitat. • Change in behaviour – due to disturbance of SAR • Change in mortality risk – including harm Blanding's Turtle (*Emydoidea blandingii*) Restricted Species7	• Within those areas that provide confirmed / likely turtle nesting habitat (i.e., within sandy areas, shorelines, or wetlands where turtle nesting activity has been observed or suitable habitat is within an area with concentrated turtle observations), and that are identified to be cleared of vegetation: – Construction will avoid nesting areas where possible; – In areas that are unavoidable, exclusionary fencing will be installed prior to the turtle nesting / hatching period of June 1 to September 15 (GBBR, n.d.). – In the rare case where construction initially avoided an area and exclusionary fencing had not been installed prior to the turtle nesting period, a qualified Biologist will complete area searches immediately prior to construction to identify any potential nesting areas and nesting activity during the turtle nesting period (June 1 to September 15; GBBR, n.d.); – If an active nest or confirmed nesting activity is found, a buffer area will be implemented around the nest or nesting activity. The radius of the buffer will range depending on the species, level of disturbance and landscape context which will be confirmed by a qualified Biologist. The nest itself should never be marked using flagging tape or other similar material as this increases the risk of nest predation; however, the outer limits of the buffer may be marked, and UTM co-ordinates taken; and – Once the Biologist has cleared the area, install turtle-appropriate exclusionary fencing during construction / decommissioning within areas of concentrated turtle activity to limit road- and construction-related mortality. • Field crews will immediately stop work for all turtles in danger of mortality and observe whether the individual(s) vacate the construction area. Should observed turtle(s) (except for nesting turtles) encountered within the construction area not vacate the area, they will be relocated to a safe and suitable location within proximity to where they were found by a qualified Biologist / handler/ or Environmental Monitor. All required permits under the ESA will be obtained prior to handing SAR. • Construction activities will not proceed within 30 m of any confirmed turtle nest between June 1 and September 15 (GBBR, n.d.). • Removal of natural vegetation using heavy machinery within suitable hibernating habitat is proposed to occur outside the winter hibernation period, from September 15 to April 30 (GBBR, n.d.), within aquatic habitats or wetlands. • Develop and implement a SAR Blasting Plan, to be submitted to MNRF for review, that might include, but will not be limited to: – Pre-blast search and species relocations; – Suitable blast timing windows; and – Appropriate blasting setbacks to turtle habitat. – Mitigation to minimize blast effects (i.e. use blasting mats over top of holes to minimize scattering of blast debris around the area; – Reduce blasting footprint to the extent possible; and – Remove all blasting debris and other associated equipment / products from the blast area). • Limit vegetation removal to within the construction footprint area, which will be clearly defined. • Vegetation removal will be minimized to the extent possible. • Rehabilitation activities will be initiated within all temporary construction / decommissioning areas where suitable habitat for SAR turtles is affected (e.g., installation of artificial nesting structures may be considered) within one (1) year of the completion of the construction / decommissioning phase. Ecopassages or designated movement corridors will be considered in areas of high activity or abundance, in order to limited road-related mortality. • Conduct construction and decommissioning activities during daylight hours for increased visibility as well as to avoid light pollution effects during the night, wherever possible. • Clearly post speed limit signage along new / temporary access roads (30 km/hr), consider installing speed bumps within areas of concentrated turtle activity, and instruct all staff to be vigilant for wildlife while driving on site. • Develop and implement a Sighting Response Protocol which will include:	*Net effect on habitat change* • Effects on habitat change can be minimized through implementation of the recommended mitigation measures; however, construction activities (e.g., road construction) may result in habitat change, which may result in potential net effects for SAR turtles. *Net effect on change in behaviour* • Effects on turtle behaviour via disturbance can be minimized through implementation of recommended mitigation measures; however, disturbance due to construction (e.g., vegetation clearing) may result in change in behaviour as some wildlife are expected to exhibit avoidance behaviour during such activities, which may result in potential net effect for SAR turtles. *Net effect on change in mortality risk* • Change via increase in mortality risk can be minimized through implementation of recommended mitigation measures; however, some isolated wildlife mortality is still possible due to construction activities (e.g., blasting), resulting in a potential net effect for SAR turtles

7. *Restricted Species refers to those species for which occurrences records are not provided in documents to be publicly-released, given their rarity and pressures such as poaching.*

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
			– Education of all on-site staff about SAR species that may be encountered; – Immediate stop in construction activity within 10 m of an observation of SAR until a qualified Biologist can confirm the species has vacated the area. In lieu of calling a Biologist, work can be resumed after a 24 hr period if no evidence of the species exists within the immediate area of previous observation. If the species still exists within the immediate area after 24 hr, a qualified Biologist will be contacted to provide appropriate direction; – For animals in immediate danger, handling procedures will be established for designated personnel (i.e., construction monitor, qualified Biologist) in the event that a SAR needs to be moved out of potential harm; – Maintain a species observation log to track species observations during the construction / decommissioning phase of the project so that adaptive management can be applied based on species concentrations; – All required permits under ESA will be obtained prior to handling SAR; – Reporting procedures to MNRF; and – Post Species at Risk Fact Sheets in areas where on-site staff can become familiar with possible species encounters. • Environmental Monitors will be present during all construction activities. Additional Environmental Monitors will be present during key construction activities including vegetation removal, and blasting, and as required to ensure compliance with environmental requirements. • Refer to general mitigation for wildlife under the Wildlife and Wildlife Habitat, and Avi-fauna VEC.	
Snake SAR	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Station (Switching Station) • Construction Completion • Power disconnection and decommissioning of service • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	• Habitat change – Including possible damage or destruction of snake SAR residences or snake SAR habitat. • Change in behaviour – due to disturbance of SAR • Change in mortality risk – including harm Eastern Hog-nosed Snake (*Heterodon platirhinos*) Massasauga Rattlesnake (Great Lakes / St. Lawrence population) (*Sistrurus c. catenatus* pop. 1)	• Trained rattlesnake monitors will be present on-site during key construction activities including vegetation removal and blasting, and as required to sure compliance with environmental requirements • During the active period for snakes, from April 30 to October 15 (GBBR, n.d.), a trained Rattlesnake Monitor will complete area searches in suitable / supporting habitat immediately prior to vegetation removal and blasting to identify any snake activity. • Field crews will immediately stop work for all snakes observed within the construction area and observe whether the individual(s) vacate the construction area. Should observed snake(s) be encountered within the construction area not vacate the construction area, they will be relocated to a safe and suitable location within proximity to where they were found by a trained Rattlesnake Monitor. • Removal of all natural vegetation within suitable nesting habitats is proposed to occur outside the nesting / early neonate season of July 1 to October 15 (Ontario Nature, 2014; COSEWIC, 2008) within sandy habitats or shorelines. • Removal of vegetation using heavy machinery within suitable hibernating habitat is proposed to occur outside the winter hibernation season, from September 15 to April 30 (GBBR, n.d.), within aquatic habitats or wetlands. • Develop and implement a SAR Blasting Plan that might include, but will not be limited: – Pre-blast search and species relocations (e.g., using bait traps); – Suitable blast timing windows, in consideration of gestation periods; and – Appropriate blasting setbacks to snake habitat. – Mitigation to minimize blast effects (i.e. use blasting mats over top of holes to minimize scattering of blast debris around the area; – Reduce blasting footprint to the extent possible; and – Remove all blasting debris and other associated equipment / products from the blast area). • Limit vegetation removal to within the construction footprint area, which will be clearly defined. • Vegetation removal will be minimized to the extent possible. • Rehabilitation activities will be initiated within all temporary construction / decommissioning areas where suitable habitat for SAR snakes is affected to satisfy the habitat requirements (e.g. pile of blast rock, artificial gestation / hibernation structures may be considered) for these species within one (1) year of the completion of the construction / decommissioning phase. • Install exclusionary fencing during construction / decommissioning within areas (where feasible) of concentrated snake activity to limit road and construction-related mortality. • Conduct construction and decommissioning activities during daylight hours for increased visibility as well as to avoid light pollution effects during the night, wherever possible. • Clearly post speed limit signage along new / temporary access roads (30 km/hr) and install speed bumps within areas of concentrated snake activity. • Develop and implement a Sighting Response Protocol which will include: – Education of all on-site staff about SAR species that may be encountered; – Immediate stop in construction activity within 10 m of an observation of SAR until a qualified Biologist can confirm the species has vacated the area. In lieu of calling a Biologist, work can be resumed after a 24 hr period if no evidence of the species exists within the immediate area of previous observation. If the species still exists within the immediate area after 24 hr, a qualified Biologist will be contacted to provide appropriate direction; – For animals in immediate danger, handling procedures will be established for designated personnel (i.e., construction monitor, qualified Biologist) in the event that a SAR needs to be moved out of potential harm; – Maintain a species observation log to track species observations during the construction / decommissioning phase of the project so that adaptive management can be applied based on species concentrations; – All required permits under ESA will be obtained prior to handling SAR;	*Net effect on habitat change* • SAR snake habitat change can be minimized through implementation of the recommended mitigation measures; however, some degradation of wildlife habitat may result from activities, resulting in a potential net effect for SAR snakes. *Net effect on Change in behaviour* • Effects on SAR snake behaviour via disturbance can be minimized through implementation of recommended mitigation measures; however, construction activities (e.g., blasting) may result in change in behaviour as some wildlife are expected to exhibit avoidance behaviour during such activities, resulting in a potential net effects for SAR snakes. *Net effect on Change in mortality risk* • Change via increase in mortality risk can be minimized through implementation of recommended mitigation measures; however, construction activities (e.g., blasting) may result in some mortality, resulting in a potential net effect for SAR snakes.

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
			– Reporting procedures to MNRF; and – Post Species at Risk Fact Sheets in areas where on-site staff can become familiar with possible species encounters. • An Environmental Monitor will be on-site during all construction activities. Additional Environmental Monitors (e.g., Rattlesnake monitors) will be present during key construction activities including vegetation removal, and blasting, and as required to ensure compliance with environmental requirements • Refer to general mitigation for wildlife under the Wildlife and Wildlife Habitat, and Avi-fauna VEC.	
Bat SAR	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Station (Switching Station) • Construction Completion • Power disconnection and decommissioning of service • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	• Habitat change – Including possible damage or destruction of bat SAR residences or bat SAR habitat • Change in behaviour – Due to disturbance of SAR • Change in mortality risk – including harm Little Brown Bat (*Myotis lucifugus*) Eastern Small-footed Myotis (*Myotis leibii*) Northern Myotis (*Myotis septentrionalis*)	• Any suitable cavity trees within forested areas proposed for removal during the bat roosting season (April 30 through September 1) will be searched, for signs of maternity roosts, by a qualified Biologist prior to any construction activities that may affect the habitat. – If an active maternity roost is found, a buffer will be implemented around the cavity tree. The radius of the buffer will range depending on the level of disturbance and landscape context which will be confirmed by a qualified Biologist. – Removal of the cavity tree can occur once a qualified Biologist provides confirmation that it is not being actively used as a maternity roost. • Limit vegetation removal to within the construction footprint area, which will be clearly defined. • Vegetation removal will be minimized to the extent possible. • Rehabilitation will be initiated within all temporary construction / decommissioning areas as appropriate to the type of habitat that was removed (e.g., replant forested areas using native stock), within 1 year of the completion of the construction/decommissioning phase. • Blasting will not be undertaken within vegetated habitats until vegetation has been removed. • Conduct construction / decommissioning activities during daylight hours in order to maximize visibility as well as to avoid light pollution effects at night, wherever possible. • Develop and implement a Sighting Response Protocol which will include: – Education of all on-site staff about SAR species that may be encountered; – Immediate stop in construction activity within 10 m of an observation of SAR until a qualified Biologist can confirm the species has vacated the area. In lieu of calling a Biologist, work can be resumed after a 24 hr period if no evidence of the species exists within the immediate area of previous observation. If the species still exists within the immediate area after 24 hr, a qualified Biologist will be contacted to provide appropriate direction; – For animals in immediate danger, handling procedures will be established for designated personnel (i.e., construction monitor, qualified Biologist) in the event that a SAR needs to be moved out of potential harm; – Maintain a species observation log to track species observations during the construction / decommissioning phase of the project so that adaptive management can be applied based on species concentrations; – All required permits under ESA will be obtained prior to handling SAR; – Reporting procedures to MNRF; and – Post Species at Risk Fact Sheets in areas where on-site staff can become familiar with possible species encounters. • An Environmental Monitor will be present on-site during all construction activities. Additional Environmental Monitors will be present during key construction activities including vegetation removal, and blasting, and as required to ensure compliance with environmental requirements • Refer to general mitigation for wildlife under the Wildlife and Wildlife Habitat, and Avi-fauna VEC.	*Net effect on habitat change* • SAR bat habitat change can be minimized through implementation of the recommended mitigation measures; however, some damage to habitat may result from construction activities (e.g., vegetation removal), resulting in a potential net effect for SAR bats. *Net effect on change in behaviour* • Effects on SAR bat behaviour via disturbance can be minimized through implementation of recommended mitigation measures; however, disturbance due to vegetation clearing may result in change in behaviour as some wildlife are expected to exhibit avoidance behaviour during such activities, resulting in a potential net effect for SAR bats. *Net effect on Change in mortality risk* • Change via increase in mortality risk can be minimized through implementation of recommended mitigation measures; however, construction activities (e.g., vegetation clearing) may result in some mortality, resulting in a potential net effect for SAR bats.
Other Mammal SAR	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Station (Switching Station) • Construction Completion • Power disconnection and decommissioning of service • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	• Habitat change – Including possible damage or destruction of mammal SAR habitat • Change in behaviour – Due to disturbance of mammal SAR • Change in mortality risk – including harm Mountain Lion / Cougar (*Puma concolor*)	• Limit vegetation removal to within the construction footprint area, which will be clearly defined. • Vegetation removal will be minimized to the extent possible. • Conduct construction activities during daylight hours in order to maximize visibility as well as to avoid light pollution effects at night, wherever possible. • Develop and implement a Sighting Response Protocol which will include: – Education of all on-site staff about SAR species that may be encountered; – Immediate stop in construction activity within 10 m of an observation of SAR until a qualified Biologist can confirm the species has vacated the area. In lieu of calling a Biologist, work can be resumed after a 24 hr period if no evidence of the species exists within the immediate area of previous observation. If the species still exists within the immediate area after 24 hr, a qualified Biologist will be contacted to provide appropriate direction; – For animals in immediate danger, handling procedures will be established for designated personnel (i.e., construction monitor, qualified Biologist) in the event that a SAR needs to be moved out of potential harm; – Maintain a species observation log to track species observations during the construction / decommissioning phase of the project so that adaptive management can be applied based on species concentrations; – All required permits under ESA will be obtained prior to handling SAR; – Reporting procedures to MNRF; and – Post Species at Risk Fact Sheets in areas where on-site staff can become familiar with possible species encounters. • An Environmental Monitor will be present during all construction activities. Additional Environmental Monitors will be present on-site during key construction activities including vegetation removal, and blasting, and as required to ensure compliance with	*Net effect on habitat change* • Mountain Lion/Cougar habitat change can be minimized through implementation of the recommended mitigation measures; however, some damage to habitat may result from construction activities (e.g., vegetation removal), resulting in a potential net effect for Mountain Lion / Cougar. *Net effect on change in behaviour* • Effects on Mountain Lion/Cougar behaviour via disturbance can be minimized through implementation of recommended mitigation measures; however, disturbance due to construction activities (e.g., blasting) may result in change in behaviour as some wildlife are expected to exhibit avoidance behaviour during such activities, resulting in a potential net effect for Mountain Lion/Cougar. *Net effect on Change in mortality risk*

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
			environmental requirements • Rehabilitation will be initiated within all temporary construction / decommissioning areas as appropriate to the type of habitat that was removed (e.g., replant forested areas using native stock), within 1 year of the completion of the construction / decommissioning phase. • Refer to general mitigation for wildlife under the Wildlife and Wildlife Habitat, and Avi-fauna VEC	• Change via increase in mortality risk can be minimized through implementation of recommended mitigation measures; however, construction activities may result in some mortality, resulting in potential net effects for Mountain Lion / Cougar.
Fish and Fish Habitat and Rare Aquatic Species	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	*Changes to fish habitat* *Changes to fish mortality* • Potential for disturbance of aquatic biota (fish and invertebrates) and aquatic habitat during water crossing installation and removal (due to in-water work, alteration to channel bed, banks and riparian areas, due to erosion and sedimentation)	• **Water Crossing Design** – Design water crossings installed at waterbodies supporting direct fish habitat to facilitate fish passage. – Design water crossings to accommodate high and low flows of the waterbody. • **Crossing Installation** – If streams are flowing during waterbody crossing structure installation, use appropriate work site isolation techniques (e.g. dam and pump, bypass channel, partial coffer damming) to minimize effects on aquatic environment. If work sites are isolated during construction, fish are to be salvaged from isolated area and transferred to undisturbed habitat downstream of the work site. – Phase crossing structure removal so no fording of watercourses is required following structure removal (i.e. the last activity as the road is being decommissioned). • **Timing Windows** – Time in-water work to avoid sensitive life stages of fish species (i.e. spawning) for waterbodies, as per timing windows according to thermal regimes as provided in **Appendix B6**. • **Blasting** – Undertake blasting operations in accordance with relevant provincial guidelines and standards on land under provincial jurisdiction and relevant federal guidelines and standards on land under federal jurisdiction. – Develop and implement a Blasting Plan that includes standard BMPs to minimize extent of adverse noise, vibration and slope instability from blasting, including: ▪ Follow proper drilling, explosive handling and loading procedures; ▪ Implement safe handling and storage procedures for all material, including soluble substances used for blasting; ▪ Use blasting mats over top of holes to minimize scattering of blast debris around the area; ▪ Reduce blasting footprint to the extent possible; ▪ Do not use ammonium nitrate based explosives near water due to the production of toxic by-products; and ▪ Remove all blasting debris and other associated equipment / products from the blast area. ▪ In the event of fish mortality, immediately stop all work and correct the cause of the mortality. ▪ Report the fish kill immediately to DFO and MNRF. ▪ If release of significant blast rock, dust or residues is detected, suspend blast work until additional mitigations as required are in place. • **Work Area** – Delineate work areas. – Maintain undisturbed buffer strips greater than 30 m in width around waterbodies and wetlands, where possible, except where access roads approach waterbody and wetland crossings. – Restrict vehicle traffic to posted speed limits. – Investigate complaints related to dust and emissions and address to the extent possible. • **Equipment Use** – In order to avoid compacting or hardening of natural ground surface, and to avoid movement of machinery on sensitive slopes, restrict construction equipment to designated controlled vehicle access routes and to identified work areas. – Whenever possible, operate machinery from outside the waterbody and on land above the high water mark or on ice in a manner that minimizes disturbance to the banks and bed of the waterbody. – Limit machinery fording (if required) to only the amount necessary and only outside of sensitive time periods and upon consultation with a qualified environmental monitor. If repeated fording of the waterbody is required, construct a temporary crossing structure (e.g. jersey bridge, swamp mats). – Ensure machinery is maintained free of fluid leaks. – Site maintenance, vehicle maintenance, vehicle washing and refuelling to be done in specified areas at least 30 m away from wetlands and waterbodies. – Wash water used for the cleaning of cement construction materials not to come in contact with the ground. Deposit waste water in a concrete washout container that allows evaporation and hardening for easier disposal or recover and recycle wash water back into cement truck. – Use and maintain emission control devices on motorized equipment (as provided by the manufacturer of the equipment) to minimize the emissions so that they remain within industry standards. Heavy equipment and machinery to be used within operating specifications. – Run vehicles and equipment only when necessary (i.e. limit idling).	*Net effects on fish habitat and fish mortality.* • Disturbances to aquatic biota and aquatic habitat due to Installation of access road water crossings can be minimized following effective implementation of crossing installation mitigation measures, however some change to fish habitat will remain at localized areas associated with temporary access road crossings. • Disturbances can be reduced to short term and localized effects provided in-water work is completed outside of sensitive fish timing windows. • Effects can be minimized following development and implementation of a flood and high water monitoring and contingency response plan as part of the Erosion and Sedimentation Control Plan, however, minor sediment releases may still occur.

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
			• **Erosion and Sediment Control** – A Sediment and Erosion Control Plan will be prepared prior to construction start. – Implement sediment and erosion control measures prior to construction near wetlands or waterbodies and maintain such measures until re-vegetation of disturbed areas is complete. – Monitor to ensure erosion and sedimentation control measures are in good repair and properly functioning prior to conducting daily work and re-install or repair as required prior to commencing daily construction activities. – In areas where bedrock is exposed at surface or trenching and securing of erosion control fencing is not possible, sediment logs (compost filter sock) may be utilized. – Ensure an additional supply of erosion and sediment control materials are readily available on the site. – Minimize removal of riparian vegetation to the greatest extent possible (maintaining riparian shrubs) in order to limit the area of exposed soil. – In the Erosion and Sedimentation Control Plan include measures (e.g. monitoring and response) should a flood or higher water levels occur due to adverse weather events. – Discharge water through energy dissipation and filtration systems (filter bag, sediment basin), as required. Ensure the volume of water is controlled and ensure that any water discharged to the natural environment does not result in scouring, erosion or physical alteration of the streams channel or banks. – Use temporary crossing structures or other practices to cross waterbodies with steep and highly erodible (e.g., dominated by organic materials and silts) banks and beds. – Remove non-biodegradable erosion and sediment control materials once site is stabilized. • **Material Stockpiling and Handling** – Stabilize and store stockpiled materials (topsoil, grubbed materials) above the high water mark and 30 m away from wetlands and waterbodies. Transmission poles or other structures will be placed above the normal high water mark, where possible. ▪ Soil stockpiles to be graded by mechanical means to compact the soil and limit the erosion. Tracks of machinery should be perpendicular to the slope of the pile to reduce the flow velocity of rainfall over the stockpile. ▪ Place only clean materials free of fine particulate matter in the water for temporary construction measures (e.g. coffer dams to be constructed of 'pea gravel' bags / meter bags, geotextile fabric, sheet pile or other clean material). ▪ Waste management to be completed in accordance with relevant provincial guidelines and standards. ▪ Dispose of any contaminated waste material generated from construction activities off-site by authorized and approved haulers and receivers. • **Grading and Excavation** – Grade disturbed / remediated slopes or stockpiles to a stable angle to avoid slope instability and reduce erosion. – Where construction activities occur within 30 m of a waterbody, ensure BMPs are used to maintain current existing drainage patterns, including: ▪ Limit changes in land contours to the maximum extent possible. ▪ Ensure roadway culverts are designed and installed to maintain existing drainage patterns. ▪ Where the installation of a flow equalizing culvert is proposed, appropriate erosion control measures (i.e. rip rap, seeding) will be installed at the ends of each culvert to prevent erosion. • **Dewatering Activities** – Limit duration of dewatering to as short a time frame as possible. – Develop and implement a construction Dewatering Discharge Plan describing appropriate areas and methods for discharge. – Leave a layer of vegetation intact between the outfall and receiving waterbody to provide additional water dispersion and entrapment of suspended solids, if discharge is to a waterbody and/or wetland, where feasible. – Discharge water shall not be directed to a waterbody that has potential to flood as a result of the added input of water caused by direct dewatering discharge. – Screen all hoses drawing water from a waterbody to prevent potential entrainment of fish and other species. – If dewatering of excavations is required, mitigation could include the use of splash pads, discharge diffusers, filter bags, sediment basins or similar measures (if required and as appropriate) at discharge locations to ensure that any water discharged to the natural environment does not result in scouring, erosion or physical alteration of the streams channel or banks. – If dewatering of tower excavations is required and expected to exceed 50,000 L/day, discharge water shall be sampled daily during the days the water is discharged and tested for suspended sediments. If the increase in suspended sediments is greater than 25 mg/L, appropriate measures (e.g. geosock or similar device) to mitigate these impacts will be implemented. – If necessary, limit water taking quantities by implementing targeted groundwater cut-offs (i.e. slurry trench walls) where possible. – No direct discharge to Key River, Magnetawan River, Giroux River, Naiscoot River or any surface water feature will occur without acquiring applicable approvals. • **Rehabilitation** – Re-vegetate or stabilize exposed sites as soon as possible following disturbance using species native to the area to limit the duration of soil exposure.	
		Changes to fish mortality	• **Equipment Use**	*Net effect on fish mortality and fish habitat*

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
		Changes to fish habitat • Potential for effects on aquatic biota (fish and invertebrates) and aquatic habitat due to accidents and/or spills including fuels, lubricants and concrete washing near waterbodies	• **Material Stockpiling and Handling** • **Spills** – Develop and implement a Spill Prevention and Response Plan outlining steps to prevent and contain any chemicals or to avoid contamination of adjacent waterbodies and train staff on associated procedures. – Apply the following general mitigation measures to avoid soil or water contamination: ▪ Ensure machinery is maintained free of fluid leaks. ▪ Site maintenance, vehicle maintenance, vehicle washing and refuelling to be done in specified areas at least 30 m away from natural features (wetlands, woodlands and wildlife habitats) or waterbodies. ▪ Store any stockpiled materials at least 30 m away from wetlands, woodlands, wildlife habitats, or waterbodies. ▪ Store any potential contaminants (e.g., oil, fuels and chemicals) in designated areas using secondary containment, where necessary.	• Effects on aquatic biota and fish habitat can be minimized from accidents and/or spills provided a Spill and Prevention Plan is developed and implemented, however some minor effects on aquatic biota and aquatic habitat may remain due to limitations in current spill clean-up processes.
		Changes to fish and fish habitat *Changes to fish mortality* • Potential for disturbance to fish and fish habitat and changes in mortality of fish due to construction blasting and/or vibration (includes disturbance to or mortality of fish eggs or larvae)	• **Blasting (see above)** • **Timing Windows (see above)**	*Net effects on changes to fish mortality and fish habitat* • Changes to fish mortality due to blasting are unlikely, but minimized provided recommended mitigation is implemented, however fish mortality may occur.
		Changes to rare aquatic species mortality • Potential for changes in mortality of rare aquatic fish species (during works on or adjacent to watercourse banks and riparian areas due to construction blasting and/or vibrations and erosion and sedimentation)	• **Timing Windows (see above)** • **Blasting (see above** • **Erosion and Sediment Control (see above)**	*Net effect on fish mortality* • Effects on fish and fish habitat and fish mortality from water crossing installation and removal will be minimized following effective implementation of recommended mitigation measures, however some changes to fish habitat will remain at localized areas associated with temporary access road crossings. • Effects on fish mortality can be reduced to short term and localized provided in-water work is completed outside of sensitive fish timing windows • Effects can be minimized following development and implementation of a flood and high water monitoring and contingency response plan as part of the Erosion and Sedimentation Control Plan, however minor sediment releases may still occur.
		Changes in rare aquatic species habitat • Potential for disturbance of aquatic habitat during water crossing installation and removal (due to in-water work, alteration to channel bed, banks and riparian area, due to erosion and sedimentation)	• **Water Crossing Design (see above)** • **Crossing Installation (see above)** • **Timing Windows (see above)** • **Work Area (see above)** • **Equipment Use (see above)** • **Erosion and Sediment Control (see above)** • **Material Stockpiling and Handling (see above)** • **Grading and Excavation (see above)** • **Dewatering Activities (see above)** • **Rehabilitation** (see above)	*Net effect on changes to rare aquatic habitat.* • Changes to rare aquatic species habitat will be minimized with the implementation of the proposed mitigation measures; however, minor changes to the habitat may still occur.
		Changes to rare aquatic species mortality • Potential for disturbance to rare aquatic species habitat and changes in mortality of fish due to construction blasting and/or vibration (includes disturbance to or mortality of fish eggs or larvae)	• **Blasting (see above)** • **Timing Windows (see above)**	*Net effects on rare aquatic species mortality* • Changes in mortality of fish due to blasting are unlikely, and will be minimized provided recommended mitigation is implemented; however some rare aquatic species mortality may occur.
Surface Water	• Site preparation	*Changes to surface water quality*	• **Water Quality**	*Net effect to surface water quality*

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
	• Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	• Reduction in surface water quality from erosion and sedimentation	– Develop and implement a Spill Prevention and Response Plan outlining steps to prevent and contain any chemicals or sediment, avoid contamination of adjacent waterbodies and train staff on associated procedures. – Turbid water shall not be discharged to a watercourse or wetland. – Vegetation management will be done using mechanical techniques rather than herbicides. • **Erosion and Sediment Control (see above)** • **Grading and Excavation (see above)** • **Equipment Use (see above)** • **Blasting (see above)** • **Material Stockpiling and Handling (see above)** • **Rehabilitation (see above)** • **Work Area (see above)**	• Reduction in surface water quality through releases of sediment can be minimized through the implementation of an erosion and sediment control measures however, some sediment release may still occur.
		Changes to surface water quality • Reduction in surface water quality due to accidental spills including fuels, lubricants, and concrete washing near waterbodies	• **Equipment Use (see above)** • **Water Quality (see above)** • **Spills (see above)**	*Net effect on surface water quality* • Reduction in surface water quality from accidental spills can be minimized provided a Spill Prevention and Response Plan is developed and implemented, however some minor effects may remain due to limitation in current spill clean-up processes.
		Changes to surface water quality and quantity • Potential effects on surface water quality and quantity due to dewatering discharge	• **Water Management** – The discharge shall be regulated at such a rate that there is no flooding in the receiving water body and that no soil erosion is caused that impacts the receiving water body. – Where feasible, leave a layer of low cover vegetation intact between the outfall and receiving waterbody to provide additional water dispersion and entrapment of suspended solids. – No direct discharge to Key River, Magnetawan River, Giroux River, Naiscoot River or any surface water feature will occur without acquiring applicable regulatory approvals – Divert access road runoff through drainage ditches directed into vegetated areas or through environmental protection measures (such as sediment traps, rock flow check dams, sediment barriers etc.) to ensure that exposed soils or road materials are not transported into watercourses or wetlands. Ditches >5% in slope may require lining with appropriate sized rip rap or rock check dams to protect against erosion and reduce flow velocity. – Apply measures for managing water flowing onto the construction site as well as water being pumped / diverted from the construction site such that sediment is filtered out prior to the water entering a waterbody or wetland. – 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 (i.e., ECA and PTTW). – Minimize paved surfaces and design roads to promote groundwater infiltration. – Implement groundwater infiltration techniques to the maximum extent possible. Examples include: ▪ releasing filtered water to vegetated areas; ▪ ditches should not be lined with an impermeable material (i.e., clay); and, ▪ groundwater should remain on site (unless contaminated). – Where possible, groundwater discharge water shall be directed to areas of groundwater recharge to allow for natural infiltration to the groundwater system. • **Water Quality** • **Dewatering Activities**	*No net effect* • Effects on surface water quality and quantity from dewatering discharge can be mitigated provided recommended mitigation is implemented
Groundwater	• Site preparation • Installation of access roads • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	*Change to groundwater quality* • Reduction in groundwater quality due to accidental contaminant spills, vehicle and machinery operation, and concrete truck rinsing.	• Develop and implement a Spill Prevention and Response Plan outlining steps to prevent and contain any chemicals or to avoid contamination of adjacent waterbodies and train staff on associated procedures. • Apply the following general mitigation measures to avoid soil or water contamination: – Ensure machinery is maintained free of fluid leaks. – Site maintenance, vehicle maintenance, vehicle washing and refuelling to be done in specified areas at least 30 m away from natural features (wetlands, woodlands and wildlife habitats) or waterbodies. – Store any stockpiled materials at least 30 m away from wetlands, woodlands, wildlife habitats, or waterbodies. – Store any potential contaminants (e.g., oil, fuels and chemicals) in designated areas using secondary containment, where necessary. • Also refer to mitigation measures for "*Reduction in soil quality due accidental release of contaminants during construction, heavy equipment and vehicle use, excavation, and concrete truck rinsing, etc.*" under the **Contaminated Lands** VEC for additional proposed mitigation measures. • Ensure that wash water used for the cleaning of cement construction materials does not come in contact with the ground. Deposit waste water in a concrete washout container that allows evaporation and hardening for easier disposal or recover and	*Net effect on groundwater quality* • Reduction in groundwater quality due to accidental contaminant spills, vehicle and machinery operation, and concrete truck rinsing would be minimized with the implementation of a Spill Prevention and Response Plan; however, residual contaminants may remain in some areas of the Transmission Line.

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
			recycle wash water back into cement truck. • If dewatering of tower foundations is required, and expected to exceed 50,000 L/day, develop and implement a construction Dewatering Discharge Plan describing appropriate areas and methods for discharge in consultation with the MOECC and prescribed in any provincially approved permits (i.e. ECA and PTTW).	
		Change to groundwater quality *Change to groundwater quantity* • Reduction in groundwater quality (turbidity), quantity and physical damage to groundwater supply wells due to agitation of the subsurface during construction blasting (including potential release of soluble substances used during blasting.	• Undertake blasting operations in accordance with relevant provincial guidelines and standards on land under provincial jurisdiction and relevant federal guidelines and standards on land under federal jurisdiction. • Develop and implement a Blasting Plan that includes standard BMPs to minimize extent of adverse noise and vibration from blasting (Also refer to mitigation measures for "*Disturbance to topography, including rock and soil instability, due to blasting*." Under the **Soils and Terrain** VEC for a list of proposed blasting BMPs). • 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 is detected the well owner will be provided 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, the impacted well will be modified (i.e. deepened) or a new well be constructed that is sufficient to provide the resident with a potable supply of water similar in quantity and quality of baseline conditions.	*Net effect on groundwater quality and quantity* • Reduction in groundwater quality (turbidity) and quantity would be minimized through the development and implementation of a Blasting Plan; however, potential disturbance to the subsurface resulting in a temporary reduction in groundwater quality and/or quantity may remain. • Physical damage to groundwater supply wells would be compensated for through implementation of mitigation but some effects to ground water quality will remain.
		Change to groundwater quantity • Reductions in groundwater recharge quantities due to increases in impervious surfaces.	• Minimize paved surfaces and design roads to promote groundwater infiltration. • Where possible, direct groundwater discharge water to natural infiltration systems.	*No net effect.* • No reduction in groundwater recharge quantities anticipated provided recommended infiltration techniques and measures are implemented.
Hazard Land	• Site preparation • Installation of access roads • Transportation of equipment and materials • Installation of watercourse crossings • Installation of towers and transmission lines • Construction completion • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	*Increased risk for soil and/or rock instability* • Disturbance to hazard lands, including rock and soil instability, due to blasting and use of heavy machinery.	• Avoid construction within hazard lands to the extent possible • Explosive use to be in accordance with relevant federal and provincial guidelines. • Undertake blasting operations in accordance with relevant provincial guidelines and standards on land under provincial jurisdiction and relevant federal guidelines and standards on land under federal jurisdiction. • Investigate alternative rock-excavating techniques (i.e. mechanical means) where possible. • Develop and implement a Blasting Plan that includes standard BMPs to minimize extent of adverse noise, vibration and slope instability from blasting, including: – Follow proper drilling, explosive handling and loading procedures; – Implement safe handling and storage procedures for all material, including soluble substances used for blasting; – Use blasting mats over top of holes to minimize scattering of blast debris around the area; – Reduce blasting footprint to the extent possible; – Do not use ammonium nitrate based explosives in or near water due to the production of toxic by-products; and – Remove all blasting debris and other associated equipment / products from the blast area. • Where visible through vegetation cover, identify unstable rock structures through visual assessment during construction. If any areas of concern are identified, mitigation may be implemented (as required) to minimize potential erosion, settlement, slope instability, foundation failure or rock fall hazards as a result of construction.	*Net effect on soil and/or rock stability* • Disturbance to hazard lands, including rock and soil instability, due to blasting and heavy machinery use would be minimized through the development and implementation of a Blasting Plan, however, some disturbance could remain.
Air quality	• Site preparation • Installation of access roads • Transportation of equipment and materials • Installation of watercourse crossings • Installation of towers and transmission lines • Installation of Interconnect Station (Switching Station) • Construction completion • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	• Vehicle and equipment combustion emissions contributing to a reduction in local air quality.	• Equip vehicles with effective exhaust systems. • Avoid unnecessary idling of engines. • Ensure that construction equipment is frequently maintained and kept in good working condition.	*Net effect on air quality* • Emissions from construction and decommissioning activities will be minimized by the proposed mitigation measures; however, some effects to combustion emissions reducing air quality will remain.
		• Nuisance effects related to dust generated from vehicle access and construction activity contributing to a reduction in local air quality.	• Implement construction speed limit of 30 km/hr on all access roads. • Conduct dust suppression (i.e., spraying water on access roads and work areas) during dry conditions to minimize dust generation. • If complaints arise, develop and maintain a reporting log, respond to complaint in a timely fashion and mitigate accordingly.	*Net effect on air quality* • Dust from construction activities minimized by the proposed mitigation measures; however, some effects to air quality may remain.
Economic Base	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines	• Positive effect on economic base, specifically for the "construction" and "retail" industries as a result of revenue generation.	• Mitigation measures are not required. •	*No net effect*
		• Positive indirect and induced economic benefits based on an increase of the local workforce for	• Mitigation measures are not required.	*No net effect*

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
	• Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Decommissioning completion • ROW restoration	the construction and decommissioning phases.		
Employment and Labour Supply	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Decommissioning completion • ROW restoration	• Positive effects as jobs are created for local workers.	• Mitigation measures are not required.	*No net effect*
Local Businesses, Institutions and Public Facilities	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Decommissioning completion • ROW restoration	• Positive effect on local businesses (specifically construction suppliers and services) • Increased demand for local goods and services.	• Mitigation measures are not required. • Mitigation measures are not required.	*No net effect* *No net effect*
Neighbourhood and Community Character	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Decommissioning completion • ROW restoration	• Disturbance to local permanent and seasonal residents due to construction and decommissioning noise and vibration.	• Equip vehicles with effective muffler and exhaust systems. • Avoid unnecessary idling of engines. • Ensure that construction equipment is frequently maintained and kept in good working condition. • Ensure that noise emissions from construction equipment do not exceed guidelines specified in MOECC publication NPC-115. • Implement construction speed limit of 30 km/hr on all access roads. • Undertake blasting operations in accordance with applicable provincial guidelines on land under provincial jurisdiction and relevant federal guidelines and standards on land under federal jurisdiction. • If complaints arise from users, develop and maintain a reporting log, respond to complaint in a timely fashion and mitigate accordingly.	*Net effect on neighbourhood and community character* • Disturbance to permanent and seasonal residents can be partially mitigated through standard mitigation measures for construction noise effects; however some intermittent disturbance may remain through the construction and decommissioning phases.
Community Services and Infrastructure	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines	• Increased demand on medical services in Parry Sound and Sudbury.	• Develop a Health and Safety Plan and Emergency Response Plan for construction personnel, to provide information and coordination of medical services in the event of a site emergency. • Ensure that all existing and future employees and contractors comply with the Plan and Contractor's health and safety requirements.	*No net effect*

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
	• Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Decommissioning completion • ROW restoration			
Traffic	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Decommissioning completion • ROW restoration	• Delays in traffic during construction and decommissioning phases.	• Develop a Traffic Management Plan prior to the construction phase and a Traffic Management Plan prior to the decommissioning phase that will include: duration of construction; transportation route for equipment and components; MTO overweight/oversize permit requirements; flagging and signage requirements; s. • Post signage to notify traffic and trail users of construction activities and duration, where necessary. • Comply with provincial requirements for load restrictions and hire a police escort or security company to guide/accompany any transport convoys, as required. • Employ flag persons to regulate traffic movement, where appropriate. • Establish haul routes to avoid tight turning areas and delays. • Inspect overhead lines which would require removal and have the appropriate utility available to assist as necessary.	*Net effect on 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.
Recreation, Cottaging and Tourism	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Decommissioning completion • ROW restoration	• Avoidance of recreational areas near Transmission Line due to noise and vibration.	• Mitigation for nuisance effects related to noise and vibration due to construction and decommissioning is considered under the Neighbourhood and Community Character VEC.	*Net effects on recreation, cottaging and tourism* • Noise and vibration disturbance can be partially mitigated through standard mitigation measures for construction noise effects; however some disturbance will remain through the construction and decommissioning phases.
		• Avoidance of recreational areas near the Route B Transmission Line due dust.	• Mitigation for nuisance effects related to dust from construction and decommissioning is considered under the Air Quality VEC.	*Net effects on recreation, cottaging and tourism* • Mitigation measures will minimize effects; however, some disturbance will due to dust remain through the construction and decommissioning phases.
		• Temporary disruption of access to existing recreational trails that will be used for construction access.	• Mitigation for temporary disruption to access and enjoyment of recreational trails by cottagers, tourists and recreational users from construction and decommissioning activities is considered under Traffic • Minimize interference of construction equipment and materials by restricting activities and workers and stockpiling of materials to designated areas.	*Net effects on recreation, cottaging and tourism* • Mitigation measures will minimize effects; however, temporary disruption to access and enjoyment of recreational trails by cottagers, tourists and recreational users may still occur intermittently throughout construction and decommissioning phases.
Public Health and Safety	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Decommissioning completion • ROW restoration	• Increased potential for traffic related incidents on Highway 69/400 and regional roads.	• Mitigation for traffic incidents from construction and decommissioning is considered under the Traffic.	*No net effect*
Non-Renewable Resources	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and	• Reduction in the licensed area and the quantity of extractable resources.	• Engage with owners of licenses to maintain an exchange of information during construction and decommissioning.	*Net effect on non-renewable resources* • There will continue to be a reduction in licensed area and the quantity of extractable resources after mitigation is applied.

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
	materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Decommissioning completion • ROW restoration			
Forestry Resources	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Decommissioning completion • ROW restoration	• Loss of harvestable forest resources due to vegetation clearing.	• Minimize clearing widths for access roads and transmission towers. • Cut and pile all salvageable wood in designated locations for removal from the proposed ROW. • Continue consultation and co-ordination with the forest resource license holder to further evaluate impacts to their planned operations.	*Net effect on forest resources* • Mitigation measures will minimize effects; however, loss of some harvestable forest resources will remain.
Game and Fishery Resources	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Decommissioning completion • ROW restoration	• Decline in available game resources for recreational hunters due to sensory disturbance of wildlife and loss of wildlife habitat.	• Mitigation for nuisance effects related to noise and vibration due to construction and decommissioning is considered under the Wildlife and Wildlife Habitat VEC.	*Net effect on game and fishery resources* • Mitigation measures will minimize effects; however, a decline in available game resources may remain.
Residential, commercial, institutional lands	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Disassembly and removal of Transmission Line components • Decommissioning completion • ROW restoration	• Change in land use on private property.	• Any change in land use on private properties will be agreed to by the property owners.	*Net effect on land use* • Land acquired for use of the Route B Transmission Line will result in a change in land use for this land.
Aboriginal Land	• Site preparation	• Disturbance to current users of	• Mitigation for nuisance effects related to noise and vibration due to construction and decommissioning is considered under the	*Net effect on Aboriginal land use and resources*

Table 6-2: Potential Effects, Proposed Mitigation Measures and Net Effects – Construction / Decommissioning

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
Use and Resources	• Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Decommissioning completion • ROW restoration	traditional lands from construction / decommissioning noise and vibration.	Neighbourhood and Community Character VEC.	• Disturbance to current 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.
		• Loss of available lands used for Aboriginal traditional activities due to loss of wildlife habitat and disturbance to wildlife.	• Engage with Aboriginal communities with traditional lands near Route B Transmission Line to maintain an exchange of information during construction and decommissioning. • Minimize clearing widths for access roads, infrastructure and storage and laydown areas. • Restore temporarily disturbed areas following construction. • Mitigation measures proposed in the Vegetation and Ecological Communities VEC, Wildlife and Wildlife Habitat VEC and Fish and Fish Habitat VEC to minimize loss of habitat and disturbance to wildlife which will serve to further reduce impacts to Aboriginal traditional activities.	*Net effect on Aboriginal land use and resources* • Mitigation measures will minimize effects; however, a decline in available lands used for Aboriginal traditional activities may remain.
Waste	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Power disconnection and decommissioning of service • Decommissioning completion • ROW restoration	• Increase in waste material on the landscape	• Waste material generated during construction will be removed regularly from the Transmission Line work site and disposed of at an approved waste facility.	*No net effect*
Archaeological Resources	• Site preparation • Installation of access roads • Installation of watercourse crossings • Transportation of equipment and materials • Installation of towers and transmission lines • Installation of Interconnect Stations (Switching Station) • Construction completion • Decommissioning completion • ROW restoration	• Discovery or disturbance to archaeological resources, previously unknown within the Transmission Line study area following Stage 1 and Stage 2 Archaeological Assessments.	• Should artifacts be encountered during construction and decommissioning activities, 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. If previously unknown archaeological resources are impacted the archaeologist monitor will have the power to halt construction until the archaeological resources have been appropriately dealt with. • Excavate and document any archaeological features or artifacts that are found as per the Ontario Ministry of Tourism, Culture and Sport's 2011 Standards and Guidelines for Consultant Archaeologists.	*No net effect*

Table 6-3: Potential Effects, Proposed Mitigation Measures and Net Effects – Operations

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
Contaminated Lands	• Unplanned maintenance of the access roads and of the ROW	*Change in soil quality* • Reduction in soil quality due accidental release of contaminants during operation, etc.	• Develop and implement a Spill Prevention and Response Plan outlining steps to prevent and contain any chemicals and to avoid soil contamination. This plan will include, for example: – Protocols for access to spill control and containment equipment/materials (e.g., ensure that spill control and containment equipment/materials are readily available on site and additional spill clean-up materials will be available if needed, restock materials contained in spill clean-up kits as necessary). – Protocols for handling contaminated materials (i.e., to be handled in accordance with relevant federal and provincial guidelines and standards). – Include Material Safety Data Sheets (MSDS) which provides information on proper handling of chemicals readily available for the types of chemicals that will be used on-site. – Training requirements for operational staff on associated emergency response plan and spill clean-up procedures. – Protocols for cleaning up spills (i.e., clean up spills as soon as possible, with contaminated soils removed to a licenced disposal site, if required; analyze any soil encountered during operation that has visual staining or odours, or contains rubble, debris, cinders or other visual evidence of impacts to determine its quality in order to identify the appropriate disposal method). – Reporting procedures to meet provincial and federal (if the spill is on federal land) requirements (e.g., reporting spills and verification of clean-up), emergency contact and project management phone numbers. • Apply the following general mitigation measures to avoid soil contamination: – Ensure machinery is maintained free of fluid leaks. – Site maintenance, vehicle maintenance, to be done on spill pads in specified areas at least 30 m away from natural features (wetlands and/or waterbodies). – Store any potential contaminants (e.g., oil, fuels and chemicals) in designated areas using secondary containment, where necessary. – All potentially hazardous materials to be stored in containment sites within the Operations and Maintenance Facility, within berms where possible. • Keep Transmission Line ROW clear of garbage and debris.	*Net effect in soil quality* • Reduction in soil quality due to accidental release of contaminants during operation would be minimized following implementation of mitigation measures; however, residual contaminants may remain in some areas of the Transmission Line.
Wildlife and Wildlife Habitat	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Change in mortality risk – Possible bird / bat mortality as a result of collision with overhead transmission lines and poles.	• Bird diverters / anti-perching devices should be considered in areas of concentrated bird features (i.e. raptor nest, heronry) along the transmission lines to minimize potential collisions. • Use of monopoles to limit perching/roosting opportunities, where possible.	*Net effect on Change in mortality risk* • Bird / bat mortality as a result of collision with overhead transmission line poles will be minimized through the implementation of mitigation measures; however, net effects may remain.
		• Change in behaviour – Disturbance to wildlife caused by noise from maintenance activities, and possible avoidance of the area.	• Include standard BMPs for limiting noise from maintenance activities (similar to construction, e.g., mufflers on vehicles, limiting work between 7 a.m. and 7 p.m., etc.). Refer to Noise VEC mitigation recommendations.	*No net effect on Change in behaviour* • Wildlife may alter movement patterns and avoid the transmission line as a result of noise from maintenance activities. This will be minimized through the implementation of mitigation measures; however, no net effects will remain.
		• Change in mortality risk – Possible bird / and bat mortality as a result of vegetation removal during routine maintenance of transmission lines or poles.	• Vegetation trimming will be limited to within areas that have been previously cleared during construction. • Schedule trimming of any necessary vegetation removal during routine maintenance activities to occur outside of the overall bird nesting season, from April 1 to August 31 (EC, 2014). If this is not possible, the following mitigation will apply, in accordance with the Migratory Birds Convention Act (MBCA) and the Wildlife Management Plan: – Conduct nest and nesting activity surveys by a qualified Avian Biologist immediately prior to vegetation maintenance. – If an active nest or confirmed nesting activity is found, a buffer area will be implemented around the nest or nesting activity. The radius of the buffer will range depending on the species, level of disturbance and landscape context which will be confirmed by a qualified Avian Biologist (EC, 2014). The nest itself will not be marked using flagging tape or other similar material as this increases the risk of nest predation, however the outer limits of the buffer can be marked (EC, 2014) and UTM coordinates will be taken. • Avoid vegetation trimming / removal during the bat maternity roosting period of May 15 and September 1. If suitable cavity trees must be removed during the bat roosting season (April 30 through September 1), each cavity tree will be searched for signs of maternity roosts by a qualified Biologist prior to removal. Should vegetation trimming be required between April 30 and May 31, and July 1 through September 1, it may be conducted only after bat exit surveys from cavity trees slated for removal have been carried out within 24 hours of removal, following MNRF protocols. • Any hazard tree identified, such as a tree which poses an immediate safety risk to individuals and / or a risk to the functionality of equipment, may be removed at any time with notification to MNRF. The need for additional mitigation measures or permits in these circumstances will be addressed on a site-specific basis. • Ensure that maintenance staff works within defined work areas. • Limit maintenance to periods outside resident wildlife breeding periods, where possible, and restrict daily maintenance to between the hours of 7 a.m. and 7 p.m. • Conduct maintenance activities during the hours of 7 a.m. to 7 p.m. for increased visibility, wherever possible.	*Net effect on Change in mortality risk* • Bird / bat mortality resulting from vegetation removal near infrastructure will be minimized through the implementation of mitigation measures; however, net effects may remain.

Table 6-3: Potential Effects, Proposed Mitigation Measures and Net Effects – Operations

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
		• Change in mortality – Possible mortality of wildlife as a result of collisions with vehicles using access roads, as well as the maintenance of access roads and transmission line infrastructure.	• Maintain speed limit signage (30 km/hr) and speed bumps installed along new / temporary access roads and instruct all staff to be vigilant for wildlife while driving on site. • Conduct maintenance activities during the hours of 7 a.m. to 7 p.m. for increased visibility, wherever possible. • Schedule trimming of any necessary vegetation removal during routine maintenance activities to occur outside of the overall bird nesting season, from April 1 to August 31 (EC, 2014). If this is not possible, the following mitigation will apply, in accordance with the Migratory Birds Convention Act (MBCA) and the Wildlife Management Plan: – Conduct nest and nesting activity surveys by a qualified Avian Biologist immediately prior to vegetation maintenance. – If an active nest or confirmed nesting activity is found, a buffer area will be implemented around the nest or nesting activity. The radius of the buffer will range depending on the species, level of disturbance and landscape context which will be confirmed by a qualified Avian Biologist (EC, 2014). The nest itself will not be marked using flagging tape or other similar material as this increases the risk of nest predation, however the outer limits of the buffer can be marked (EC, 2014) and UTM coordinates will be taken. • Any hazard tree identified, such as a tree which poses an immediate safety risk to individuals and / or a risk to the functionality of equipment, may be removed at any time with notification to MNRF. The need for additional mitigation measures or permits in these circumstances will be addressed on a site-specific basis. • Avoid vegetation trimming / removal during the bat maternity roosting period of May 15 and September 1. If suitable cavity trees must be removed during the bat roosting season (April 30 through September 1), each cavity tree will be searched for signs of maternity roosts by a qualified Biologist prior to removal. Should vegetation trimming be required between April 30 and May 31, and July 1 through September 1, it may be conducted only after bat exit surveys from cavity trees slated for removal have been carried out within 24 hours of removal, following MNRF protocols. • Provide “Wildlife Awareness” training to all maintenance/operations, site inspection and monitoring staff. Training is to include wildlife avoidance measures, wildlife handling protocols, and recording of wildlife encounter incidents.	*Net effect on Change in mortality risk* • Wildlife mortality resulting from access road maintenance and collisions with vehicles will be minimized through the implementation of mitigation measures; however, net effects may remain.
Vegetation and Ecological Communities	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Change in Species Diversity • Change in Community Diversity – Introduction of invasive species due to increased disturbance / edge effects, loss of vegetation cover as a result of trimming under the Transmission Line	• If encroachment of invasive species is detected, management recommendations will be determined by a qualified Biologist. • Vegetation trimming will be limited to areas that have been previously-cleared during construction.	*Net effect on change in species diversity* • Change in species diversity resulting from vegetation clearing or encroachment by invasive species will be minimized through the implementation of mitigation measures; however, net effects may remain. *Net effect on change in community diversity* • Change in community diversity resulting from vegetation clearing or encroachment by invasive species will be minimized through the implementation of mitigation measures; however, net effects may remain.
		• Change in Wetland Quality and Function • – Risk of soil or water contamination from oils, gasoline, grease, and other materials during maintenance activities.	• Refer to mitigation measures for “Reduction in soil quality due to accidental release of contaminants during operations” under the Soils and Terrain VEC.	*No net effect on change in Wetland Quality and Function* • Soil or water contamination resulting from accidental contaminant spills will be minimized through the implementation of mitigation measures. No net effects are anticipated.
Avian SAR	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Change in habitat – Habitat alteration • Change in behaviour – Avoidance behaviour by avian SAR due to noise disturbance • Effects to Change in mortality risk – Continued direct mortality from collision with transmission line infrastructure and electrocution. Chimney Swift (*Chaetura pelagica*)	• Refer to general mitigation for wildlife under the Wildlife and Wildlife Habitat, and Avi-fauna VEC. • Conduct maintenance activities during the hours of 7 a.m. to 7 p.m. for increased visibility, wherever possible. Schedule trimming of any necessary vegetation removal during routine maintenance activities to occur outside of the overall bird nesting season, from April 1 to August 31 (EC, 2014). If this is not possible, the following mitigation will apply, in accordance with the Migratory Birds Convention Act (MBCA) and the Wildlife Management Plan: – Conduct nest and nesting activity surveys by a qualified Avian Biologist immediately prior to vegetation maintenance. – If an active nest or confirmed nesting activity is found, a buffer area will be implemented around the nest or nesting activity. The radius of the buffer will range depending on the species, level of disturbance and landscape context which will be confirmed by a qualified Avian Biologist (EC, 2014). The nest itself should never be marked using flagging tape or other similar material as this increases the risk of nest predation, however the outer limits of the buffer can be marked (EC, 2014) and UTM coordinates will be taken. – Any hazard tree, such as a tree which poses an immediate safety risk to individuals and / or a risk to the functionality of equipment, is identified; the tree may be removed at any time with notification to MNRF. The need for additional mitigation measures or permits in these circumstances will be addressed on a site-specific basis. • Post Species at Risk Fact Sheets in areas where staff can become familiar with species that may be encountered.	*Net effects to habitat changes* • Whip-poor-will habitat change can be minimized through implementation of mitigation measures; however, maintenance activities (e.g. vegetation trimming) may result in some alteration/loss of habitat, thus potential net effects may remain. • Maintenance activities are not anticipated to result in alteration/loss of habitat of Chimney Swift, Loggerhead Shrike and Least Bittern; thus no net effects are anticipated. *Net effects to Change in behaviour* • . Change in behaviour can be minimized through implementation of mitigation measures; however, noise disturbance from maintenance activities may

Table 6-3: Potential Effects, Proposed Mitigation Measures and Net Effects – Operations

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
		Least Bittern (*Ixobrychus exilis*) Bobolink (*Dolichonyx oryzivorus*) Whip-poor-will (*Caprimulgus vociferous*)	• Bird diverters / anti-perching devices should be considered in areas of concentrated bird features (i.e. raptor nest, heronry) along the transmission lines to minimize potential collisions. • Use of monopoles to limit perching/roosting opportunities.	result in avoidance behaviour by all avian SAR, thus potential net effects may remain. *Net effects to Change in mortality risk* • Change due to increase in mortality risk can be minimized through implementation of mitigation activities; however, some mortality due to collisions with infrastructure is possible for all avian SAR, thus potential net effects may remain.
Turtle Species at Risk	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Change in habitat – habitat alteration • Change in behaviour – Avoidance behaviour by wildlife due to noise disturbance • Change in mortality risk – Continued direct mortality from collision with vehicles on access roads Blanding's Turtle (*Emydoidea blandingii*) Restricted Species[8]	• Refer to general mitigation for wildlife under the Wildlife and Wildlife Habitat, and Avi-fauna VEC. • Periodically maintain any Ecopassages that were installed during construction to allow for movement corridors in areas where high turtle activity has been identified, to limit road mortality. • Conduct maintenance activities during the hours of 7 a.m. to 7 p.m. for increased visibility, wherever possible. • Post Species at Risk Fact Sheets in areas where on-site staff can become familiar with species that may be encountered. • Develop and implement a Sighting Response Protocol which will include: – Education of all on-site staff about SAR species that may be encountered; – Immediate stop in construction activity within 10 m of an observation of SAR until a qualified Biologist can confirm the species has vacated the area. In lieu of calling a Biologist, work can be resumed after a 24 hr period if no evidence of the species exists within the immediate area of previous observation. If the species still exists within the immediate area after 24 hr, a qualified Biologist will be contacted to provide appropriate direction; – For animals in immediate danger, handling procedures will be established for designated personnel (i.e., construction monitor, qualified Biologist) in the event that a SAR needs to be moved out of potential harm; – Maintain a species observation log to track species observations during the construction / decommissioning phase of the project so that adaptive management can be applied based on species concentrations; – All required permits under ESA will be obtained prior to handling SAR; – Reporting procedures to MNRF; and – Post Species at Risk Fact Sheets in areas where on-site staff can become familiar with possible species encounters.	*No net effects to habitat changes* • Maintenance activities are not anticipated to result in alteration/loss of habitat of turtle SAR, thus no net effects will remain. *No net effects to Change in behaviour* • Maintenance activities and noise disturbance are not anticipated to result in avoidance behaviour by turtle SAR through implementation of mitigation measures; thus, no net effects will remain. *Net effects to Change in mortality risk* • Change due to increase in mortality risk can be minimized through implementation of mitigation measures; however, mortality due to collisions with vehicles may occur for turtle SAR, thus potential net effects may remain.
Snake Species at Risk	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Habitat Change – Habitat alteration • Change in behaviour – Avoidance behaviour by wildlife due to noise disturbance • Change in mortality risk – Continued direct mortality from collision with vehicles on access roads. Eastern Hog-nosed Snake (*Heterodon platirhinos*) Massasauga Rattlesnake (Great Lakes / St. Lawrence population) (*Sistrurus catenatus* pop. 1)	• Refer to general mitigation for wildlife under the Wildlife and Wildlife Habitat, and Avi-fauna VEC. • Conduct maintenance activities during the hours of 7 a.m. to 7 p.m. for increased visibility, wherever possible. Post Species at Risk Fact Sheets in areas where on-site staff can become familiar with species that may be encountered. • In the rare event that a snake is encountered, and needs to be relocated, a qualified Biologist/handler will be contacted to move the snake a safe distance away in appropriate habitat. • Develop and implement a Sighting Response Protocol which will include: – Education of all on-site staff about SAR species that may be encountered; – Immediate stop in construction activity within 10 m of an observation of SAR until a qualified Biologist can confirm the species has vacated the area. In lieu of calling a Biologist, work can be resumed after a 24 hr period if no evidence of the species exists within the immediate area of previous observation. If the species still exists within the immediate area after 24 hr, a qualified Biologist will be contacted to provide appropriate direction; – For animals in immediate danger, handling procedures will be established for designated personnel (i.e., construction monitor, qualified Biologist) in the event that a SAR needs to be moved out of potential harm; – Maintain a species observation log to track species observations during the construction / decommissioning phase of the project so that adaptive management can be applied based on species concentrations; – All required permits under ESA will be obtained prior to handling SAR; – Reporting procedures to MNRF; and – Post Species at Risk Fact Sheets in areas where on-site staff can become familiar with possible species encounters.	*No net effects to habitat changes* • Maintenance activities are not anticipated to result in alteration/loss of habitat of snake SAR through implementation of mitigation measures; thus no net effects will remain. *Net effects to Change in behaviour* • Change in behaviour can be minimized through implementation of mitigation measures; however, noise disturbance from maintenance activities may result in avoidance behaviour by snake SAR, thus potential net effects may remain. *Net effects to Change in mortality risk* • Change due to increase in mortality risk can be minimized through implementation of mitigation measures; however, mortality due to collisions with vehicles may occur for snake SAR, thus potential net effects may remain.
Bat Species at Risk	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Habitat change – Habitat alteration • Change in behaviour – Avoidance behaviour by wildlife due to noise disturbance • Change in mortality risk	• Refer to general mitigation for wildlife under the Wildlife and Wildlife Habitat, and Avi-fauna VEC. • Conduct maintenance activities during the hours of 7 a.m. to 7 p.m. for increased visibility, wherever possible. • Avoid vegetation trimming / removal during the bat maternity roosting period of May 15 and September 1. If suitable cavity trees must be removed during the bat roosting season (April 30 through September 1), each cavity tree will be searched for signs of maternity roosts by a qualified Biologist prior to removal. Should vegetation trimming be required between April 30 and May 31, and July 1 through September 1, it may be conducted only after bat exit surveys from cavity trees slated for removal have been carried out within 24 hours of removal, following MNRF protocols. • Any suitable hazard tree, such as a tree which poses an immediate safety risk to individuals and / or a risk to the functionality of	*Net effects to habitat changes* • Habitat change can be minimized through implementation of mitigation measures; however, maintenance activities may result in alteration/loss of habitat of bat SAR, thus potential net effects may remain. *Net effects to Change in behaviour*

8. *Restricted Species refers to those species for which occurrences records are not provided in documents to be publicly-released, given their rarity and pressures such as poaching.*

Table 6-3: Potential Effects, Proposed Mitigation Measures and Net Effects – Operations

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
		– Continued direct mortality from collision transmission line infrastructure, and electrocution. Little Brown Myotis (*Myotis lucifugus*) Eastern Small-footed Myotis (*Myotis leibii*) Northern Myotis (*Myotis septentrionalis*)	equipment, is identified; the tree may be removed at any time with notification to MNRF. The need for additional mitigation measures or permits in these circumstances will be addressed on a site-specific basis. • Develop and implement a Sighting Response Protocol which will include: – Education of all on-site staff about SAR species that may be encountered; – Immediate stop in construction activity within 10 m of an observation of SAR until a qualified Biologist can confirm the species has vacated the area. In lieu of calling a Biologist, work can be resumed after a 24 hr period if no evidence of the species exists within the immediate area of previous observation. If the species still exists within the immediate area after 24 hr, a qualified Biologist will be contacted to provide appropriate direction; – For animals in immediate danger, handling procedures will be established for designated personnel (i.e., construction monitor, qualified Biologist) in the event that a SAR needs to be moved out of potential harm; – Maintain a species observation log to track species observations during the construction / decommissioning phase of the project so that adaptive management can be applied based on species concentrations; – All required permits under ESA will be obtained prior to handling SAR; – Reporting procedures to MNRF; and – Post Species at Risk Fact Sheets in areas where on-site staff can become familiar with possible species encounters.	• Change in behaviour can be minimized through implementation of mitigation measures; however, noise disturbance from maintenance activities may result in avoidance behaviour by bat SAR, thus potential net effects may remain. *Net effects to Change in mortality risk* • Change due to increase in mortality risk can be minimized through implementation of mitigation measures; however, individual mortality due to collisions with infrastructure is anticipated for bat SAR, thus potential net effects may remain.
Other Mammal SAR	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Habitat change – Habitat alteration • Change in behaviour – Avoidance behaviour by wildlife due to noise disturbance • Change in mortality risk – Continued direct mortality from collision with vehicles on access roads. Mountain Lion / Cougar (*Puma concolor*)	• Refer to general mitigation for wildlife under the Wildlife and Wildlife Habitat, and Avi-fauna VEC. • Conduct maintenance activities during the hours of 7 a.m. to 7 p.m. for increased visibility, wherever possible. Standard BMPs for limiting noise from maintenance activities (similar to those applied for the construction phase, e.g., mufflers on vehicles, limiting work between 7 a.m. and 7 p.m.) will be included. • The SAR Fact Sheet will be clearly posted in areas where on-site staff can become familiar with species that may be encountered.	*Net effects to habitat changes* • Habitat change can be minimized through implementation of mitigation measures; however, maintenance activities may result in alteration/loss of habitat of mammal SAR, thus potential net effects may remain. *Net effects to Change in behaviour* • Change in behaviour can be minimized through implementation of mitigation measures; however, noise disturbance from maintenance activities may result in avoidance behaviour by mammal SAR, thus potential net effects may remain. *Net effects to Change in mortality risk* • Change due to increase in mortality risk can be minimized through implementation of mitigation measures; however, mortality due to collisions with vehicles may occur for mammal SAR thus net effects may remain.
Groundwater	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW	*Change in groundwater quality* • Reduction in groundwater quality due to accidental contaminant spills, vehicle and machinery operation during operation.	• Develop and implement a Spill Prevention and Response Plan outlining steps to prevent and contain any chemicals or to avoid contamination of adjacent waterbodies and train staff on associated procedures. • Apply the following general mitigation measures to avoid soil and/or water contamination: – Ensure machinery is maintained free of fluid leaks. – Store any potential contaminants (e.g., oil, fuels and chemicals) in designated areas using secondary containment, where necessary. • Also refer to mitigation measures for "Reduction in soil quality due accidental release of contaminants during operation, etc." for additional proposed mitigation measures.	*Net effect on groundwater quality* • Reduction in groundwater quality due to accidental contaminant spills, vehicle and machinery operation during operation would be minimized through the implementation of a Spill Prevention and Response Plan and other proposed mitigation measures; however, residual contaminants may remain in some areas of the Transmission Line.
Fish and Fish Habitat and Rare Aquatic Species	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW Vegetation management	*Changes to Fish Habitat* • Potential for disturbance to fish habitat due to contaminant spills.	• **Equipment Use** • **Water Quality** • **Spills** – Develop and implement a Spill Prevention and Response Plan outlining steps to prevent and contain any chemicals or to avoid contamination of adjacent waterbodies and train staff on associated procedures. – Apply the following general mitigation measures to avoid soil or water contamination: ▪ Ensure machinery is maintained free of fluid leaks. – Store any potential contaminants (e.g., oil, fuels and chemicals) in designated areas using secondary containment, where necessary	*Net effect on fish habitat* • Effects on fish habitat due to spills are minimized following effective mitigation and implementation of a Spill Prevention and Response Plan; however some minor effects on fish habitat may remain due to limitations in current spill clean-up processes.
	• Replacement and maintenance of culverts along access road crossings	*Changes to Fish Habitat* • Potential for obstruction of fish passage in waterbodies due to design of replacement water crossings and debris build-up at watercourses	• **Water Crossing Design** – Design culverts installed at waterbodies supporting direct fish habitat to facilitate fish passage. – Design culverts to accommodate high and low flows of the watercourse. • **Timing Windows** – Time in-water work to avoid sensitive life stages of fish species (i.e. spawning), as provided in **Appendix B6**.	*Net effect on fish habitat* • 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, regular maintenance, and adherence to timing windows for maintenance

Table 6-3: Potential Effects, Proposed Mitigation Measures and Net Effects – Operations

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
				activities in-water, however some change to fish habitat will remain at localized areas.
Surface Water	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	*Changes to Surface Water Quality* • Potential effects on surface water quality due to contaminant spills.	• **Spills** – Develop and implement a Spill Prevention and Response Plan outlining steps to prevent and contain any chemicals or to avoid contamination of adjacent waterbodies and train staff on associated procedures. – Apply the following general mitigation measures to avoid soil and/or water contamination: ▪ Ensure machinery is maintained free of fluid leaks. ▪ Store any potential contaminants (e.g., oil, fuels and chemicals) in designated areas using secondary containment, where necessary. – Also refer to mitigation measures for "Reduction in soil quality due accidental release of contaminants during operation, etc." for additional proposed mitigation measures.	*Net effect on surface water* • Effects on surface water quality during maintenance can be mitigated provided a Spill Prevention and Response Plan is developed and implemented, however some minor effects may remain due to limitations in current spill clean-up processes.
Neighbourhood and Community Character	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Disturbance to local permanent and seasonal residents due to noise from maintenance activities.	• Limit maintenance activities to daylight hours. • Equip vehicles with effective muffler and exhaust systems. • Avoid unnecessary idling of engines. • Ensure that maintenance equipment is frequently maintained and kept in good working condition. • Ensure that noise emissions from maintenance equipment not exceed guidelines specified in MOECC publication NPC-115. • Implement construction speed limit of 30 km/hr on all access roads. • If complaints arise, develop and maintain a reporting log, respond to complaint in a timely fashion and mitigate accordingly.	*Net effect on neighbourhood and community character* • Disturbance to local permanent and seasonal residents can be partially mitigated by complying with regulatory noise emission standards and standard practices for operation and maintenance noise effects; however some disturbance will remain.
		• Disturbance to local permanent and seasonal residents due to noise associated with SS operation.	• Noise levels from the SS will be designed to achieve compliance with applicable Provincial noise level limits at nearby receptors.	*Net effect on neighbourhood and community character* • Operational noise from the SS may be audible in close proximity to the SS but will remain below provincial standards.
		• Effect on the visual character of some communities perceived by permanent and seasonal residents on private lands or community spaces within the Route B Transmission Line study area.	• Use of least visually intrusive transmission towers (i.e., monopole design) where possible.	*Net effect on neighbourhood and community character* • Mitigation measures will minimize effects; however, Transmission Line infrastructure will be visible from neighbourhood and community spaces and may have an effect and the views capes of a community.
Recreation, Cottaging and Tourism	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Disturbance to recreational users, cottagers and tourists due to noise related to maintenance activities.	• Mitigation for disturbance to Traditional land users near the Route B Transmission Line due to noise and vibration is considered under the Neighbourhood and Community Character VEC.	*Net effect on recreation, cottaging and tourism* • Disturbance to recreational users, cottagers and tourists can be partially mitigated by complying with regulatory noise emission standards and standard practices for operation and maintenance noise effects; however some disturbance will remain.
		• Disturbance to recreational users, cottagers and tourists due to noise related to SS operation;	• Mitigation for disturbance to Traditional land users near the Route B Transmission Line due to noise and vibration is considered under the Neighbourhood and Community Character VEC.	*Net effect on recreation, cottaging and tourism* • Operational noise from the SS may be audible in close proximity to the SS but will remain below provincial standards.
		• Avoidance of nearby recreational areas by tourists and other recreational users due to the changes to the landscape and views.	• Mitigation for effects to cottagers, tourists and recreational users avoiding nearby parks and Conservation Reserves due to the presence of Transmission Line towers and a loss of vegetation is considered under the Landscape and Views VEC.	*Net effect on recreation, cottaging and tourism* • Mitigation measures will minimize effects; however, changes to the landscape and views as perceived by cottagers, tourists, and recreational users may cause some avoidance of recreational lands.
Non-Renewable Resources	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Reduction in the quantity of prospect extractable resources (future pit / quarry / mineral operations).	• There are no mitigation measures for this effect	*Net effect on non-renewable resources* • There will be a reduction in the quantity of prospect extractable resources (future pit / quarry / mineral operations).

Table 6-3: Potential Effects, Proposed Mitigation Measures and Net Effects – Operations

VEC	Project Activity	Potential Environmental Effects	Proposed Mitigation Measures	Net Effects
Forestry Resources	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• The sustainable forest license holder could experience changes to current access (physical and/or administrative) due to the presence of Transmission Line infrastructure.	• Ensure that harvesting equipment is granted access once the line is built. • Follow up with the forest resource license to indicate any requirements for access once the line is built. • Continue consultation and co-ordination with the sustainable forest license holder to further evaluate impacts to their planned operations.	*Net effect on forest resources* • After mitigation is applied there is potential that the sustainable forest license holder may experience access restrictions to their remaining silviculture plots due to the presence of Transmission Line infrastructure.
Aboriginal Land Use and Resources	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Disturbance to users of traditional lands due to noise associated with maintenance.	• Mitigation for disturbance to users of Traditional lands near the Route B Transmission Line due to noise and vibration is considered under the Neighbourhood and Community Character	*Net effect on Aboriginal land use and resources* • Disturbance to users of Traditional Lands can be mitigated be partially mitigated through standard mitigation measures for operation noise effects; however some intermittent disturbance will remain through the operation phase.
		• Disturbance to users of traditional lands due to noise associated with the SS.	• Mitigation for disturbance to users of Traditional lands near the Route B Transmission Line due to noise and vibration is considered under the Neighbourhood and Community Character	*Net effect on Aboriginal land use and resources* • Operational noise from the SS may be audible in close proximity to the SS but will remain below provincial standards.
		• Change in the available lands used for Aboriginal traditional activities and cultural site	• Manage vegetation only as necessary for safe operation of the Route B Transmission Line requires. • Communicate with First Nations when maintenance activities are scheduled to occur on Reserve lands. • 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. • Mitigation measures proposed in the Vegetation and Ecological Communities VEC, Wildlife and Wildlife Habitat VEC and Fish and Fish Habitat VEC to minimize loss of habitat and disturbance to wildlife which will serve to further reduce impacts to Aboriginal traditional activities.	*Net effect on Aboriginal land use and resources* • 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.
Waste	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Increase in waste material on the landscape	• Waste material generated during maintenance activity will be removed regularly and disposed of at an approved waste facility.	*No net effect*
Built Heritage and Cultural Heritage Landscapes	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Change to the cultural heritage landscape character of Moose Lake Trading Post.	• Opportunities to minimize visual effects to built heritage properties will be explored during detailed design, such as pole placement.	*Net effect on built heritage and cultural heritage landscapes* • Mitigation measures will minimize effects; however, shadows will be cast on Moose Lake Trading Post, due to the presence of the Transmission Line.
Landscapes and Views	• Preventative and routine inspections of the Transmission Line components and the Switching Station • Unplanned maintenance of the access roads and the ROW • Vegetation management	• Change to the existing landscape and views as perceived by recreational land / trail users and permanent and seasonal residents and users of the recreational land and trails.	• Use least visually intrusive transmission towers (i.e., monopole design) where possible. • Mitigation for disturbance to landscapes and views of cultural significance is considered in the Built Heritage and Cultural Heritage Landscapes VEC. • Mitigation for disturbance to landscapes and views within neighbourhoods and communities within the Route B Transmission Line study area is considered in the Neighbourhood and Community Character VEC.	Net *effect* on landscapes and views • Mitigation measures will minimize effects; however, some disturbance to the landscape and views as perceived by recreational land and trail users as well as permanent and seasonal residents will remain.

6.4 Evaluation of Significance

Construction and Decommissioning

As per **Section 3.7**, only likely adverse net effects are evaluated against the criteria outlined in **Table 3-2**. An assessed determination of low, moderate or high for each criterion is included in the **Table 6-4**, along with an overall statement of significance for each potential adverse net effect.

Mitigation measures have been proposed to address potential adverse effects.

Operation

As per **Section 3.7**, only likely adverse net effects are evaluated against the criteria outlined in **Table 3-2**. An assessed determination of low, moderate or high for each criterion is included in the **Table 6-5**, along with an overall statement of significance for each potential adverse net effect.

Mitigation measures have been proposed to address potential adverse effects.

Table 6-4: Evaluation of Significance of Predicted Net Effects – Construction / Decommissioning

VEC	Net Effects	Value of the Resource Affected	Magnitude of the Effect	Geographic Extent of the Effect	Duration / Frequency of the Effect	Irreversibility of the Effect	Ecological/Social Context	Significance Statement
Soils; Sedimentation and Erosion	• Effects on soil quality and quantity (erosion and sedimentation, compaction)	• Low; effect is on a common feature within the study area (soils).	• Low; with mitigation, net erosion and compaction effects are expected to be a minor change from existing conditions.	• Low; disturbance to soil quality and quantity will be confined to construction footprints within the transmission line study area.	• Low; effect is evident only during one project phase (construction phase) before reclamation activities are complete.	• Low; effect to soil quality and quantity can be restored similar to baseline conditions.	• Low; effect to soil quality and quantity is on a feature with low fragility (soils).	• Disturbance of soil resulting in erosion, compaction and removal will be confined to the designated construction areas and occur along the Transmission Line for short durations during the construction period. Affected areas will be restored through the replacement of salvaged topsoil. • After applying effective mitigation, the effect is not significant.
	• Effects on soil quality (top soil mixing)	• Low; effect is on a common feature within the study area (soils).	• Low; with mitigation, net soil quality effects from mixing are expected to be a minor change from existing conditions.	• Low; mixing of topsoil will be confined to areas where vegetation clearing and excavation is required within the construction footprint of the study area.	• Low; effect is expected to occur infrequently over the duration of the construction phase.	• Low; effect to soil quality can be restored similar to baseline conditions.	• Low; effect to soil quality due to mixing of topsoil and subsoils is on a feature with low fragility (soils).	• Disturbance of soil resulting in mixing of topsoil and subsoil will be confined to designated construction areas and may occur within the Transmission Line study area, for short durations during the construction period. Affected areas will be restored through the replacement of salvaged topsoil. • After applying effective mitigation, the effect is not significant.
Contaminated Lands	• Effects on soil quality (spills)	• Low; effect is on a common feature within the study area (soils).	• Low; with mitigation, net soil quality effects from spills are expected to be a minor change from existing conditions.	• Low; reduction in soil quality will be confined to areas where the accidental release occurred within the construction footprint of the study area.	• Low, effect is not expected to occur unless an accidental release occurs.	• Low; effect to soil quality can be restored similar to baseline conditions.	• Low; effect to soil quality and quantity is on a feature with low fragility (soils).	• Reduction in soil quality due to the accidental release of contaminants will be localized and occur infrequently during the construction and decommissioning period. Effects to soil quality will be confined to the construction footprints 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 effective mitigation, the effect is not significant.
Wildlife and Wildlife Habitat	• Habitat change	• Low; Effect is on a common feature. Wildlife habitat in the area of the Transmission Line includes sensitive features such as habitat for several Species of Conservation Concern. These features are common within the study area and regionally.	• Moderate; Effect exceeds existing conditions. Up to 310 ha of wildlife habitat will be removed for construction of Route B; of this, approximately 32 ha will be temporary in nature. Remaining wildlife habitat will also be fragmented.	• Low; Effect is within the study area.	• Low; habitat change will be evident during one phase and occurs infrequently.	• Moderate; Effect is not readily reversible during the life of the Transmission Line. • Some wildlife habitat removal (e.g. through vegetation trimming) will exist for the duration of the Transmission Line. However, rehabilitation of temporarily disturbed areas will occur post-construction and decommissioning.	• Low; Effect is on a feature with low fragility. • Wildlife habitat in the area of the Transmission Line is common.	• An estimated 310 ha of wildlife habitat will be removed for Route B development. Wildlife habitat is abundant within the study area and regionally and permanent habitat removal and fragmentation will be localized to the Transmission Line footprint (32 ha). A number of areas will be rehabilitated after decommissioning. Habitat loss will result in some permanent loss of habitat at tower foundation locations which will not reduce habitat availability beyond a level capable of sustaining wildlife populations, including species of conservation concern in the area of the Transmission Line and regionally. • After applying identified mitigation, the effect is not significant.
	• Change in mortality risk	• Low; Effect is on a common feature. Wildlife, including Species of Conservation Concern, occur frequently throughout the study area and mortality associated with Transmission Line construction is unlikely.	• Low; Effect is inconsequential or a minor change compared to existing conditions. Proposed mitigation measures are expected to minimize or eliminate potential wildlife mortality during construction. Wildlife is abundant within the study area and the potential for construction-related mortality is not expected to have population-level effects.	• Low; Effect is within the study area.	• Low; Effect is evident only during one project phase and occurs infrequently for short durations.	• Low; Effect is readily reversible over a short period of time.	• Low; Effect is on a feature with low fragility. Some Species of Conservation Concern have the potential for increased mortality, however mortality associated with Transmission Line construction is unlikely.	• Existing wildlife is abundant within the study area and given the proposed mitigation mortality risk is anticipated to be low and will not affect the viability and sustainability of populations of species of conservation concern or other wildlife species within the study area and regionally. • After applying identified mitigation, the effect is not significant.
	• Change in behaviour	• Low; Effect is on a common feature. Wildlife including Species of Conservation Concern occur frequently throughout the study area	• Low; Effect is inconsequential or a minor change compared to existing conditions. Proposed mitigation measures are expected to minimize changes in wildlife behaviour; however, some wildlife is expected to exhibit avoidance behaviour during construction activities due to the presence of humans and noise.	• Low; Effect is within the study area.	• Moderate; Effect is evident during more than one project phase and occurs infrequently or frequently for short durations.	• Low; Effect is readily reversible over a short period of time.	• Moderate for Species of Conservation Concern; Effect is on a feature with moderate fragility, as some Species of Conservation Concern may exhibit avoidance behaviours during operations. • Low for common species; Effect is on feature with low fragility.	• Existing wildlife is abundant within the study area and given the proposed mitigation disturbance risk is anticipated to be low and of a short duration which will not likely affect the viability and sustainability of populations of species of conservation concern or other wildlife species within the Route B or regional area. • After applying identified mitigation, the effect is not significant.

Table 6-4: Evaluation of Significance of Predicted Net Effects – Construction / Decommissioning

VEC	Net Effects	Value of the Resource Affected	Magnitude of the Effect	Geographic Extent of the Effect	Duration / Frequency of the Effect	Irreversibility of the Effect	Ecological/Social Context	Significance Statement
Vegetation and Ecological Communities	• Change in species diversity	• Low; Effect is on a common feature.	• Low; Effect is inconsequential or a minor change compared to existing conditions. Proposed mitigation measures are expected to minimize changes in species diversity.	• Low; Effect will occur within the study area.	• Low; Effect is evident only during one project phase and occurs infrequently for short durations.	• Moderate; Effect is not readily reversible during the life of the Transmission Line. • Some changes in species diversity (e.g. plant composition) may persist during the operating phase within the ROW.	• Low; Effect is on a feature with low fragility; no rare plant species occur within the study area.	• Changes in species diversity are anticipated to be of low magnitude during construction/ decommissioning of the Route B Transmission Line. The net effect is limited to the footprint and is reversible as species assemblages will likely re-establish for some communities overtime through natural succession of vegetation. Although changes in species diversity will likely persist into the operation phase. • After applying identified mitigation, the effect is not significant.
	• Change in community diversity	• Low; Effect is on a common feature. Rock Barrens were identified within the study area although they are common throughout.	• Moderate; Effect exceeds existing conditions. Up to 310 ha of vegetation will be removed for construction of Route B; of this, approximately 32 ha will be temporary in nature. Remaining vegetation will also be fragmented.	• Low; Effect will occur within the study area.	• Low; Effect is evident only during one project phase and occurs infrequently or frequently for short durations.	• Moderate; Effect is not readily reversible during the life of the Transmission Line. • Habitat removal for access roads and Transmission Lines will result in the removal of vegetation for permanent infrastructure. • Some vegetation communities can be rehabilitated over the long-term.	• Low; Effect is on a feature with low fragility.	• An estimated 310 ha of vegetation will be removed. Vegetation covers the entire study area and permanent vegetation removal and fragmentation will be localized to the Route B footprint (278 ha). A number of areas will be rehabilitated after decommissioning. However, vegetation loss will result in some permanent loss of vegetation. The effect is not anticipated to reduce community diversity outside of the Route B footprint. • After applying identified mitigation, the effect is not significant.
Species at Risk	• Habitat change	• Moderate; Effect is on a moderately common feature. Species at Risk habitat is common throughout the Route B study area.	• Moderate; Effect exceeds existing conditions. Proposed mitigation measures will limit habitat loss to the area of construction but some Species at Risk habitat will be lost during Route B Transmission Line construction. Provincial legislation (i.e. ESA) allows for damage or destruction of Species at Risk habitat with a permit.	• Low; Effect will occur within the study area. .	• Low; Effect is evident during one project phase and occurs infrequently for short durations.	• Moderate; Effect via habitat change for some Species at Risk is not readily reversible during the life of the Transmission Line.	• Moderate; Effect is on a feature with moderate fragility.	• Some Species at Risk habitat will be removed during construction of the Route B Transmission Line. Species at Risk habitat is abundant within the study area. • If required, a compensation plan will be developed with the MNRF through the ESA permitting process. • After applying identified mitigation, the effect is not significant.
	• Change in mortality risk	• Moderate; Effect is on a moderately common feature. Species at Risk species are relatively common throughout the Route B study area	• Moderate; Effect exceeds existing conditions. Proposed mitigation measures will limit mortality to Species at Risk; however, even with these mitigation measures there is still a possibility for Species at Risk mortality. Provincial legislation (i.e. ESA) allows for damage or destruction of Species at Risk habitat with a permit.	• Low; Effect is within the study area. • Mortality to Species at Risk is possible but unlikely.	• Low; Effect is evident only during one project phase and occurs infrequently for short durations.	• Low; Effect is readily reversible during the life of the Transmission Line. Isolated Species at Risk mortality, if it occurs, is not anticipated to have long-term population level effects.	• Moderate; Effect is on a feature with moderate fragility, as affected Species at Risk populations are common within the study area and regionally.	• The increased risk of mortality to Species at Risk related to the Route B Transmission Line could increase the risk of isolated Species at Risk mortality during construction. If required, a monitoring/compensation plan will be developed with the MNRF through the ESA permitting process. • After applying identified mitigation, the effect is not significant
	• Change in behaviour	• Moderate; Effect is on a moderately common feature. Species at Risk species are relatively common throughout the Route B study area	• Moderate; Effect exceeds existing conditions. Proposed mitigation measures are expected to minimize changes in Species at Risk behaviour; however, some Species at Risk are expected to exhibit avoidance behaviour during construction activities due to the presence of humans and noise. Provincial legislation (i.e. ESA) allows for the harassment of individual Species at Risk with a permit.	• Low; Effect is within the study area.	• Moderate; Effect is evident during more than one project phase and occurs infrequently or frequently for short durations.	• Low; Effect is readily reversible over a short period of time. • Disturbance will be limited to the construction period.	• Moderate; Effect is on a feature with moderate fragility as affected Species at Risk populations are common within the study area and regionally.	• Disturbance effects to Species at Risk will be minimized by implementing mitigation measures. • After applying identified mitigation, the effect is not significant.

Table 6-4: Evaluation of Significance of Predicted Net Effects – Construction / Decommissioning

VEC	Net Effects	Value of the Resource Affected	Magnitude of the Effect	Geographic Extent of the Effect	Duration / Frequency of the Effect	Irreversibility of the Effect	Ecological/Social Context	Significance Statement
Fish and Fish Habitat and Rare Aquatic Species	• Effects on fish habitat and fish mortality (water crossing installation and removal, erosion, sedimentation, spills)	• Low / Moderate; Effect may be on a sensitive feature that is common within the Transmission Line study area; however with mitigation the effect is highly unlikely to occur	• Low; Effect from erosion, sedimentation and/or spills will be a minor change from existing conditions	• Low; Effect will occur within the study area.	• Low; Effect is evident only during construction and occurs infrequently for short durations	Low; Effect is readily reversible over a short period of time	• Low; fish and fish habitat are moderately resilient to disturbances; however with mitigation the effect is unlikely to occur	• Effect will be temporary in nature and minor in duration and geographic extent. • 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. Application of mitigation and spill response measures are expected to avoid most net effects. • After applying identified mitigation, the effect is not significant.
	• Effects on rare aquatic species motility (blasting and/or vibration)	• High; Effect is on a rare species	• Moderate; Effect exceeds baseline conditions	• Low; Effect is confined to sites within disturbance footprint of the study area	• Low; Frequency - infrequent and only as needed – not every tower foundation will require blasting. • Duration – short term (days)	• Moderate; mortality is irreversible.	• Moderate / High; affected fish species are rare and protected provincially.	• Effects on fish mortality are unlikely since blasting requirements near fish habitat are not anticipated. Effects can be reduced to short term and localized provided in-water work is completed outside of sensitive fish timing windows. • After applying identified mitigation, the effect is not significant.
	• Effects on rare aquatic species (erosion and sedimentation)	• Moderate; Effect may be on a rare species; however with mitigation the effect is highly unlikely to occur	• Low; Effect from erosion, sedimentation and/or spills will be a minor change from existing conditions	• Low; Effect will occur within the study area.	• Low; Effect is evident only during construction and occurs infrequently for short durations	• Low; Effect is readily reversible over a short period of time	• Moderate; rare fish are sensitive to disturbances; however with mitigation the effect is highly unlikely to occur	• Effects can be minimized following development and implementation of a flood and high water monitoring and contingency response plan as part of the Erosion and Sedimentation Control Plan • Effects will be temporary in nature and minor in duration and geographic extent. • After applying identified mitigation, effect is not significant.
Surface Water	• Effects on surface water quality (spills, erosion and sedimentation)	• Low; Effect is on a common feature (surface water) within the Transmission Line study area.	• Low; Effect from erosion, sedimentation and/or spills will be a minor change from existing conditions	• Low; Effect will occur within the study area. •	• Low; Effect is evident only during construction and occurs infrequently for short durations	• Low; Effect is readily reversible over a short period of time	• Low; surface water quality is moderately resilient to disturbances; however with mitigation the effect is highly unlikely to occur	• 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. Application of mitigation and spill response measures are expected to avoid most net effects. • After applying identified mitigation, effect is not significant.
Groundwater	• Effects on groundwater quality and quantity (blasting)	• Low; groundwater is a common feature within the study area. It is the primary source of drinking water within the Transmission Line study area; however effects are unlikely with proposed mitigation.	• Low; proposed mitigation measures are expected to minimize or mitigate effects related to the reduction in groundwater quality/quantity and physical damage to supply wells in the unlikely event of blasting activities being required.	• Low; effect to groundwater quality/quantity is predicted to be confined to the blast zone of influence within the study area.	• Low; effect is evident for a short duration before effective mitigation is applied (i.e. physical damage to well repaired and well restored).	• Low; effect is readily reversible by supplying well owners with potable water for a short duration or providing an alternative source of water (i.e. new well) as a permanent solution.	• Low; hydrogeological conditions relating to groundwater systems is a feature with low fragility within the transmission line study area.	• Blasting is highly unlikely to occur for Transmission Line installation. In an unlikely event that blasting may be required for tower foundation installation, effects to groundwater and private water wells 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). • After applying effective mitigation, the effect is not significant.
	• Effects on groundwater quality (spills)	• Low; groundwater is a common feature within the study area. It is the primary source of drinking water within the Transmission Line study area; however effects are unlikely with proposed mitigation.	• Low; proposed mitigation measures are expected to minimize or mitigate effects related accidental release of contaminants resulting in a minor change to existing conditions.	• Low to Moderate; reduction in groundwater quality could extend past the transmission line study area and is dependent on groundwater flow patterns; however mitigation will substantially reduce the opportunity for contaminants to reach the groundwater table.	• Low; Effect is evident only during construction and occurs infrequently for short durations	• Low; effect is reversible with effective spill clean-up processes.	• Low; hydrogeological conditions relating to groundwater systems is a feature with low fragility within the transmission line study area.	• Reduction in groundwater quality due to the accidental release of contaminants will 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 effective mitigation, the effect is not significant.
Hazard Lands	• Effects on soil and/or rock stability (blasting)	• Low; effect is on a common feature (hazard lands).	• Low; effect is a minor change to existing conditions due to limited extent of blasting requirements within the study area.	• Low; effect will be confined to blasting locations within the transmission line study area.	• Low; Effect is evident only during construction and occurs infrequently for short durations	• Low; effect is reversible by implementing slope stabilization measures in the unlikely event of slope instability.	• Low; effect is on a feature with low fragility.	• Blasting is highly unlikely to occur for Transmission Line installation. In an unlikely event that blasting may be required for tower foundation installation slope and rock instability resulting in rock falls is common within the transmission line study area. Effects 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 effective mitigation, the effect is not significant.

Table 6-4: Evaluation of Significance of Predicted Net Effects – Construction / Decommissioning

VEC	Net Effects	Value of the Resource Affected	Magnitude of the Effect	Geographic Extent of the Effect	Duration / Frequency of the Effect	Irreversibility of the Effect	Ecological/Social Context	Significance Statement
Air Quality	• Effects on air quality (dust, combustion emissions)	• Low; effect is on a common feature.	• Low- effects of emissions and dust will not create a measureable effect to local or regional air quality parameters.	• Low; effects to air quality will be within the Route B Transmission Line study area.	• Low; Nuisance effects of dust will be evident during construction and occurs infrequently for short durations	• Low; Effect is readily reversible over a short period of time	• Low; effect is on a feature with low fragility.	• Effects will be temporary in nature and minor in duration and frequency and geographic extent. • After applying identified mitigation, the effect is not significant.
Noise *(as it relates to Land and Neighbourhood and Community Character, Recreation, Cottaging and Tourism and Aboriginal Land Use Resources VECs)*	• Intermittent disturbance to current permanent and seasonal residents, recreational and traditional land users, cottagers and tourists from construction/decommissioning noise and vibration.	• Low; anthropogenic noise is common throughout the study area.	• Moderate; will exceed existing conditions intermittently during construction activity.	• Low; ; Effect will occur within the study area	• Low; effects will be evident during construction activities and will occur infrequently for short durations.	• Low; effect is reversible upon completion of Route B Transmission Line construction / decommissioning.	• Low; effect is on community members, recreational and traditional land users, cottagers and tourists that currently experience anthropogenic noise throughout the study area.	• After applying identified mitigation, the effect is not significant.
Traffic	• Traffic delays on highways and regional roads intermittently throughout construction and decommissioning phases.	• Low; effect is on a common feature (provincial highways and regional roads) that currently experiences intermittent traffic delays.	• Low; effect is a minor change compared to existing conditions.	• Low; effect is within the Transmission Line study area.	• Low; effects on Highway 69 / 400 and other regional roads is evident only during construction activities and occurs for short durations.	• Low; the effects of traffic are readily reversible.	• Low; the effect on a feature with low fragility.	• After applying identified mitigation, the effect is not significant.
Recreation, Cottaging and Tourism	• Some disturbance to recreation, cottaging and tourism due to dust will remain through the construction and decommissioning phases.	• Low; effect is on a common feature (recreational lands and trails).	• Moderate; dust will not result in a measureable effect to local or regional air quality parameters.	• Low; effect is within the Transmission Line study area.	• Low; dust may cause temporary annoyance but there will be no measureable effect to local or regional air quality parameters.	• Low; effects related to air quality are temporary and readily reversible.	• Low; the effect on a feature with low fragility.	• After applying identified mitigation, the effect is not significant.
	• Temporary disruption to access and enjoyment of recreational trails by cottagers tourists and recreational users may occur intermittently through the construction and decommissioning phases.	• Moderate; effect is on a moderately common feature (recreational lands and trails).	• Low; effect is inconsequential or is a minor change compared to existing conditions. Proposed mitigation measures are expected to minimize effects related to disturbance to access and decreased enjoyment of recreational trails.	• Moderate; effect is within the regional study area.	• Low; effect is evident only during construction activities and for short durations.	• Low; effect is readily reversible over a short period of time.	• Moderate; effect is on a feature with moderate fragility and will likely cause annoyance to recreational users	• After applying identified mitigation, the effect is not significant.
Non-Renewable Resources	• Reduction in licensed area and the quantity of aggregate.	• Low; effect is on a common feature (mineral and/or aggregate resources)	• Low; effect is minor compared to existing conditions. Proposed mitigation measures are expected to minimize effects.	• Low; effect on resources is within the Transmission Line study area.	• Moderate; resources will remain unavailable for exploitation throughout construction / decommissioning but will become available again after decommissioning phase.	• Moderate; Effect is not readily reversible during the life of the Transmission Line.	• Low; effect is on a feature with low fragility. Resources will be quarried in other areas throughout the life of the Route B Transmission Line	• After applying identified mitigation, the effect is not significant.
Forestry Resources	• Loss of some harvestable forest resources.	• Low; effect is on a common feature (forestry resources)	• Low; effect on forestry resources is a minor change to existing conditions	• Low; effect is within the Transmission Line Study area.	• Low; Effect is occurs only once during construction	• Low; effect is reversible over a short period of time.	• Low; effect is on a feature with low fragility –Other harvestable forestry resources will be available in the area throughout construction and decommissioning phases	• After applying identified mitigation, the effect is not significant.
Game and Fishery Resources	• Some decline in available game resources.	• Low; effect is on a common feature (game resources)	• Low; effect on game resources is a minor change compared to existing conditions. Proposed mitigation measures are expected to minimize effects.	• Low; effect is within the Transmission Line study area.	• Moderate; effect is evident during construction / decommissioning and operation phases and occurs infrequently for short durations.	• Moderate; effect is not readily reversible. The loss of habitat and sensory disturbance to game will occur throughout the life of the Transmission Line	• Low; effect is on a feature with low fragility as game will inhabit areas outside of the Route B Transmission Line study area.	• After applying identified mitigation, the effect is not significant.
Residential, Commercial and Institutional Lands	• Change in land use on private property.	• Low; effect is on a common feature (private lands) that will primarily be changed with agreement from the landowner	• Low; effect is a minor change compared to existing conditions.	• Low; effect is within the Transmission Line study area.	• Moderate; effect is evident during more than one project phase and occurs continuously; however landowners will be able to predominantly continue current land uses.	• Moderate; effect is not readily reversible during the life of the Transmission Line.	• Low; effect is on a feature with low fragility.	• After applying identified mitigation, the effect is not significant.

Table 6-4: Evaluation of Significance of Predicted Net Effects – Construction / Decommissioning

VEC	Net Effects	Value of the Resource Affected	Magnitude of the Effect	Geographic Extent of the Effect	Duration / Frequency of the Effect	Irreversibility of the Effect	Ecological/Social Context	Significance Statement
Aboriginal Land Use and Resources	• Some decline in the available lands used for Aboriginal traditional activities.	• Low; effect is on a common feature (Traditional lands)	• Low; effect on Traditional lands is a minor change compared to existing conditions. Proposed mitigation measures are expected to minimize effects.	• Low; effect is within the Transmission Line study area.	• Low; effect is evident during the construction and decommissioning phases.	• Low; effect is readily reversible	• Low; effect on lands used for traditional activities is on a feature with low fragility.	• After applying identified mitigation, the effect is not significant.

Table 6-5: Evaluation of Significance of Predicted Net Effects – Operations

VEC	Net Effects	Value	Magnitude	Geographic Extent	Duration / Frequency	Irreversibility	Ecological/Social Context	Significance Statement
Contaminated Land	• Effects on soil quality (spills)	• Low; effect is on a common feature within the study area (soils).	• Low; effect is expected to be a minor change from existing conditions.	• Low; reduction in soil quality will be confined to areas where the accidental release occurred within the study area.	• Low, effect is not expected to occur unless an accidental release occurs.	• Low; effect to soil quality can be restored similar to baseline conditions.	• Low; effect to soil quality and quantity is on a feature with low fragility (soils).	• Reduction in soil quality due to the accidental release of contaminants will be localized and occur infrequently during the operation period. Effects to soil quality will 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 effective mitigation, the effect is not significant.
Wildlife and Wildlife Habitat	• Change in mortality risk (Bird, Bat, Wildlife)	• Low; Effect is on a common feature. Wildlife habitat in the area of the Transmission Line includes sensitive features such as habitat for several Species of Conservation Concern. These features are common within the study area and regionally.	• Low; Effect is inconsequential or a minor change compared to existing conditions. Proposed mitigation measures are expected to minimize potential wildlife mortality during operations. Wildlife are abundant within the study area and operations/ maintenance activities related-mortality anticipated to be rare in part due to the infrequent nature of the maintenance activities and therefore are not expected to have population-level effects.	• Low; Effect is within the study area.	• Low; Effect is evident only during one project phase and occurs infrequently for short durations.	• Low; Effect is readily reversible over a short period of time, following construction of the Transmission Line.	• Moderate for Species of Conservation Concern; Effect is on a feature with moderate fragility, as some Species of Conservation Concern have the potential for increased mortality. • Low for common species; Effect is on feature with low fragility.	• Existing wildlife (including common wildlife and Species of Conservation Concern) is abundant within the study area and given the proposed mitigation mortality risk is anticipated to be low and will not likely affect the viability and sustainability of populations of species of conservation concern or other wildlife species within the study area and regionally. • After applying identified mitigation, the effect is not significant.
Vegetation and Ecological Communities	• Change in species diversity	• Low; Effect is on a common feature.	• Low; Effect is inconsequential or a minor change compared to existing conditions. Proposed mitigation measures are expected to minimize or mitigate change in species diversity.	• Low; Effect will occur within the study area.	• Low; Effect is evident only during one project phase (maintenance activity) and occurs infrequently or frequently for short durations.	• Moderate; Effect is not readily reversible during the life of the Transmission Line. • Some changes in species diversity (e.g. plant composition) may persist during the operating phase.	• Low; Effect is on a feature with low fragility.	• Changes in species diversity are anticipated to be minor during operations of the Route B Transmission Line 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 overtime through natural succession of vegetation. • After applying identified mitigation, the effect is not significant.
	• Change in community diversity (including community loss)	• Low; Effect is on a common feature. Rock Barrens were identified within the study area although they are common throughout.	• Low; Effect is inconsequential or is a minor change compared to existing conditions. Proposed mitigation measures are expected to minimize or mitigate change in community diversity.	• Low; Effect will occur within the study area.	• Low; Effect is evident only during one project phase and occurs infrequently for short durations.	• Moderate; Effect is not readily reversible during the life of the Transmission Line. • Most vegetation communities can be rehabilitated after decommissioning.	• Low; Effect is on a feature with low fragility.	• Changes in community diversity during operations are anticipated to occur on common features and are readily reversible upon decommissioning. • After applying identified mitigation, the effect is not significant.
Species at Risk	• Change in mortality risk	• Moderate; Effect is on a moderately common feature. Species at Risk identified to occur within the study are relatively common.	• Moderate; Effect exceeds existing conditions. Proposed mitigation measures will limit increased mortality risk to Species at Risk; however, even with this mitigation there is still potential for some mortality during infrequent maintenance activity. Provincial legislation (i.e. ESA) allows for Species at Risk mortality with a permit.	• Low; Effect is within the study area. • Mortality to Species at Risk is possible but unlikely.	• Low; Effect is evident only during one project phase and occurs infrequently for short durations.	• Low; Effect is readily reversible during the life of the Transmission Line. Isolated Species at Risk mortality, if it occurs, is not anticipated to have long-term population level effects.	• Moderate; Effect is on a feature with moderate fragility, since affected Species at Risk species are considered common within the study area and regionally.	• The increased risk of Species at Risk mortality related to the operations of the Transmission Line may result in isolated Species at Risk mortality. HIW is committed to monitoring Species at Risk mortality and, if required, will develop a compensation plan with the MNRF based on the results of the monitoring and follow-up program. • After applying identified mitigation, and potential compensation the effect is not significant,
	• Change in behaviour	• Moderate; Effect is on a moderately common feature. Species at Risk identified to occur within the study are relatively common.	• Low; Effect exceeds existing conditions. Presence of humans during operations may result in some change in behaviour (e.g. avoidance) compared to existing conditions, though considered inconsequential. • Provincial legislation (i.e. ESA) allows for damage or	• Low; Effect is within the study area. .	• Low; Effect is evident during maintenance activity and occurs infrequently for short durations.	• Low; Effect is readily reversible over a short period of time. Change in behaviour may occur during maintenance activities of the Transmission Line and access roads but these activities are anticipated to have short-term effects.	• Moderate; Effect is on a feature with moderate fragility since affected Species at Risk species are considered common within the study area and regionally.	• Disturbance effects to Species at Risk are not anticipated to affect the viability and sustainability of populations within the study area or regionally. • After applying identified mitigation, the effect is not significant.

Table 6-5: Evaluation of Significance of Predicted Net Effects – Operations

VEC	Net Effects	Value	Magnitude	Geographic Extent	Duration / Frequency	Irreversibility	Ecological/Social Context	Significance Statement
			destruction of Species at Risk habitat with a permit.					
	• Change in habitat	• Moderate; Effect is on a moderately common feature. Species at Risk habitat identified to occur within the study are relatively common.	• Low; Effect will be a minor change from existing conditions since the majority of habitat change occurs during operations.	• Low; Effect will occur within the study area. .	• Low; Effect is evident during one project phase and occurs infrequently for short durations.	• Moderate; Effect via habitat change for some Species at Risk is not readily reversible during the life of the Transmission Line.	• Moderate; Effect is on a feature with moderate fragility.	• Some Species at Risk habitat will be altered during operation of the Route B Transmission Line. Species at Risk habitat is abundant within the study area. • If required, a compensation plan will be developed with the MNRF through the ESA permitting process. • After applying identified mitigation, the effect is not significant.
Fish and Fish Habitat and Rare Aquatic Species	• Effects on fish and fish habitat (Spills)	• Low; Effect may be on a sensitive feature that is common within the Transmission Line study area; however with mitigation the effect is highly unlikely to occur	• Low; Effect from minor spills will be a minor change from existing conditions	• Low; Effect will occur within the study area.	• Low; Effect is evident during operations and occurs infrequently for short durations	• Low; Effect is readily reversible over a short period of time	• Low; affected fish and fish habitat are highly resilient to disturbances	• There is a low probability of spills of contaminants and limited magnitude of effects on surface water quality. Minor leaks or spills may occur. Application of mitigation and spill response measures are expected to avoid most net effects. • After applying the identified mitigation, the effect is not significant.
	• Effects on fish habitat (obstruction of fish passage through blocked water crossings)	• Low ; Effect may be on a sensitive feature that is common within the Transmission Line study area	• Low; Effect will be a minor change to existing conditions	• Low; Isolated to area at water crossings	• Low; effect occurs infrequently over a short duration	• Low; effect is readily reversible over a short period of time.	• Low; affected fish and fish habitat are highly resilient to disturbances	• 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, regular maintenance • Effect will be limited in magnitude, geographic extent, duration and is reversible. • After applying the identified mitigation, the effect is not significant.
Surface Water	• Effects on Surface Water Quality (spills)	• Low; Effect is on a common feature (surface water) within the Transmission Line study area.	• Low; Effect will be a minor change compared to existing conditions	• Low; Effect will occur within the study area.	• Low; Effect is evident only during operations and occurs infrequently for short durations	• Low; Effect is reversible over a short period of time	• Low; affected fish and fish habitat are highly resilient to disturbances	• There is a low probability of spills of contaminants and limited magnitude of effects on surface water quality. Minor leaks or spills may occur. Application of mitigation and spill response measures are expected to avoid most net effects. • After applying the identified mitigation, the effect is not significant.
Groundwater	• Effects on groundwater quality (spills)	• Low; groundwater is a common feature within the study area. It is the primary source of drinking water within the Transmission Line study area; however effects are unlikely with proposed mitigation.	• Low; proposed mitigation measures are expected to minimize or mitigate effects related to the reduction in groundwater quality/quantity and physical damage to supply wells from blasting activities.	• Low; Effect will occur within the study area.	• Low; Effect is evident only during operations and occurs infrequently for short durations	• Low; effect is reversible with effective spill clean-up processes.	• Low; hydrogeological conditions relating to groundwater systems is a feature with low fragility within the transmission line study area.	• 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 effective mitigation, the effect is not significant.
Noise (as it relates to Land and Neighbourhood and Community Character, Recreation, Cottaging and Tourism and Aboriginal Land Use and Resources VECs)	• Intermittent disturbance to current permanent and seasonal residents, recreational and traditional land users, cottagers and tourists from noise from maintenance.	• Low; anthropogenic noise is common throughout the study area.	• Low; will be comparable to existing conditions during operations	• Low; Effect will occur within the study area	• Low; effect will be evident during operation activities but is unlikely to be noticeable to most users.	• Low; effect is reversible upon completion of Route B Transmission Line operations.	• Low; effect is on community members, recreational and traditional land users, cottagers and tourists that currently experience anthropogenic noise throughout the study area.	• After applying identified mitigation, the effect is not significant.
	• Disturbance to current permanent and seasonal residents, recreational and traditional land users, cottagers and tourists from noise due to SS operation.	• Low; anthropogenic noise is common throughout the study area.	• Low; will be comparable to existing conditions during operations	• Low; Effect will occur within the study area	• Low; effect will be evident during operation activities but is unlikely to be noticeable to most users.	• Low; effect is reversible upon completion of Route B Transmission Line operations.	• Low; effect is on community members, recreational and traditional land users, cottagers and tourists that currently experience anthropogenic noise throughout the study area.	• After applying identified mitigation, the effect is not significant.
Neighbourhood and Community Character	• Transmission Line infrastructure will be visible from private land and neighbourhood and community spaces. This may have an effect and the viewscapes of a community.	• Low; effect is on a common feature (neighbourhood and community spaces) where visual effects from infrastructure installations are also common.	• Low; visual effects to neighbourhood and community character are a minor change compared to existing conditions.	• Low; effect is within the Transmission Line study area	• Low; effect is evident only during operations and will only be visible when affected users are in the immediate vicinity of the transmission line.	• Low; the effects on views is readily reversible upon decommissioning.	• Low; the effect is on a feature with low fragility	• After applying identified mitigation, the effect is not significant.
Recreation, Cottaging and Tourism	• Changes to the landscape and views as perceived by cottagers, tourists, and	Low; effect is on a common feature (recreational, cottaging and tourism areas)	• Low; visual effects are a minor change compared to existing conditions.	• Low; effect is within the Transmission Line study area	• Low; effect is evident only during operations and will only be visible when affected	• Moderate; effect is readily reversible after the life of the Transmission line	• Low; the effect is on a feature with low fragility	• After applying identified mitigation, the effect is not significant.

Table 6-5: Evaluation of Significance of Predicted Net Effects – Operations

VEC	Net Effects	Value	Magnitude	Geographic Extent	Duration / Frequency	Irreversibility	Ecological/Social Context	Significance Statement
	recreational users may cause some avoidance of recreational lands.	where visual effects from infrastructure installations are also common.			users are in the immediate vicinity of the transmission line.			
Non-Renewable Resources	• There will be a reduction in the quantity of prospect extractable resources (future pit / quarry / mineral operations).	• Low; the effect is on a common feature (mineral and/or aggregate resources)	• Low; the effect is minor compared to existing conditions.	• Low; effect on resources is within the Transmission Line study area.	• Moderate; resources within the ROW will remain unavailable throughout operation but will become available again after decommissioning phase.	• Moderate; effect is readily reversible after the life of the Transmission line.	• Low; the effect is on a feature with low fragility. Resources will be quarried in other areas throughout the life of the Route B Transmission Line	• After applying identified mitigation, the effect is not significant.
Forestry Resources	• Potential that sustainable forest license holder could experience access changes to their remaining silviculture plots due to the presence of Transmission Line infrastructure.	• Low; effect is on a common feature (forestry resources)	• Low; effect on access is expected to be inconsequential or a minor change to existing conditions	• Low; effect is within the Transmission Line Study area.	• Moderate- effect will remain throughout operation phase but will occur infrequently or for short durations.	• Low; effect is reversible over a short period of time.	• Low; effects to access can be managed through communication and agreements between HIW and the sustainable forest license holder	• After applying identified mitigation, the effect is not significant.
Aboriginal Land Use and Resources	• 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.	• Low; effect is on a common feature (Traditional lands)	• Low; effect on Traditional lands is a minor change compared to existing conditions. Proposed mitigation measures are expected to minimize or mitigate effects.	• Low; effect is within the Transmission Line study area.	• High; effect is evident during operation phase and occurs continuously.	• Low; effect is readily reversible	• Low; effect on lands used for traditional activities is on a feature with low fragility. Traditional activities will continue to occur outside of the Transmission Line ROW.	• After applying identified mitigation, the effect is not significant.
Built Heritage and Cultural Heritage Landscapes	• Shadows will be cast on Moose Lake Trading Post, throughout the operation of the Transmission Line.	• Moderate; effect is moderate as the arrangement of power corridors to transportation corridors and adjacent structures is typical.	• Low; effect is inconsequential or is a minor change compared to existing conditions.	• Low; effects due to shadows are expected to be localized within the Moose Lake Trading Post and cottages, within and / or near the Transmission Line study area.	• Moderate; Shadows will be evident during the operation phase and will occur infrequently or frequently for short durations.	• Moderate; effect is not readily reversible during the life of the Transmission Line.	• Low; The effect is on a feature with low fragility	• After applying identified mitigation, the effect is not significant
Landscape and Views	• Some disturbance to the landscape and views as perceived by recreational land and trail users as well as permanent and seasonal residents will remain.	• Low; effect is on a common feature where visual effects from infrastructure installations are also common.	• Low; visual effects are a minor change compared to existing conditions.	• Low; effect is within the Transmission Line study area	• Low; effect is evident only during operations and will only be visible when affected users are in the immediate vicinity of the transmission line.	• Low; the effects on views is readily reversible upon decommissioning.	• Low; the effect is on a feature with low fragility	• After applying identified mitigation, the effect is not significant.

6.5 Other Environmental Effects

6.5.1 Accidents and Malfunctions

Accidents or malfunctions are defined as those activities that result in unintentional negative consequences. Accidents or malfunctions could result from human activities undertaken during the construction/decommissioning phase or the operational phase.

Accidents and malfunctions are uncommon at transmission line sites. Implementation of protection measures outlined in the Spill Prevention and Response Plan, Erosion and Sediment Control Plan, Blasting Plan, Construction Dewatering and Discharge Plan and Transmission Line monitoring and maintenance program should further reduce the likelihood and magnitude of adverse environmental effects from accidents and malfunctions.

Construction / decommissioning and operation activities were reviewed to determine potential accidents and malfunctions associated with the Transmission Line that could cause potential environmental effects. As required by the HIFN Guidance document, this chapter provides an overview of possible accidents and malfunctions, which includes: an identification of the potential occurrences related to Transmission Line activities, the mitigation measures to prevent or minimize the accidents and malfunctions, response procedures if an accident occurs and the significance of the effects.

Construction / Decommissioning

Potential Effects and Mitigation

During the construction / decommissioning phase, potential accidents and malfunctions associated with the Transmission Line include accidental discharges and spills, and equipment malfunction and fire. Precautions will be taken and mitigation measures applied to avoid these unlikely occurrences during construction / decommissioning of the Transmission Line. Mitigation measures to minimize the potential for accidents and malfunctions are outlined below.

Accidental Discharges and Spills

Construction / decommissioning activities will not require storage of large quantities of fuels or other hazardous materials on-site; however, the Contractor may opt to have a fuel storage tank. Although fuel quantities are small, there is the possibility for fuel or other hazardous substance spills associated with construction / decommissioning activities. Materials that could be accidentally spilled include relatively small quantities of fuel, oil, lubricants, grease, hydraulic fluids, cable installation fluid and concrete wash water associated with construction equipment maintenance and concrete pouring activity.

Accidental spills could result in adverse environmental effects by contaminating: soils and terrain, groundwater, wildlife habitat, vegetation and ecological communities, surface water, fish and fish habitat, land and resources used for traditional purposes by Aboriginal Persons. Accidental discharges and spills could result in the following adverse environmental effects:

- Change to vegetation and wildlife habitat;
- Reduced soil quality/quantity;
- Reduced water quality;
- Change to fish and fish habitat; and
- Disturbance to Aboriginal land use and resources.

To mitigate the potential for spills, the fuel tank will have secondary containment (to capture any spilled fuel) and bollards to protect the tank from any vehicular impact. All fuels and hazardous material use will be subject to best management practices for fuel storage and handling. These will be documented in the Spill Prevention and Response Plan (SPRP). The SPRP will, at a minimum, follow best management practices for spill response and will be completed in accordance with relevant provincial standards and federal if on federal land. The SPRP will be in place prior to initiation of construction / decommissioning activities to ensure that proper measures are applied should a spill occur including:

- Stopping all work in the area of a contaminant spill until the spill is cleaned up;
- Ensuring that spill control and contaminant equipment / materials are readily available on site;
- Having protocols for access to additional spill clean-up materials, if needed;
- Ensuring that contaminated materials are handled in accordance with relevant provincial guidelines and standards;
- Having the Material Safety Data Sheets (MSDS) which provides information on proper handling of chemicals readily available for the types of chemicals that will be used on-site;
- Providing proper training of operational staff on associated emergency response plan and spill clean-up procedures;
- Cleaning up spills as soon as possible, with contaminated soils removed to a licenced disposal site, if required;
- Restocking materials contained in spill clean-up kits as necessary;
- Analyzing any soil encountered during excavation that has visual staining or odours, or contains rubble, debris, cinders or other visual evidence of impacts to determine its quality in order to identify the appropriate disposal method; and,
- Developing reporting procedures to meet provincial requirements (e.g., reporting spills and verification of clean-up), and to include emergency contact and project management phone numbers.

The contractor will be required to immediately contain the spill of any hazardous material upon discovery, unless the type of chemical is unknown. In this case, sampling would be required to ensure appropriate handling and disposal. Proposed mitigation for spills outlined under each applicable VEC will minimize adverse environmental effects from any potential spills. After applying identified mitigation, the effect is not significant.

Equipment Malfunction

In extreme cases, there could be potential failure or malfunction of transmission lines during erection of transmission towers (i.e. tower falling over) and/or accidents associated with construction equipment including excavators, backhoes, cranes, hoists, etc. Equipment and/or transmission line malfunction could result in the following adverse environmental effects:

- Disturbance of vegetation and wildlife habitat;
- Reduced soil quality/quantity;
- Reduced water quality;
- Disturbance to fish and fish habitat; and,
- Disturbance to Aboriginal land use and resources.

Equipment operation and infrastructure installation will be completed by skilled operators with appropriate experience for the task (e.g., crane operation). All equipment will be maintained at appropriate intervals, including checks as required to assess tire pressures, belts and hoses, fluid levels, and to identify mechanical defects or

worn materials. In addition, installation of towers and transmission line, installation of SS will only be completed when environmental considerations are favourable (i.e., low winds, no chance of lightning, little to no rainfall etc.). Equipment malfunction that would result in adverse environmental effects is uncommon and the proposed mitigation measures further reduce the likelihood of a malfunction occurring. After applying identified mitigation, the effect is not significant.

Accidental Fires

There is the potential for accidental fires to occur during construction / decommissioning of the Transmission Line. Fires could occur as a result of a spark from equipment malfunction, which could spread throughout the construction / decommissioning site. As a result, a fire could release emissions to the atmosphere, which could affect the vegetation and wildlife habitat, endanger wildlife and affect the ability of local and First Nation communities to use the areas within the study area.

To ensure accidental fires are controlled, the Contractor will be required to develop fire-protection measures in their Health and Safety Plan and include the types of fire suppression equipment, communications, notifications and reporting protocols and initial response procedures as may be required by provincial and federal agencies. After applying identified mitigation, the effect is not significant.

Operations

Potential Effects and Mitigation

During the operation phase, potential accidents and malfunctions associated with the Transmission Line could include accidental discharges and fires. Precautions will be taken and mitigation measures applied to avoid these unlikely occurrences during the operation of the Transmission Line. Mitigation measures to minimize the potential for these accidents and malfunctions are outlined below.

Accidental Discharges and Spills

Potential accidental discharges and spills could occur as a result from transformers, spills from lubrication fluids, and release of petroleum hydrocarbons from vehicles conducting maintenance activities. Accidental spills could result in the following adverse environmental effects:

- Change to vegetation and wildlife habitat;
- Reduced soil quality/quantity;
- Reduced water quality; and,
- Change to fish and fish habitat.

To mitigate these potential adverse environmental effects from accidental discharges and spills, HIW will implement and follow best management practices included in the SPRP during the operation phase. The SPRP will be in place prior to initiation of operation activities to ensure that proper measures are applied.

HIW will be required to immediately contain the spill of any hazardous material upon discovery, unless the type of chemical is unknown. In this case, sampling would be required to ensure appropriate handling and disposal.

General mitigation measures will also be applied to avoid soil and/or water contamination, such as:

- Ensure machinery is maintained free of fluid leaks;

- Undertake site maintenance, vehicle maintenance, vehicle washing and refuelling at least 30 m away from natural features (wetlands and/or waterbodies);
- Store any stockpiled materials at least 30 m away from wetlands and/or waterbodies;
- Store any potential contaminants (e.g., oil, fuels and chemicals) in designated areas using secondary containment, where necessary;
- Store all potentially hazardous materials in containment sites within the Operations and Maintenance Facility, within berms where possible;
- Keep Transmission Line clear of garbage and debris;
- Ensure maintenance machinery is maintained free of fluid leaks;

After applying identified mitigation, the effect is not significant.

Accidental Fires

There is the potential for accidental fires to occur during the operation phase. Accidental fires could be caused by maintenance activities (where a flame is required) or caused by lightning. HIW will have in the Health and Safety Plan the procedures should a fire be detected. To mitigate this effect, fire extinguishers will be located on maintenance vehicles and fire response procedures will be developed and adhered to. After applying identified mitigation, the effect is not significant.

6.6 Effects of the Environment on the Transmission Line

The following sections provide a description of potential effects of the environment on the Transmission Line, including mitigation measures (where relevant).

6.6.1 Climatic Fluctuations

Global computer climate modeling indicates an increase in the variability of weather patterns, with an increase in average annual temperatures of 2 to 6^{o}C projected by the end of the 21st Century, with a corresponding increase in annual precipitation amounts, number of hot days, number of severe storms, and drought conditions (Riebeek, 2007).

An increase in annual temperature, number of hot days and drought events will not directly impact the operation of Transmission Line. However, increased drought conditions may increase the potential for forest fires within the Transmission Line study area. Large forest fires could damage the transmission towers and lines and SS and require major replacement of facilities in an extreme event.

6.6.1.1 Extreme Events

Extreme events such as extreme wind, electric storms, heavy ice/snow and seismic events could potentially impact the Transmission Line. The sections below are descriptions of the various extreme events that may potentially affect the Transmission Line study area.

Extreme Winds

There is potential for extreme winds in the Transmission Line study area. Extreme winds during periods of below-freezing air temperatures could contribute to lowered wind chill and blowing snow. This could result in reduced

visibility, limiting ROW access to the Transmission Line. Extreme winds could cause downed trees, which could also block access roads. In addition, transmission lines could be susceptible to damage by extreme winds if improperly designed or installed.

In the event of a tornado in the study area, some infrastructure damage may occur and potentially affect the local landscape and habitat (e.g., vegetation damage, increased dust, etc.). Tornado events are temporary and the likelihood of such an event impacting the Transmission Line is remote. As such, to mitigate for tornadoes is to ensure proper and regular maintenance programs of the Transmission Line.

Electric Storms

There is potential for electric storms in the Transmission Line study area. In the event of a thunderstorm, it is recommended that there be no personnel near the Transmission Line. Thunderstorms may be accompanied by hail, lightning, and high winds which could damage the Transmission Line and create unsafe working conditions.

To ensure safety of the personnel in the area, weather forecasts will be monitored for advanced warning of incoming storms and temperature extremes, providing time to prepare for extreme weather conditions. Preparation will include mobilizing equipment to key areas for maintenance and providing personnel with safe refuge.

Heavy Ice/Snow

Heavy ice / snow and severe snowstorms may potentially affect the Transmission Line operation. Mitigation for snowfall and heavy ice is concentrated on effective snow / ice removal. A Snow Removal Program will be employed to ensure safe and efficient operations.

6.6.1.2 Seismic Events

The Transmission Line is not located in an area that is prone to severe earthquake events; however, the possibility for a minor earthquake is always present. An earthquake has the potential to damage the Transmission Line components and affect operations by causing operational delays. In an unlikely event of an earthquake, mitigation measures are limited to proper and regular maintenance activities.

7. Environmental Protection Planning

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. It will also include management plans recommend during the EA, including:

- Traffic Management Plan
- Spill Prevention and Response Plan
- Blasting Plan (if required)
- Rehabilitation Plan
- Erosion and Sediment Control Plan
- Construction Dewatering and Discharge Plan (if required)
- Wildlife Management Plan
- SAR Management Plan
- Archaeology and Cultural Resources Management Plan

The EPP will be based on:

- *EA ACT* requirements
- O.Reg. 116/01 Category B Environmental Review requirements
- Henvey Inlet Wind LPs Environmental Management System;
- Final EA Report;
- permit conditions; and
- professional experience.

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).

8. Follow-up and Monitoring

8.1 Follow-up Program

The purpose of a follow-up program is "for verifying the accuracy of the environmental assessment of a project, and determining the effectiveness of any measures taken to mitigate the adverse environmental effects of the project." (CEA Agency, 2014). The Transmission Line follow-up program will assist in determining if any further mitigation is required should the environmental effect continue to occur with proposed mitigation.

This EA predicts that, with the implementation of mitigation and adaptive management measures (in situations where monitoring indicates a need for additional mitigation), the Transmission Line is not anticipated to have significant mortality effects on SAR or other wildlife including migratory birds. The issue of potential wildlife mortality is important to HIFN and other interested parties so a follow-up program is proposed to verify the accuracy of the EA and determine the effectiveness of mitigation measures.

The EA has identified wildlife habitat for numerous species including both common species (e.g., moose, White-tailed Deer) as well as SAR (e.g., Massasauga Rattlesnake and Blandings Turtle) throughout the Transmission Line Study Area. To verify the accuracy of the EA, the follow-up program (Wildlife Mortality Follow-up Program) will involve ongoing monitoring by environmental monitors and construction/operations staff for any wildlife mortality associated with Transmission Line activities during construction and operations. Environmental Monitors and construction/operations staff will be required to document any mortality caused by Transmission Line activities including the expected cause of mortality during the construction and operation phase. This will also include a tracking system developed and implemented for turtle, snake and SAR sightings as well as any wildlife mortality associated with Transmission Line activities in order to inform adaptive management for mortality, if required. The staff member will take photos of the species for further review (e.g. to determine species, age, sex, etc.), if necessary, by a qualified Biologist.

Any wildlife mortality will be reported to the appropriate Environmental Lead (e.g., Environmental Manager for construction and operations) within 24 hours of discovery (specific reporting procedures will be outlined in the EPP). The Environmental Lead will be responsible for maintaining a detailed wildlife mortality tracking system identifying the species affected, age/sex of the individual (where possible), location, date, time, causes of mortality and any actions to reduce the likelihood of additional mortality. Every time an incident has been reported, the Environmental Lead will review all information and determine if corrective action should be taken to reduce any further mortality risk.

The purpose of documenting and reporting wildlife mortality is to create a tracking system that will be used confirm EA accuracy including the effectiveness of mitigation and trigger adaptive management measures if current mitigation is not proving effective. The adaptive management plan will include specific thresholds to trigger additional mitigation based on the results of follow-up mortality monitoring. Adaptive management measures to address wildlife mortality will be documented in the EPP and may include any potential recommendations from MNRF identified during the ESA permitting process could include (but not limited to):

- Installing additional wildlife passages in areas of documented mortality;
- Adding additional vehicle controls (e.g., signage or speed bumps); and
- Adjust timing of activities to further avoid sensitive periods where possible.

The data and results of the Wildlife Mortality Follow-up Program will be documented every 6 months starting at construction commencement and then annually for 2 years post construction. A report documenting the results of

the Wildlife Mortality Follow-up Program will be provided to HIFN, MNRF (for activities in areas under MNRF jurisdiction) and EC/CWS (for activities in areas under EC/CWS jurisdiction) one month after each 6 month period starting at construction commencement and then one month after each yearly period during post-construction.

8.2 Monitoring Program

The purpose of a monitoring program under Ontario Regulation (O.Reg.) 116/01 is to confirm that mitigation measures identified in the environmental review process are implemented and effective. The Transmission Line monitoring program will confirm that mitigation measures recommended in the ERR are implemented. The monitoring program will also assist in determining if any further mitigation is required should the environmental effect continue to occur with proposed mitigation.

Generally, monitoring is conducted during construction/decommissioning to ensure that appropriate mitigation measures have been implemented to reduce or minimize potential environmental effects. Monitoring is completed during construction/decommissioning and operations (post-construction) phases. The purpose of the construction/decommissioning monitoring program is to:

- confirm that construction/decommissioning activities are being undertaken as per ERR requirements, contract documents (including drawings, plans and specifications), permit requirements and BMPs;
- confirm that mitigation measures are being installed as defined in this ERR and applicable permits;
- verify that construction activities and/or mitigation measures are not creating unintended, adverse environmental effects (e.g., if proposed sediment control measures are not providing the desired level of environmental protection, work affecting that aspect of the environment is to be stopped until the deficiency is corrected);
- identify the need for corrective or alternate mitigation measures; and
- provide a record of the construction/decommissioning process which typically includes weekly reports detailing progress, issues and actions taken to resolve those issues by the Environmental Inspector.

Monitoring programs to confirm the implementation of mitigation measures during construction/decommissioning and compliance with the commitments in this ERR and any other permitting commitments are documented throughout and summarized in **Table 8-1**.

Monitoring programs during operation (post-construction) are documented throughout and summarized in **Table 8-2**.

Table 8-1: Transmission Line Monitoring – Construction / Decommissioning

VEC	Construction / Decommissioning Monitoring
Soils, Sedimentation and Erosion	• Construction activities will be monitored by a qualified Environmental Monitor to ensure compliance with mitigation measures including the Erosion and Sediment Control Plan.
Fish and Fish Habitat and Surface Water	• Monitor on-site conditions (i.e., erosion and sediment control, spills, flooding, etc.) where construction occurs within 30 m of a watercourse on the following basis: ▪ Weekly during active construction periods. ▪ Prior to, during and post forecasted large rainfall events (>20 mm in 24 hours) or significant snowmelt events (i.e., spring freshet). ▪ Daily during extended rain or snowmelt periods. ▪ Monthly during inactive construction periods, where the site is left alone for 30 days or longer. • In the event that a spill / discharge of sediment occur, report the details of the event to MOECC, EC and/or DFO depending on the location and nature of the discharge. Include in the description, the type of discharge and any assessment and remediation undertaken. • Conduct regular inspections of construction equipment for leaks / spills • Monitor all in-water works (i.e., culvert installation or replacement) to ensure mitigation has been effectively applied. • Monitor fish habitat throughout duration of in-water construction activities (i.e., culvert installation or replacement) to identify any disturbances • Monitor downstream flow and ensure fish have been removed from the work area before isolated work area has been dewatered (if required). • Monitor visually upstream and downstream of work locations for evidence of increased turbidity and/or sediment loading • Monitor to ensure no barriers to fish passage have been created as a result of construction/decommissioning. • Monitor re-establishment of vegetation and bank stability following construction completion.
Groundwater	• Construction activities will be monitored by a qualified Environmental Monitor to ensure compliance with mitigation measures including the SPRP • In the event of an accidental spill and a reduction in groundwater quality is determined and clean-up is not possible, a continued monitoring of groundwater should be completed after the event until the groundwater shows no further indication of contamination. Depending on the size of spill and impact to groundwater, monitoring may include installation of groundwater monitoring well(s) and subsequent groundwater quality testing.
Hazard Lands	• Routine visual inspections for slope instability performed by the contractor during and after any ground disturbance in hazard lands.
Wildlife and Wildlife Habitat / Vegetation and Ecological Communities	• Construction activities including vegetation clearing, blasting (if required), dewatering (if required) and rehabilitation will be monitored by an Environmental Monitor to ensure compliance with mitigation measures including the Erosion and Sediment Control Plan, SPRP, Blasting Plan (if require), Construction Dewatering Discharge Plan (if required) and Wildlife Management Plan. • Conduct a post-planting inventory of rehabilitated temporary construction areas to determine establishment of plantings and monitor potential encroachment of invasive species.
Species at Risk	• Construction activities including vegetation clearing, blasting, dewatering and rehabilitation will be monitored by a qualified Environmental Monitor / Biologist to ensure compliance with mitigation measures including the SAR Management Plan and Endangered Species Act permit.
Air Quality	• Visual monitoring of dust emissions and impacts during construction by the contractor to ensure compliance with mitigation measures including the Blasting Plan (if required) and Erosion and Sediment Control Plan.

Table 8-2: Transmission Line Monitoring – Operations

VEC	Operations Monitoring
Wildlife and Wildlife Habitat / Vegetation and Ecological Communities	• Rehabilitated areas will be monitored one year and five years post-construction to confirm the success of rehabilitation efforts (e.g., planting survival). • If monitoring indicates rehabilitation is unsuccessful, additional rehabilitation will be implemented to achieve desired outcomes.
Species at Risk	• Rehabilitated areas will be monitored for a minimum of two (2) years post-construction to confirm the success of rehabilitation efforts (e.g., if artificial Massasauga Rattlesnake gestation / hibernation structures need to be created on site).

9. Consultation Summary

9.1 Introduction and Overview

This chapter documents communication and consultation activities for the proposed Transmission Line and has been prepared in accordance with the requirements in the MOECC's "Guide to Environmental Assessment Requirements for Electricity Projects" (the Guide) under O.Reg. 116/01. The consultation program for the proposed Transmission Line was initiated in January 2015 and continued through to the submission of Volume B, which includes the Final ERR, in September 2015. As such, all activities related to consultation are documented and submitted as part of this report.

Throughout the planning process, HIW has maintained continuous communication with stakeholders, which includes First Nation and other Aboriginal communities, government agencies, the public and other stakeholder / interest groups (such as cottagers' associations). The following provides a description of the consultation program undertaken by HIW for the proposed Transmission Line, and describes the consultation requirements outlined in the Guide and the steps taken to meet and exceed these requirements.

This chapter describes the communication tools used and the consultation activities undertaken to date, including notifications, public information centres and individual meetings with stakeholders. Questions and comments received to date from feedback received at public meetings, emails and phone calls and in-person correspondence between the HIW team and stakeholders are summarized in this chapter.

A summary of key meetings between the HIW team and various stakeholder groups, such as regulatory agencies, municipalities and Aboriginal communities, is also presented. This chapter concludes with details regarding the Interim and Final ERR review and comment periods and opportunities for further stakeholder consultation as part of the ER process.

9.2 Consultation Program

9.2.1 Consultation Requirements under Ontario Regulation 116/01

The Guide describes the requirements for stakeholder consultation and for documenting the results of the ER process as per O.Reg. 116/01. It also sets out opportunities for stakeholder review of reports prepared under this process. The following sections describe key requirements outlined in the Guide as they relate to consultation with the public, government agencies, and First Nation and other Aboriginal communities.

9.2.1.1 Consultation with the Public

According to the Guide, the purpose of public consultation in the ER process is to "allow the proponent to identify and address public concerns and issues and to provide the public with an opportunity to receive information about and make meaningful input into the project review and development" (MOECC, 2011).

As outlined in the Guide, the proponent's public consultation program is to:

- *Identify potentially affected stakeholders;*
- *Describe how the project may affect the environment;*
- *Provide appropriate notification to identified stakeholders as prescribed in the Environmental [Screening/Review] Process;*

- *Inform the public where, when and how they can be involved;*
- *Identify public concerns and issues related to the project;*
- *Address public concerns and issues raised during the program; and*
- *Document how public input is taken into account in the [review] process and in the project planning and development.*

(MOECC, 2011)

The Guide calls for public consultation to commence early in the ER process and continue throughout the process, as necessary. Under the Guide, HIW is required to "maintain a record and mailing list of all participants in the consultation process, a record of public concerns and issues, and a record of how any concerns and issues have been addressed during the Screening or Environmental Review stages" (MOECC, 2011).

9.2.1.2 Consultation with Government Agencies

The purpose of agency consultation is to "inform and receive input from all government agencies with jurisdiction or a program interest related to a particular electricity project" (MOECC, 2011) which may include federal and provincial ministries and agencies, and municipalities. It is HIW's responsibility to identify and consult the appropriate agencies.

HIW is required to contact the appropriate agency technical representatives regarding their agency's requirements, concerns and technical input, and keep them apprised of the Transmission Line's consultation program and other opportunities for their agency to participate in the ER process. The Guide encourages proponents to circulate relevant sections of the ERR to the appropriate agency contacts for comment prior to the formal review periods (MOECC, 2011).

9.2.1.3 Consultation with Henvey Inlet First Nation and Other First Nation / Aboriginal Communities

The Guide specifies that proponents should give particular consideration to "the concerns of First Nations and other Aboriginal communities located in the vicinity of, or having a potential interest in, the project. First Nations and other Aboriginal communities are to be identified, notified, consulted, and involved in an appropriate manner" (MOECC, 2011). HIW has identified the interests of First Nation and other Aboriginal communities that are relevant to the nature, location and effects of the proposed Transmission Line.

9.2.1.4 Mandatory Consultation

As outlined in the Guide, HIW is required to prepare two (2) mandatory notices:

1. **Notice of Commencement** – to be prepared at the beginning of an Environmental Review to formally announce that the Transmission Line is undergoing the Environmental Review process and that it will be subject for review under that process.
2. **Notice of Completion** – intended to inform public and agency stakeholders that HIW has completed an Environmental Review under the Environmental Review process and that the ERR is available for review for a minimum 30-day period.

While mandatory public notification requirements are specified in the Guide, other methods of public consultation used are at the discretion of the proponent (MOECC, 2011).

9.2.1.5 Documentation

The Guide requires the following documentation to be provided as it relates to consultation:

- A description of the public and agency consultation program and consultation activities / events;
- A list of agencies contacted or consulted; and
- A summary of public and agency concerns or issues, and how they have been resolved or addressed.

9.2.2 Fulfilling Consultation Requirements under Ontario Regulation 116/01

Table 9-1 provides a list of consultation requirements as described in the Guide and the corresponding section in which these requirements are fulfilled within this chapter.

Table 9-1: Consultation Requirements Under the Guide

Reference Section in the Guide	Requirements under the Guide	Corresponding Section In Current Chapter
A.6.2.1	**Public Consultation**	**Section 9.3; Section 9.4.1**
A.6.2.2	**Agency Consultation**	**Section 9.3; Section 9.4.3**
A.6.2.3	**Consultation with First Nation and Other Aboriginal Communities**	**Section 9.3; Section 9.4.2**
A.6.2.4	**Mandatory Notification**	**Section 9.3.4**
	▪ Notice of Commencement	**Section 9.3.4.1**
	▪ Notice of Completion	**Section 9.3.4.3**
A.6.2.5 / B.3.3	**Documentation**	
	▪ A description of the public and agency consultation program and consultation activities / events	**Section 9.3**
	▪ A list of agencies contacted or consulted	**Appendix C1**
	▪ A summary of public and agency concerns or issues, and how they have been resolved or addressed	**Section 9.4**
	▪ Copies of key public and agency comments	**Appendix C2**

HIW is committed to promoting active participation that goes beyond the requirements of O.Reg. 116/01 and ensuring there is ongoing communication with all stakeholders throughout the course of the ER process. As such, consultation included mandatory activities (as described in **Table 9-1**) as well many others that were beyond the basic requirements of the Guide, including invitations to two (2) PICs, radio advertisements, making information / reports available for review at the outset of the ER process as well as circulating an Interim Draft ERR for review and comment. HIW also organized individual meetings with several key stakeholders to ensure they were kept informed and appropriately engaged throughout the planning of the Transmission Line.

9.3 Communication Tools and Consultation Activities

The following section provides a description of the communication tools used and consultation activities undertaken for carrying out meaningful engagement with stakeholders during the ER process for the proposed Transmission Line.

9.3.1 Stakeholder Contact List

A stakeholder contact list was created early in the planning of the proposed Transmission Line to identify all parties potentially interested in the proposed Transmission Line. The contact list includes the following groups:

- The public which includes property owners within 1 km of the Transmission Line study area and individuals who expressed interest in the HIWEC;
- Local municipalities;
- Relevant federal and provincial agencies and elected officials;
- HIFN and other First Nation and Aboriginal communities;
- Other stakeholder / interest groups; and
- Interested members of the public and agencies engaged between 2008 and 2014 during past consultation activities for the HIWEC (for more details see Volume A – Henvey Inlet Wind Energy Centre Environmental Assessment) who would have an interest in the planning and development of the Transmission Line.

The contact list was updated and revised, as appropriate, to reflect those individuals and agencies who did not wish for further involvement in the ER, as well as those new individuals and agencies who wished to be directly notified of future events.

With regard to the First Nation and other Aboriginal communities contact list, a preliminary list was developed based on proximity to the proposed Transmission Line as well as other known Aboriginal interests from First Nation and Métis communities in the area near the proposed Transmission Line. On May 28, 2015, HIW provided the MOECC with a list of First Nation and other Aboriginal communities and contacts identified at the commencement of the ER.

The MOECC revised the list of First Nation and other Aboriginal communities and circulated it to the MNRF Parry Sound District staff. On June 19, 2015, MOECC provided this list to HIW. The list included the following First Nation and other Aboriginal communities:

- Henvey Inlet First Nation;
- Magnetawan First Nation;
- Shawanaga First Nation;
- Wasauksing (Parry Island) First Nation;
- Dokis First Nation;
- Beausoleil First Nation;
- Georgina Island First Nation;
- Chippewas of Rama First Nation; and
- MNO Consultation Office:
  - Georgian Bay Métis Council; and
  - Moon River Métis Council.

Appendix C1 provides a list of the government agencies, other stakeholder / interest groups and First Nation and other Aboriginal communities contacted throughout the ER process. It should be noted that the personal information, such as names, addresses, email addresses and phone numbers, from members of the public, and First Nation and Aboriginal communities, has not been included in this report.

9.3.1.1 Distribution Boundary

As mentioned above, property owners within 1 km of the Transmission Line study area were added to the stakeholder contact list based on their potential interest in the Transmission Line. These property owners were, therefore, provided notification of key milestones and events related to the Transmission Line as the ER progressed. **Figure 9-1** shows the 1 km boundary for the distribution of notices to property owners.

9.3.2 Stakeholder Tracking Database

A stakeholder tracking database was used to track all correspondence between stakeholders and the HIW team. All letters, emails, and telephone calls received and responses provided as well as all meeting materials were tracked and recorded to provide an accurate account of all communication exchanged during the ER process (refer to **Appendices C2 and C4** for correspondence and meeting materials related to the Transmission Line).

9.3.3 Henvey Inlet Wind Website, Phone, Email and Office

A website (www.henveyinletwind.ca) was created in November 2014. The HIW website currently hosts:

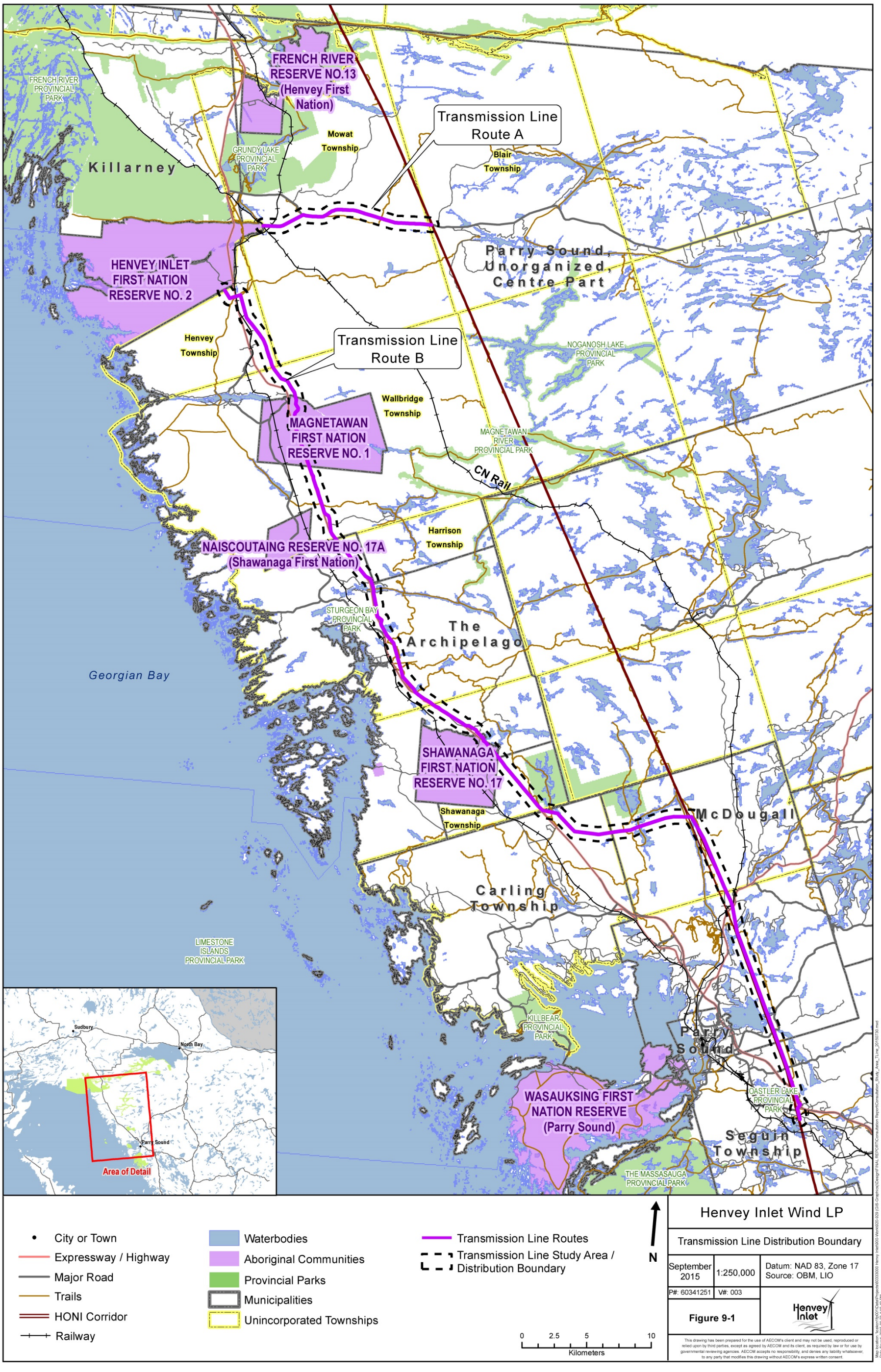
- General information about HIW and its composition;
- An overview of the HIWEC;
- Economic and environmental benefits of the HIWEC;
- Documentation including notices and reports;
- Resources;
- An opportunity to sign-up to a mailing list to receive newsletter updates; and
- General contact information.

The website continues to act as the hub for all Transmission Line information and provides an opportunity for those interested in the Transmission Line but who are unable to attend live events to be involved in the information sharing process. Individuals who are interested in receiving updates on the Transmission Line are also able to register online to receive notices via email and / or mail.

A dedicated phone number (705-857-5265) and email address (info@henveyinletwind.com) were created for the Transmission Line and are used to encourage all interested parties to contact the HIW team with questions and / or comments at any time during the study process.

HIW also set up an office at the HIFN Band Office – 295 Pickerel River Road, Pickerel, Ontario. The office is open from 8:30 a.m. to 4:30 p.m. Monday to Thursday and 8:30 a.m. to 12:00 p.m. on Fridays to allow HIFN Band Members or other interested individuals to drop in to speak about the Transmission Line. Transmission Line materials such as reports and notices are available for review and a HIW representative is available to speak with individuals about the Transmission Line.

Figure 9-1: Distribution Boundary



9.3.4 Notifications

Notices were used to provide information about the Transmission Line, such as announcements of study commencement and completion, locations and times of PICs as well as the availability and location of Transmission Line documents available for review. Notices for the public were distributed via email and/or Canada Post mail to individuals identified on the stakeholder contact list at key milestones during the ER process. Notices were also posted in newspapers and on the HIW website, as well as advertised on the radio to reach broader audiences.

The following sections describe the notices that have been distributed to stakeholders on the Transmission Line contact list to date.

9.3.4.1 Notice of Commencement of Environmental Assessment and Public Information Centre #1

A combined Notice of Commencement of Environmental Assessment and Public Information Centre (PIC) #1 was distributed in January 2015. The notice was distributed to inform the local community and relevant government agency contacts, local municipalities and special interest groups of HIW's plans to engage in the Transmission Line and to host the first round of PICs in the community of Britt and Town of Parry Sound. The notice included information such as the:

- Transmission Line description;
- Purpose of PIC #1;
- Date, time, and location of PIC #1;
- Documents for public review and comment;
- Map of the study area; and
- Contact information.

On January 23, 2015, the notice was mailed to property owners within 1 km of the Transmission Line study area, property owners residing in the community of Britt and individuals who showed previous interest (between 2008 – 2014) in the wind energy centre (see **Appendix I of Volume A**). The notice was also posted on the HIW website on January 23, 2015 and published in the following newspapers:

- Parry Sound Beacon on January 30 and February 13, 2015;
- Sudbury Star on January 31 and February 14, 2015; and
- Turtle Island News on February 4 and February 18, 2015.

The notice was also mailed to relevant federal agency contacts, local municipalities, other stakeholder / interest groups and First Nation and other Aboriginal communities on January 23, 2015. In addition, the notice was emailed to other stakeholder / interest groups without a publicly known mailing address on January 27, 2015.

A copy of this notice is provided in **Appendix C3**.

9.3.4.2 Notice of Public Information Centre #2

A notice was distributed to invite the local community and other interested stakeholders to the second PIC and inform them about the opportunity to review and comment on the Interim Draft ERR prepared for the Transmission Line. The notice included information such as the:

- Transmission Line description;
- Purpose of PIC #2;
- Date, time and location of PIC #2;
- Map of the study area; and
- Contact information.

On June 25, 2015 the notice was posted on the HIW website. Between June 30 and July 2, 2015 the notice was mailed to property owners within 1 km of the Transmission Line study area and property owners residing in the community of Britt. The notice was also mailed to relevant federal agency contacts, local municipalities, other stakeholder / interest groups, and First Nation and other Aboriginal communities between June 30 and July 2, 2015 and was published in the following newspapers:

- Turtle Island News on July 1 and July 15, 2015; and
- Parry Sound Beacon on July 3 and July 17, 2015.

A radio advertisement on Parry Sound's 103.3 Moose FM was also broadcasted to notify the public of PIC #2, which has a large fan base within the Transmission Line study area. The advertisements ran in advance of the Transmission Line public meeting from July 18 to July 31, 2015 in 30 second time slots, six times per day.

On July 29, 2015 an email was sent to the Aboriginal communities identified on the Transmission Line contact list as a reminder to attend the PIC and review and comment on the Interim Draft ERR being made available.

Through ongoing consultation, HIW was informed of additional cottage and ratepayers' associations that may have interest in the Transmission Line. These organizations were added to the stakeholder contact list and subsequently sent the notice of PIC #2. The notice was accompanied with letters addressed to the cottage and ratepayers' associations to invite them to the PIC and provide an opportunity to review and comment on the Interim Draft ERR. The notices were sent via email and regular mail on June 30 and July 2, 2015 to the following associations:

- Federation of Ontario Cottagers' Association;
- Georgian Bay Association;
- Harris Lake & South Magnetawan River Cottagers' Association;
- Mill Lake Guardians' Association;
- Mill Lake Village Association;
- Nine Mile Lake Cottagers' Association;
- North Sound Association;
- Oastler Lake Association;
- Otter Lake Ratepayers' Association;
- Skerryvore Ratepayers' Association;
- Sturgeon Bay Pointe Au Baril Ratepayers Association;
- Three Legged Lake Ratepayers Association; and
- West Carling Association.

A copy of this notice and letter is provided in **Appendix C3**.

9.3.4.3 Notice of Study Completion

A Notice of Study Completion was distributed in September 2015. The purpose of this notice was to announce the completion of the Final ERR and the availability of the reports for public review and comment. The notice included information such as the:

- Transmission Line description;
- Documents available for review and comment;
- Process for providing comments;
- Map of the study area; and
- Contact information.

On September 25, 2015, the notice was mailed to property owners within 1 km of the Transmission Line study area and property owners residing in the community of Britt. The notice was also distributed to relevant government agencies, local municipalities and other stakeholder / interest groups, including cottage and ratepayers' associations on September 25, 2015. The notice was also emailed to stakeholders without a publicly known mailing address on September 25, 2015. The notice was further posted on the HIW website on September 25, 2015 and published in the Parry Sound Beacon on September 25 and October 2, 2015.

In order to give other Aboriginal communities in Ontario the opportunity to provide feedback, the notice was also published in the Turtle Island News on September 30 and October 7, 2015.

A copy of this notice and letter is provided in **Appendix C3**.

9.3.5 Public Information Centres

Two (2) rounds of PICs were held for the Transmission Line; the first in March 2015 and the second in August 2015. These were scheduled to occur at key points in the process in order to offer the public and other stakeholders an opportunity to learn about and provide their input into the planning and assessment phase of the Transmission Line. The details related to each meeting are provided below.

9.3.5.1 Public Information Centre #1

PICs were held on March 3 and March 4, 2015 at the Holy Family Church Parish Hall in the community of Britt and the Bobby Orr Community Centre in the Town of Parry Sound, respectively. The purpose of this first round of PICs was to:

- Introduce the Transmission Line and the two route options that are being considered;
- Provide an overview of the approach to the planning and ER process, including the work and studies completed to date;
- Provide an opportunity for attendees to meet members of the HIW team;
- Answer questions about the Transmission Line; and
- Obtain input for consideration in the planning and design of the Transmission Line.

Both PICs followed an open house format which included information boards and roll-out maps on display. HIW brochures and Canadian Wind Energy Association (CanWEA) factsheets were made available to attendees (refer to **Appendix C4** for copies of PIC #1 materials). The information boards were set up on easels in a semi-circle layout to allow for an easy flow throughout the room. Comment forms were provided to attendees to submit comments and concerns about the Transmission Line. Members of the HIW team were available to answer questions and discuss concerns with attendees on a one-on-one basis. "Conversation" tables were set up in the middle of the rooms on which roll-out maps of the Transmission Line study area were displayed. These tables allowed attendees to fill out comment forms and discuss the study area with the HIW team.

A total of 11 individuals signed in at the PIC held in the community of Britt and five (5) comment forms were submitted. A total of 31 individuals signed in at the PIC held in the Town of Parry Sound and 16 comment forms were submitted. Key comments and questions received included:

- Concerns about Route B due to the extent of potential effects;
- Protection of cottagers' rights;
- Concerns about the potential impacts to wildlife, forests and wetlands;
- Environmental impacts of clear cutting and herbicides;

- Impacts to property owners and recreational water use in the Nine Mile Lake area;
- Health risks;
- Visual impact;
- Effects due to additional traffic; and
- Property value concerns.

At the time of PIC #1, HIW was in the process of assessing both Route A and Route B options for the Transmission Line. As such, the HIW team requested feedback on which route option for the Transmission Line was preferred. Feedback indicated that there was a strong preference for Route A. All of the submitted comment forms, with personal information redacted, are included in **Appendix C4** and the consideration of the comments received are included in the Summary of Public Consultation Comments in **Table 9-2**.

PIC #1 materials were posted on the HIW website on March 13, 2015.

9.3.5.2 Public Information Centre #2

The second round of public meetings included two (2) PICs held on August 1, 2015 at the Britt Legion in the community of Britt and the Bobby Orr Community Centre in the Town of Parry Sound, respectively. The purpose of the PICs was to:

- Discuss, review and encourage the public to provide comments regarding the Interim Draft ERR;
- Provide an update on the work and studies completed to date;
- Answer questions about the Transmission Line; and
- Obtain community input for consideration in the assessment process of the Transmission Line.

Both PICs followed an open house format which included information boards and roll-out maps on display (refer to **Appendix C4** for copies of PIC #2 materials). The information boards were set up on easels along the walls to allow for an easy flow throughout the room. Comment forms were provided to attendees to submit questions, comments and concerns about the Transmission Line. Members of the HIW team were available to answer questions and discuss concerns with attendees on a one-on-one basis.

A total of 23 individuals signed in at the PIC held in the community of Britt and two (2) comment forms were submitted. A total of 34 individuals signed in at the PIC held in the Town of Parry Sound and three (3) comment forms were submitted. Key comments and questions received included:

- Visual impacts;
- Property value concerns; and
- Strong preference for Route A versus Route B (since both route options were still being assessed by HIW at the time of this public meeting).

All of the submitted comment forms, with personal information redacted, are included in **Appendix C4** and the consideration of the comments received are included in the Summary of Public Consultation Comments in **Table 9-2**.

PIC #2 materials were posted on the HIW website on August 4, 2015.

9.3.6 Individual Meetings and Discussions

Throughout the ER process, the HIW team met with the MNRF as well as Shawanaga First Nation and Magnetawan First Nation to discuss the Transmission Line and identify any potential concerns. In addition, teleconferences were held with Wasauksing First Nation, Beausoleil First Nation, Chippewas of Georgina Island First Nation and Chippewas of Rama First Nation to identify any concerns with the Transmission Line with regard to their Aboriginal and Treaty Rights. A summary of correspondence with these First Nation communities is contained in **Section 9.4**.

The sections below provide more details on these meetings and discussions.

9.3.6.1 Meetings with Government Agencies

Meetings with the Ontario Ministry of Natural Resources and Forestry

On March 4, 2015, HIW held a meeting with the MNRF. The purpose of this meeting was to:

- Provide an overview of the Transmission Line, including its background, the development process and the HIW partnership between Nigig, Pattern Development and HIFN;
- Discuss the regulatory framework for the Transmission Line;
- Present the draft 2015 Work Plan as it specifically related to Species at Risk (SAR) issues and permitting;
- Receive MNRF's comments / feedback on proposed field investigations;
- Discuss the permitting, construction and operations schedules;
- Discuss natural heritage designated areas for both Route A and Route B of the Transmission Line; and
- Discuss the consultation process for the Transmission Line.

As a result of this meeting, MNRF agreed to provide the HIW team with relevant reports and data.

A second meeting was held on March 25, 2015 to:

- Discuss the ER process for the Transmission Line;
- Discuss Easement versus Land Use Permit (LUP);
- Provide feedback on the SAR Work Plan; and
- Discuss the direction regarding Aboriginal consultation processes.

As a result of this meeting, an initial stakeholder mailing list was drafted by HIW and submitted for review by the MNRF. The MNRF agreed to provide notices to stakeholders known to the MNRF, as due to confidentiality, the MNRF could not provide the names and addresses to HIW. The MNRF provided feedback on the SAR Work Plan and advised of any additional field requirements. The MNRF consulted with the MOECC regarding requirements for consultation with Aboriginal communities. On June 19, 2015, the MOECC provided the HIW team a list of First Nation and other Aboriginal communities that were to be engaged during the ER process (see **Section 9.3.1**).

On June 25, 2015 the HIW team met with MNRF to:

- Discuss the Transmission Line 2015 Work Plan;
- Provide the results of the May 2015 MOECC meeting;
- Provide an overview of work to date; and
- Provide timelines for SAR permitting.

MNRF provided information on SAR permit reporting, commented on widening access roads for construction and confirmed the ER requirements. The HIW team committed to include all required information in the Information Gathering Form submission as discussed with MNRF. Following the meeting, the MNRF provided the timing window for tree removal to avoid bat mortality as well as outstanding data requested by the HIW team.

Meetings with the Ontario Ministry of the Environment and Climate Change

HIW provided a Pre-Submission Consultation Form to MOECC on March 30, 2015. On May 26, 2015, HIW held a meeting with MOECC to:

- Provide MOECC information about the Transmission Line and routes;
- Discuss the details of the ER process;
- Discuss Aboriginal consultation and the communities that HIW is to consult with; and
- Discuss any additional MOECC requirements.

MOECC confirmed that the ER process should follow O.Reg. 116/01 and provided further details on requirements. MOECC had no concerns with bringing both routes forward in the ER process. MOECC was to provide the list of Aboriginal communities to consult with, which was provided subsequent to the meeting on June 19, 2015.

Meetings with the Ontario Ministry of Transportation

HIW has engaged in ongoing discussions and meetings with the MTO and continues to work with the MTO on detailed design and required permitting of the Transmission Line.

9.3.6.2 Meetings with Municipalities

Meeting with Township of McDougall

CanACRE, an agent of HIW, corresponded and met with Township of McDougall staff on several occasions to discuss providing access to municipal land that is either directly affected by the Transmission Line or that requires permission to enter in order to access the Transmission Line corridor. Discussions also included the use of municipal land for the Transmission Line.

On May 6, 2015, HIW attended a Council Meeting and presented on the Transmission Lines which included an overview, background information, ER process and schedule. Mayor and Council provided the permission to access their property.

Meeting with Township of Carling

CanACRE corresponded and met with Township of Carling staff on several occasions to discuss providing access to municipal land that is either directly affected by the Transmission Line or that requires permission to enter in order to access the Transmission Line corridor. Discussions also included the use of municipal land for the Transmission Line.

On August 17, 2015, HIW attended a Council Meeting and presented on the Transmission Lines which included an overview, background information, ER process and schedule. Mayor and Council provided the permission to access their property.

Meeting with Township of Seguin

CanACRE corresponded and met with Township of Seguin staff on several occasions to discuss providing access to municipal land that is either directly affected by the Transmission Line or that requires permission to enter in order to access the Transmission Line corridor. Discussions also included the use of municipal land for the Transmission Line.

On August 24, 2015, HIW attended a Council Meeting and presented on the Transmission Lines which included an overview, background information, ER process and schedule. Mayor and Council provided the permission to access their property.

9.3.6.3 Meetings with First Nation and Aboriginal Communities

Meetings with Shawanaga First Nation

HIFN and Shawanaga First Nation discussed the Transmission Line informally prior to the start of the ER process in an effort to keep the community aware of the associated HIWEC and related proposed 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 First Nation lands for the environmental studies. Due to sensitive community information, the community offered to share Transmission Line maps with Elders to determine if information could be shared, and also to review a work plan provided that detailed proposed environmental study activities.

As part of the Cumulative Effects Assessment (see the Overlapping and Cumulative Effects Assessment), Shawanaga First Nation was asked to provide information about on-Reserve projects currently underway or expected in the future. 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 First Nation lands. The meeting included an overview of the Transmission Line, the request for archaeology access, employment opportunities and cumulative effects 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 support for the HIWEC and use of Shawanaga First Nation lands for the transmission line pending further discussions on accommodation / compensation.

Meetings with Magnetawan First Nation

HIFN and Magnetawan First Nation discussed the Transmission Line informally prior to the start of the ER process in an effort to keep the community aware of the associated HIWEC and related proposed infrastructure. These discussions occurred between Chief Wayne McQuabbie of HIFN and Chief William Diabo of Magnetawan First Nation.

On July 14, 2015 a meeting was held with the Magnetawan First Nation Chief and Council to provide further details on the Transmission Line, and the crossing of Magnetawan First Nation lands. The meeting included an overview of the Transmission Line, a request for access to conduct archaeology assessments, discussion of employment opportunities and other potential projects in the area. A possible working group was discussed between HIFN, Shawanaga First Nation and Magnetawan First Nation. During this meeting Chief Diabo stated his support for the HIWEC and use of Magnetawan First Nation lands for the transmission line pending further discussions on accommodation/compensation.

Meetings with Dokis First Nation

HIFN and Dokis First Nation discussed the Transmission Line informally prior to the start of the ER process in an effort to keep the community aware of the associated HIWEC and related proposed infrastructure. These discussions are ongoing and will continue beyond the ER process.

9.3.6.4 Meetings with Other Stakeholders / Interest Groups

Westwind Forest Stewardship Inc.

On August 6, 2015, HIW held a meeting with Westwind Forest Stewardship Inc. to discuss how the Transmission Line may affect their operations. Westwind Forest Stewardship Inc. has a sustainable forest resource license giving them timber harvesting rights throughout both Transmission Line study areas. Westwind Forest Stewardship Inc.'s key points discussed included:

- Ensuring that transmission infrastructure will not impede access to current and future timber harvesting areas.
- Determining whether Westwind Forest Stewardship Inc. will need to obtain permits from HIW to cross the Transmission Line once it is built.
- The impacts of Route A to Westwind Forest Stewardship Inc.'s long term study plots along Highway 522, which may be lost if Route A is selected.
- Requesting additional information on how any merchantable timber on Crown land that will be removed to clear the right-of-way will be managed.

Westwind Forest Stewardship Inc. indicated a desire to bid on any clearing contracts and noted that they can help with timber valuation surveys prior to clearing. Discussions with Westwind Forest Stewardship Inc. are ongoing.

9.3.6.5 CanAcre Meetings with Property Owners

While these consultations are outside of the ER process it is important to note that CanAcre, property agents to HIW, contacted and / or met all of the property owners that may be directly affected by the Transmission Line. The purpose of these meetings has been to request permission to enter their properties to complete the 2015 environmental field studies and initiate discussions on the use of their property for the Transmission Line. These consultations are ongoing and will continue beyond the ER process.

9.4 Consideration of Feedback Received during the ER Process

The following section provides a summary of consideration of feedback received from the public, First Nation and Aboriginal communities, government agencies and other stakeholder / interest groups (**Tables 9-2** through **9-5**).

Copies of all correspondence are available in **Appendix C2**. In the cases of correspondence with individuals, personal information was redacted.

In order to adequately document and respond to comments received during the ER process, this chapter includes feedback received from public up to August 8, 2015. Feedback from Aboriginal communities, local municipalities, government agencies and other stakeholder / interest groups up to September 2, 2015 is also considered in this Report.

9.4.1 Correspondence with the Public

Table 9-2 provides a summary of questions and comments received and corresponding responses by HIW to illustrate how feedback was considered. Comments and questions were received during PIC #1 and PIC #2, as well as from emails and phone calls to the HIW team. **Table 1** in **Appendix C2** provides a detailed list of comments and questions received by the public from the commencement of the ER process through August 8, 2015. **Table 1** also provides HIW's consideration of, and responses to, these questions and comments received.

9.4.2 Correspondence with First Nation and Aboriginal Communities

Table 9-3 provides a description of key correspondence between First Nation communities, Aboriginal communities and the HIW team. In addition to the correspondence recorded below, all First Nation and Aboriginal communities identified on the HIW contact list (see **Section 9.3.1**) also received notices and were kept informed about key consultation events and milestones related to the Transmission Line as described in **Section 9.3.4**. Additional information regarding in-person meetings held with First Nation and Aboriginal communities is provided is **Section 9.3.6.3**.

With regard to Beausoleil First Nation, Chippewas of Georgina Island First Nation and Chippewas of Rama First Nation, during a phone call with an HIW representative, each community expressed that they would like to stay informed about the Transmission Line; however, no correspondence has been received to date.

Additional follow-up has occurred between HIFN / HIW with Shawanaga First Nation and Magnetawan First Nation on accommodation / compensation for the use of their reserve lands for the Transmission Line. Discussions are ongoing.

9.4.3 Correspondence with Government Agencies

Table 9-4 provides a description of key correspondence between government agencies and the HIW team. The comments and questions provided in the table below were mainly received via email correspondence and telephone calls. In most cases, the comments were provided by the government agencies at the request for information by the HIW team.

In addition to the correspondence recorded in **Table 9-4**, all government agencies identified on the HIW contact list (see **Appendix C1**) also received notices and were kept informed about key consultation events and milestones related to the Transmission Line as described in **Section 9.3.4**.

9.4.4 Correspondence with Other Stakeholders / Interest Groups

Table 9-5 provides a description of key correspondence between stakeholder / interest groups and the HIW team. The comments and questions provided in the table below were mainly received via email correspondence and telephone calls. In most cases, the comments were provided by the stakeholder / interest group at the request for information for the HIW team.

In addition to the correspondence recorded in **Table 9-5**, all stakeholder / interest groups identified on the HIW contact list (see **Appendix C1**) also received notices and were kept informed about key consultation events and milestones related to the Transmission Line as described in **Section 9.3.4**.

Table 9-2: Summary of Comments and Questions from the Public

Topic	Comment	Response from HIW	ERR References
Public Consultation and Engagement	Members of the public requested improvements to the public consultation process and provided suggestions for doing so, including: reaching out to relevant associations such as the Federation of Ontario Cottagers' Association; increasing publicity; including information about who the decision makers are; and providing a formal presentation with a question and answer period. It was also requested to better identify roads on the maps.	The Federation of Ontario Cottagers' Associations is on HIW's contact list and the Federation was sent notices of key milestones and events related to the Transmission Line throughout the ER process. Notices regarding public meetings were mailed to property owners within 1 km of the Transmission Line, posted on the HIW website (www.henveyinletwind.com), and advertised in newspapers and on the radio prior to the events. The notices were also mailed or emailed to everyone on the HIW contact list. An open house format was selected because it allows attendees to process information about the Transmission Line at their own pace. This format also provides opportunities for one-on-one conversations with members of the HIW team. Maps were updated to ensure labels for roads are clearly displayed.	Section 9.3
	Members of the public provided additional information to support the study including the location of a HONI switching station, natural heritage features, private property and a public boat launch that were not identified on a map	The features identified by the public have been noted and considered as part of the Final ERR.	Sections 1.1, 2.4.8, 2.6, 4.2, and 5
	Members of the public requested additional information regarding the study including: • Contact information for sharing concerns/ asking questions about the project • Location of information presented at the public meetings	Stakeholders are encouraged to contact the HIW team with questions and comments at any time by: • Email: info@henveyinletwind.com • Mail: 295 Pickerel Road, Pickerel, ON P0G 1J0 • Telephone: 705-857-5265 Material presented at the public meetings was posted on the HIW website (www.henveyinletwind.ca) the day of, or immediately following, the PICs, along with electronically fillable comment cards to provide an opportunity for those who missed attending in person a chance to provide their comments.	Section 9.3
Transmission Line Location and Route Preference	Members of the public expressed their preference for Route A rather than Route B because of the potential for fewer impacts.	The preference shown for Route A has been noted.	Sections 5.3, 5.4, 5.5 and 9.3
	Concern was expressed for the possibility of property expropriation with Route B.	Information gathered through surveys will be used to make adjustments to the proposed route, wherever possible. While expropriation is a remote possibility, it is not something that HIW is currently considering. The intent is to come to mutually agreeable terms with all directly affected landowners along the route.	Section 5.3.2
	The public questioned why a 90 km route (Route B) was under consideration when there was a 20 km route (Route A) option.	The HIW FIT Contract awarded in 2011 has an approved interconnection point south of Parry Sound to the 230 kV HONI system (Route B). In addition to the assessment of interconnection of Route B, HIW in close consultation and discussions with IESO, HONI and expert consultants, conducted a technical and legal assessment of the possibility of amending the FIT Contract to permit interconnection at the HONI 500 kV circuit (Route A) to reduce the overall length of transmission required for the HIWEC. The FIT Contract amendment was not approved and the assessment has resulted in the conclusion that the current technically and legally viable interconnection point for the Transmission Line is the connection point south of Parry Sound to the 230 kV HONI system (Route B), and HIW will continue exclusive assessment and development of that interconnection point and the associated Transmission Line.	Section 5.0
	The crossing of Nine Mile Lake with Route B was mentioned as a concern and suggestions were made to reroute this crossing to another location.	The east-west corridor for Route B has moved north of Nine Mile Lake so as not to impact the lake and its users.	Section 5.3.2.8
	Whether Route B will follow existing hydro lines and if new poles be used or if HIW would use the existing poles in the Highway 69 corridor.	Route B extends from Henvey Inlet I.R. #2 and will follow the Highway 69/400 corridor until approximately Woods Road where it will proceed east to the existing HONI 500 kV line. Route B then follows this 500 kV line (on the east side) to the south side of the Parry Sound Transformer Station where it will connect to the 230 kV line. New poles will be used to construct the Transmission Line.	Sections 1.1 and 2.1
Natural Heritage Impacts	Many concerns were expressed regarding the impacts of this project (including human access, clear cutting, maintenance, pesticide use, use of defoliants) on various aspects of the environment including water bodies, wildlife and vegetation (including SAR).	Field studies have been conducted to identify and waterbodies, wildlife and vegetation (including SAR) that are present within the Transmission Line study area. HIW has used the field studies to understand the potential impacts during construction, operation and decommissioning to develop effective mitigation measures to avoid or minimize these impacts. In addition, plans to monitor the effect to these important features during construction, operation and decommissioning are proposed. These potential effects and proposed mitigation measures and monitoring plans are provided in the Final ERR. Pesticides will not be used for the management of vegetation. Mechanical equipment will be used.	Sections 6.2, 6.3 and 6.4
Project Cost	Information regarding the cost of the project was requested.	HIWEC and the Transmission Line are privately owned by and financed through Henvey Inlet First Nation (Henvey Inlet Wind LP) and therefore, specific costs cannot be provided	N/A
Spills and Contamination	Concern was expressed about potential contamination.	Though unlikely, there could be a potential for a small amount of liquids (e.g., fuel and lubricants) to be released from construction and / or operations equipment. HIW is committed to clean and report (as applicable) any accidental spills that occur.	Sections 6.2, 6.3 and 6.4

Table 9-2: Summary of Comments and Questions from the Public

Topic	Comment	Response from HIW	ERR References
Impacts to Property	Concerns were expressed regarding the impacts of the Transmission Line and construction / maintenance on property owners and their property value. In addition, the public questioned how environmental sensitivities are being assessed on private properties.	With respect to property values around transmission lines, we appreciate that the construction of new transmission lines can be temporarily and intermittently disruptive to people living close by. Property values may be directly affected during the construction phase. However, during the operations phase, we have not been able to find any documented reports/studies or evidence that property values decline due to the presence of a transmission line. With respect to how environmental sensitivities are being assessed on private properties, field studies have been conducted to identify and waterbodies, wildlife and vegetation (including SAR) that are present within the Transmission Line study area. HIW has used the field studies to understand the potential impacts during construction, operation and decommissioning to develop effective mitigation measures to avoid or minimize these impacts. In addition, plans to monitor the effect to these important features during construction, operation and decommissioning are proposed. These potential effects and proposed mitigation measures and monitoring plans are provided in the Final ERR.	Sections 5.3 and 6.3
Visual Impacts	Concerns were expressed about the visual impact of the Transmission Line on the Georgian Bay shoreline, as well as the visual distraction to drivers along the highway. It was suggested that using poles rather than the “lattice” type structures would be less unsightly.	Since the Transmission Line will be located greater than 20 km from Georgian Bay, it will not be visible from Georgian Bay. Potential effects on landscapes and views as a result of the Transmission Line are detailed in the Final ERR. Steel monopoles will be used throughout the route except where a span of 230 m or greater will be required (e.g., crossing a water body). In these cases, a wood H-frame may be used. The “lattice” type structure will not be used.	Section 6.2.27
Access Roads	Details regarding the access roads were requested, including their locations and the plan for decommissioning the roads once the Transmission Line is complete.	The location of access roads is provided in the Final ERR. All new access roads (i.e., not already existing) will be temporary and only be used for construction. Existing access roads will continue to be used for their current use.	Section 2.2 and 2.6
	Concern was expressed regarding additional traffic and illegal public use of the access roads, including potential vandalism.	Details on the impacts from additional traffic are included in this Final ERR. Any existing access roads will continue to be used for their current use, whether they are public or private. Any new access roads (i.e., not already existing) will be decommissioned following construction; therefore there is no concern with illegal use.	Section 6.2.16 and 6.3
Henvey Inlet Wind Energy Centre WTGs	Details regarding various aspects of the HIWEC and the proposed turbines were requested, including information about their location, visual impacts to cottagers along HIFN I.R. #2, and future plans for expansion.	There will be up to 91 WTGs. The proposed layout for the HIWEC includes a minimum turbine setback of 550 metres from receptors. The turbines will be sited a minimum of 500 m from the Georgian Bay shoreline to minimize the visual impacts on the shoreline. There are no current plans to expand this Wind Energy Centre. For more information, please see **Volume A – HIW Final Draft EA Report**.	Volume A
	Concerns were raised regarding the HIWEC and WTGs including the proximity of turbines to the nature reserve and their noise level.	The WTGs are sited in areas taking into consideration environmental impacts (e.g., not in wetlands, but on rocky outcrops) and they are not within the North Georgian Bay Shoreline and Islands Conservation Reserve. Noise levels will be in accordance with Ontario requirements. Please see the Noise Impact Assessment in the **Appendix M** of **Volume A – HIW Final Draft EA Report**.	Volume A
Health Impacts	The public was interested in learning more about EMF and its effects on human health. It was asked whether 500 kV gives off more EMF than 230 kV.	Health Canada states that: *“Health Canada does not consider that any precautionary measures are needed regarding daily exposures to EMFs at ELFs [extremely low frequencies]. There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those located just outside the boundaries of power line corridors.”* Additional information can be found on the Health Canada website: http://healthycanadians.gc.ca/healthy-living-vie-saine/environment-environnement/home-maison/emf-cem-eng.php.	Section 6.2.18

Table 9-3: Key Correspondence with Aboriginal Communities

	Date	Community	Discussion Topics	Follow-Up
Beausoleil First Nation	July 10, 2015	Beausoleil First Nation	• HIW provided information about PIC #2. • HIW requested questions / comments. • Beausoleil First Nation would like to stay informed about the Transmission Line.	• HIW sent a link to notice of PIC#2 and HIW website documents. • Sent reminder email of PIC #2.
Chippewas of Georgina Island First Nation	July 10, 2015	Chippewas of Georgina Island First Nation	• HIW requested confirmation of notice of PIC #2. • HIW requested questions / comments. • Chippewas of Georgina Island First Nation would like to stay informed about the Transmission Line.	• Sent reminder email of PIC #2.
Chippewas of Rama First Nation	July 10, 2015	Chippewas of Rama First Nation	• HIW requested confirmation of notice of PIC #2. • HIW requested questions / comments. • Chippewas of Rama First Nation would like to stay informed about the Transmission Line.	• Sent reminder email of PIC #2.
Dokis First Nation	June 5, 2015	Dokis First Nation	• Provided details on other projects in the area that may contribute to cumulative effects.	• Information provided was considered in the Final ERR.
Magnetawan First Nation	January to August, 2015	Magnetawan First Nation	• Several discussions / emails on obtaining access for review of constructability and use of Traditional Land Use Study.	• No follow-up as permission was granted for access but permission for use of Traditional Land Use Study was not granted.
	June 15-23, 2015	Magnetawan First Nation	• Magnetawan First Nation confirmed date to meet with HIW to discuss the Transmission Line.	• Held meeting on July 14, 2015.
	August 20, 2015	Magnetawan First Nation	• Magnetawan First Nation confirmed that they received the letter sent by HIW on August 11, 2015 as a follow-up to the meeting on July 14, 2015. The letter requested permission to access lands for the archaeological study and an archaeological monitor and included a detailed map of Route B through the reserve lands. No issues with the proposed work are expected and scheduled a time to complete the Stage 2 Archaeological field work. •	• N/A
Shawanaga First Nation	January to August, 2015	Shawanaga First Nation	• Several discussions / emails on obtaining access for review of constructability and use of Traditional Land Use Study.	• No follow-up as permission was granted for access and use of Traditional Land Use Study.
	May 22 – July 9, 2015	Shawanaga First Nation	• Shawanaga First Nation confirmed date to meet with HIW to discuss the Transmission Line.	• Held meeting on July 14, 2015.
	August 11, 2015	Shawanaga First Nation	• Shawanaga First Nation requested a digital copy of the Archaeological work plan in order to identify cultural heritage features along the Transmission Line route.	• Follow-up letter was sent from meeting on July 14, 2015 providing detailed map of Route B through the reserve lands and requesting permission to access lands for the archaeological study and an archaeological monitor. These were also sent digitally on August 20, 2015 • Follow-up required for permission to access land and for an archaeological monitor.
Wasauksing First Nation	June 6, 2015	Wasauksing First Nation	• HIW provided overview of the Transmission Line and two route options • HIW requested information for the Cumulative Effects Assessment – Community was unaware of other projects • HIW requested information regarding the Aboriginal or Treaty Rights • HIW requested Aboriginal traditional knowledge	• HIW sent a map of the Transmission Line study area.
	June 30, 2015	Wasauksing First Nation	• HIW and Wasauksing First Nation discussed a meeting to provide general information about the Transmission Line and employment.	• Meeting to be held September, 2015.
	July 10, 2015	Wasauksing First Nation	• Wasauksing First Nation confirmed they received the Notice of PIC #2 and interest in having a presentation on the Transmission Line. • If new developments have occurred since April / May then Wasauksing First Nation would like an update.	• Provided the website link where the latest Transmission Line documents could be found.
	July 21, 2015	Wasauksing First Nation	• Wasauksing First Nation does not have any concerns or comments on the Transmission Line but wish to continue to receive information on the Transmission Line. • Wasausking First Nation provided a “No Concerns” letter on July 21, 2015	• N/A

Table 9-4: Key Correspondence with Government Agencies

Government Agency	Date	Agency	Questions / Comments	Henvey Inlet Wind's Consideration and Response to Comments Received
FEDERAL AGENCIES				
Environment Canada	March 16, 2015	Environment Canada	• Acknowledging receipt of Notice of Commencement and requesting participation in the ER process for HIWEC and for the Transmission Line.	• N/A
	August 4, 2015	Environment Canada	• Provided a letter with comments on the Interim Draft ERR. Comments included potential need for Species at Risk Permit, migratory birds and wetlands.	• Letter was sent with response to questions.
Fisheries and Oceans Canada (DFO)	April 2, 2015	DFO	• Provided a list of SAR and recommended contacting the conservation authority and MNRF.	• Considered the information provided in the Final ERR.
Nav Canada	February 7, 2015	NAV Canada	• Informed that they are unable to locate a submission for this project. Requires the submission of a land use submission form and map along with turbine and Transmission Line locations.	• Responded by stating that a Land Use Submission Form will be provided when the turbine and transmission line locations are finalized.
	July 10, 2015	NAV Canada	• Provided file no. 15-2029 for future correspondence with NAV Canada for the Transmission Line. Requested to know if notices were sent to NAV Canada regarding the wind project and if yes, to whom they were sent. • Requested a Land Use Proposal be sent for their approval.	• Response and information was provided on July 24, 2015.
PROVINCIAL AGENCIES				
Hydro One Networks Inc. (HONI)	February 23, 2015	HONI	• Submitted list of concerns regarding Transmission Line Route B.	• The HIW team will continue to discuss the Transmission Line with HONI as planning and design continues.
Infrastructure Ontario (IO)	January 29, 2015	IO	• Requested removal from circulation list. Electronic copies of notices sent to keith.noronha@infrastructureontario.ca.	• Removed from the contact list.
Ontario Ministry of Natural Resources and Forestry (MNRF)	January 28, 2015	MNRF – Parry Sound District	• Confirmed the point of contact for the Parry Sound District, how to make information requests and availability for a meeting.	• Scheduled meeting with MNRF.
	January 28, 2015	MNRF – Sudbury District	• Confirmed that the Transmission Line does not fall within the Sudbury District.	• N/A
	February 18, 2015	MNRF – Parry Sound District	• Confirmed date and location of kick-off meeting.	• N/A
	March 2, 2015	MNRF – Parry Sound District	• Requested shapefiles for the Transmission Line route options and study area. • Confirmed that the routes changed since the publication of the Draft Transmission Line Description Report.	• Provided shapefiles requested.
	March 6, 2015	MNRF – Parry Sound District	• Provided information on the Overall Benefit Permit Process and relevant Acts and regulations.	• Considered the information provided in the Final ERR.
	March 6, 2015	MNRF – Parry Sound District	• Requested the MOECC contact for the ER process. • Provided a table which indicates which Crown Land Use Designations are associated with each proposed route and indicated the location of shapefiles for Crown Land Use Policy Atlas and policy reports. • Provided the information regarding the C-Permit process. • Advised that there is no specific management direction for North Georgian Bay Shoreline and Islands Conservation Reserve (C117). Any proposed activities must comply with the *Provincial Parks and Conservation Reserves Act.*	• Provided MNRF the MOECC contact • Provided draft 2015 Work Plan for HIW Route A and Route B Transmission Line Study • Provided shapefiles requested
	March 16, 2015	MNRF – Parry Sound District	• Received the SAR work plan to share with the Management Biologist. • Requested to discuss streamlining the ER for the Transmission Line.	• N/A
	March 25, 2015	MNRF – Parry Sound District	• Provided direction, including mapping, on where surveys are required.	• Considered the information provided in the Final ERR.
	March 26, 2015	MNRF – Parry Sound District	• Confirmed that previous survey mapping provided by MNRF needs to be disregarded since Route B for the Transmission Line changed.	• N/A
	March 27, 2015	MNRF – Parry Sound District	• Provided edits to the March 4, 2015 meeting minutes.	• N/A
	April 8, 2015	MNRF – Parry Sound District	• Provided further information and confirmed that more information will be sent to HIW team regarding Bald Eagles and the Transmission Line.	• Considered the information provided in the Final ERR.
	April 10, 2015	MNRF – Parry Sound District	• Confirmed information regarding the French-Severn Management Plan came from the Westwind Forest Stewardship related to their annual work schedule and not necessarily related to the Crown Land Use Policy Atlas. Also confirmed it would be important to consult with Westwind as they have a lot of good information regarding the land base.	• Considered the information provided in the Final ERR.
	May 11, 2015	MNRF – Parry Sound District	• Provided information regarding Blanding's Turtle survey, Massasauga rattlesnake habitat survey, snake and turtle surveys, crepuscular SAR, crepuscular habitat and survey corridor width.	• Considered the information provided in the Final ERR.
	June 9, 2015	MNRF – Parry Sound District	• Provided information regarding SAR, ANSIs, Evaluated Wetlands, and Woodland information and confirmed that information regarding fish and significant wildlife habitat was to follow.	• Considered the information provided in the Final ERR.
	June 24, 2015	MNRF – Parry Sound District	• Confirmed that visits are not required to confirmed gestation sites.	• N/A
	June 29, 2015	MNRF – Parry Sound District	• Confirmed that MNRF is following up with requests regarding locations for the HIFN lands. • Provided information regarding reporting plant rarity and environmental reporting for the Transmission Line ER.	• Considered the information provided in the Final ERR.
	July 22, 2015	MNRF- Parry Sound District	• Confirmed that MNRF is looking into the five (5) SAR which should not be publicly disclosed in the Environmental Baseline Reports.	• N/A
	August 7, 2015	MNRF- Parry Sound District	• Confirmed that the Seguin Chutes ANSI and Round Lake Provincial Nature Reserve Park Addition ANSI are Candidate ANSIs but there is no longer any intent to confirm them as ANSIs and they have no formal provincial status.	• N/A

Table 9-4: Key Correspondence with Government Agencies

Government Agency	Date	Agency	Questions / Comments	Henvey Inlet Wind's Consideration and Response to Comments Received
Ontario Ministry of the Environment and Climate Change (MOECC)	May 7, 2015	MOECC	• Provided "Aboriginal Consultation Information" for the Transmission Line.	• Provided the list of First Nation and other Aboriginal communities identified at the commencement of the ER to the MOECC.
	June 19, 2015	MOECC	• Provided the Aboriginal consultation list for the Transmission Line.	• Updated contact list.
	June 30, 2015	MOECC	• Provided comments and information regarding: – Consultation with First Nation and Métis communities for the Transmission Line; – O.Reg. 116 and the Environmental Screening Process; – Water resources; – Contaminated soil; – Blasting and air quality; and – Transformer stations.	• Considered information provided in the Final ERR.
	July 22, 2015	MOECC	• Identified that the three (3) additional Williams Treaty communities were added to the MOECC list (Chippewas of Georgina Island FN, Beausoleil FN, and Chippewas of Rama FN) since the Transmission Line extends south of Parry Sound – this triggers potential interest from the Williams Treaty. Should Route A be chosen, these communities would likely not have an interest given their distance. Likewise, if Route A is not chosen, Dokis First Nation may not have an interest given their distance.	• N/A
	August 5, 2015	MOECC	• Provided comments on the Interim Draft ERR.	• Response sent.
Ontario Ministry of Tourism, Culture and Sport (MTCS)	February 10, 2015	MTCS	• Provided data on the registered sites within 1 km of HIFN I.R. #2. • Provided Project Information Form (PIF) number for St 1AA Henvey Inlet Wind LP Transmission Line – Route A (P438-0020-2015). • Provided PIF number for Route B (P438-0021-2015). • As per Standard 7.5.8 of the MTCS (2011) "Standards and Guidelines for Consultant Archaeologists", some reports that may include work on or within 50 m of the HIWEC include: TMHC 2010, Stage 1 Archaeological Assessment MTO Northeastern Aggregate Investigation Pointe au Baril Station, Source # P27-062 Harrison Township, District of Parry Sound, Ontario. URS 2014, STAGE 2 ARCHAEOLOGICAL ASSESSMENT Highway 69 Four Laning South End Transition to Existing Highway 69 (From 1.7 km north of Highway 529 to 3.9 km north of Highway 522) District of Parry Sound.	• Considered the information provided in the Final ERR.
	April 10, 2015	MTCS	• Provided advice on submitting a PIF for Stage 2 field work.	• N/A
	May 20, 2015	MTCS	• Provided contact information for cultural heritage values and properties designated as Historic Sites under Regulation 880 of the Revised Regulations of Ontario, 1990.	• Considered the information provided in the Final ERR.
	July 15, 2015	MTCS	• Requested a copy of the display panels presented at PIC #2.	• Provided a link to the display boards for PIC #2 on the HIW website.
Ontario Ministry of Transportation (MTO)	February 10, 2015	MTO	• Advised that the archaeological assessment reports related to Highway 69 between Parry Sound and French River requested by HIW should be acquired from MTCS.	• Consulted with MTCS on archaeological assessments.
	February 12, 2015	MTO	• Provided comments on the Transmission Line Description Report.	• Responded to the MTO's questions.
	August 1, 2015	MTO	• Discussed the Transmission Line alignment, interface with MTO's infrastructure and the information needed in advance of the Risk Assessment workshop. • Requested: – Drawings identifying the locations where the Transmission Line will be within the future MTO right-of-way; – Drawings identifying the locations of existing or "to be built" MTO access roads that the Transmission Line would like to use; – Revised Transmission Line drawings for the latest Transmission Line route; and – Confirm attendees at risk workshop. • MTO will provide design standards related to sightlines to assist with determining acceptable access locations. • MTO will host a Risk Assessment Workshop on August 27 and 28, 2015.	• Workshop held August 27 and 28. Discussions are ongoing.
MUNICIPALITIES				
Seguin Township	February 10, 2015	Seguin Township	• Provided a list of questions and requests for additional information on the Transmission Line. The questions related to timing, route selection, route locations and the size of the transformer station.	• Provided the following responses: – Ongoing studies will continue through spring / summer 2016. Construction is scheduled to commence April, 2016. The commercial operation date is scheduled for November 2017. – HIW will only be constructing and utilizing one route. – When Route B veers southeast to the HONI line it will approximately parallel the HONI line. HIW is still undergoing the details of the line, it is anticipated that the corridor will be widened.

Table 9-4: Key Correspondence with Government Agencies

Government Agency	Date	Agency	Questions / Comments	Henvey Inlet Wind's Consideration and Response to Comments Received
				– Only a SS will be required at the point of interconnection. HIW is still working on the design but anticipate the SS will be no larger than 2 ha.
	March 4, 2015	Seguin Township	• Provided comments on the Transmission Line Description Report. • Requested to be included in future information distributions regarding the Transmission Line.	• Responded to the Seguin Township's questions. • Contacted Seguin Township to discuss the road user agreement and permit requirements. Discussions are ongoing.
	July 23, 2015	Seguin Township	• Provided comments on the Interim Draft ERR. • Mainly concerned that the Interim Draft ERR does not provide an accurate portrayal of the natural and social environment in the vicinity around and south of the Parry Sound Transformer Station. • The most significant points for the Seguin Township relate to the location of new access roads, laydown areas and yards, the location of the new switching station and the inadequate level of information being used in the decision-making process.	• Responded to the Seguin Township's questions. • Included information on existing conditions in the Final ERR.
Township of Archipelago	May 20, 2015	Township of Archipelago	• Passed request for cultural heritage sites in Transmission Line study area to a Planner at the Township of Archipelago.	• No information received to date.
Township of Parry Sound	June 3, 2015	Township of Parry Sound	• Provided information regarding cultural heritage within the township including historic buildings and properties.	• Considered information provided in the Final ERR.

Table 9-5: Summary of Correspondence with Other Stakeholder / Interest Groups

Stakeholder/ Interest Group	Date	Agency	Questions / Comments	Henvey Inlet Wind's Consideration and Response to Comments Received
District of Parry Sound Social Services	March 20, 2015	District of Parry Sound Social Services	• Confirmed that the Transmission Line will not impact the District of Parry Sound Social Services and requested to be removed from the contact list.	• Removed from the contact list.
North Bay Parry Sound District Health Unit	February 18, 2015	North Bay Parry Sound District Health Unit	• Requested removal from Henvey Inlet Wind Energy Centre and Transmission Line contact list.	• Removed from the contact list.
Cottagers' and Ratepayers' Associations	February 15, 2015	Otter Lake Ratepayer's Association	• Asked where the Route B Transmission Line ended.	• At the time of the initial response, the exact location of the point of interconnect with the HONI 230 kV transmission line had yet to be determined. The location of the point of interconnect is at the 230kV just south of Garden Court in the Township of Seguin.
	February 28, 2015	Nine Mile Lake Cottagers Association	• Provided letter supporting the HIWEC as it is an opportunity to improve the local economy and support the environment. • Does not support Route B as it runs directly over Nine Mile Lake and provincially significant wetlands. Route B could impact several SAR in the area. Nine Mile Lake is also used by local aircraft pilots for water landings. The Route B Transmission Line would be very close to identified fish habitats and risk a natural fishing resource. Herbicides that would be used to maintain the Transmission Line would impact SAR, wetlands and water quality.	• The alignment of Route B was moved north to avoid crossing Nine Mile Lake and avoid any interference with aircraft that land and take-off from the lake and avoid fish habitat. • Followed up with the MNRF about SAR and provincially significant wetlands and will apply for required permits from the MNRF. • HIW will not be using chemicals (i.e., pesticides) to manage vegetation growth. Any vegetation that needs to be removed during operations will be done by mechanical means.
	June 27, 2015	Nine Mile Lake Cottagers Association	• Provided contact information including email and mailing address to keep updated with the Transmission Line.	• Updated contact list.
	July 28, 2015	Nine Mile Lake Cottagers Association	• Questioned why Route B would be preferred over Route A as there would be greater economic and environmental impacts if Route B is chosen. • If Route A is chosen, fewer chemicals would be required for maintenance.	• Comments noted. • HIW will not be using chemicals (i.e., pesticides) to manage vegetation growth. Any vegetation that needs to be removed during operations will be done by mechanical means.
	August 7, 2015	Nine Mile Lake Cottagers Association	• Opposed to Route B because it has a greater environmental impact on numerous sensitive lands.	• Comment noted.
	January 27, 2015	Mill Lake Guardians Association	• Requested a larger map of the transmission routes and larger print on the pamphlets.	• Provided a link to the Transmission Line Description Report available on the HIW website that includes a detailed map.
	March 2, 2015	Mill Lake Guardians Association	• Concerned about contamination and about Transmission Line Route B on west side of existing highway corridor and preferred the Transmission Line on the east side.	• Though unlikely, there could be a potential for a small amount of liquids (e.g., fuel and lubricants) to be released from construction and / or operations equipment. HIW is committed to clean and report (as applicable) any accidental spills that occur.
	June 23, 2015	Mill Lake Guardians Association	• Requested to speak to representative regarding members that received land expropriation letters in relation to the Transmission Line.	• A representative from CanAcre contacted the representative from Mill Lake Guardians Association to clarify that the letters did not come from HIW.
	July 2, 2015	Key River Cottagers Association	• Requested more information on upcoming PICs for the Transmission Line. • Asked if there has been a decision made on the south versus east hydro corridor.	• Provided details on the second round of PICs. • The route will be confirmed in the Fall 2015.
Georgian Bay Land Trust	January 29, 2015	Georgian Bay Land Trust	• Requested information regarding what the mailing list is based on.	• HIW's mailing list is made up of local landowners, government and non-government organizations. With respect to your organization, HIW sends information to organizations that may be impacted by the HIWEC and associated Transmission Line or have information about the area that could help with the environmental assessment of the HIWEC and Transmission Line.
Westwind Forest Stewardship Inc.	**May 15, 2015**	Westwind Forest Stewardship Inc.	• Interested in discussing data sharing, vegetation removal, any potential impacts to their operations. • Potential concerns include access across transmission corridors and impacts to planting and cutting due to vegetation removal. • Requested a copy of the Transmission Line route.	• Westwind Forest Stewardship Inc.'s concerns were considered in **Volume A** - HIWEC Final Draft EA Report. • Maps depicting the potential Transmission Line routes were provided to Westwind Forest Stewardship Inc. • A meeting was scheduled between HIW and Westwind Forest Stewardship Inc. for August 6, 2015.
Bell Media	**June 15, 2015**	Bell Media	• Confirmed that CICI-TV Sudbury has not switched to digital and is still operating in analog. • Confirmed that CKCO-TV-2 was decommissioned last winter.	• Comments noted.
CBC / Radio-Canada Transmission	**June 15, 2015**	CBC Transmission	• Confirmed that CBC / Radio-Canada no longer operates the analog services CBLT-6 in Sudbury nor CBLT-TV-4 in North Bay. Also provided the active broadcasting services in Sudbury and North Bay which should take part in an environmental assessment.	• Comments noted.
TVO	**June 15, 2015**	TVO	• Confirmed that CICA-TV-6 North Bay has been decommissioned.	• Comments noted.

9.5 Publication of Environmental Review Report

9.5.1 Pre-Interim Draft Report

The Transmission Line Description Report was made available for review and comment at the time that the Notice of Commencement and Invitation to Public Information Centre #1 was distributed to the public, government agencies, other stakeholder / interest groups, and First Nation and other Aboriginal communities. The Transmission Line Description Report described:

- The Transmission Line and the regulatory framework;
- The Transmission Line components;
- An overview of the construction, operations and maintenance, and decommissioning phases of the Transmission Line; and
- Potential environmental effects that will be evaluated in the ERR.

This report was posted on the HIW website and made available at the Britt Public Library and the HIW office from January 23, 2015 to March 16, 2015. Copies of the report were also available at PIC #1.

9.5.2 Interim Draft Environmental Review Report

The Interim Draft ERR was made available for comment and review at the time that the Notice of Public Information Centre #2 was distributed to the public, government agencies, other stakeholder / interest groups, and First Nation and other Aboriginal communities. The report described in more detail the:

- The Transmission Line and the regulatory framework;
- The Transmission Line components;
- The proposed schedule for the ER, construction, operations and decommissioning;
- The environmental review methodology; and
- Existing environmental conditions.

Additionally, the Stage 1 Archaeological Assessments for Route A and Route B were also made available for review at the same time as the Interim Draft ERR.

The reports were posted on the HIW website on July 2, 2015, 30 days prior to PIC #2. Copies of the reports were also available at PIC #2. The public, government agencies, other stakeholder / interest groups, and First Nation and other Aboriginal communities had until August 8, 2015 to provide comments on these reports. Comments received after August 8, 2015 on the Interim Draft ERR requiring answers have been responded to on an individual basis but have not been incorporated into this section of the Final ERR.

9.5.3 Final Environmental Review Report

Volume B is comprised of the Final ERR and the following Appendices:

- Screening Criteria Checklist;
- Technical Support Document; and
- Consultation Materials.

These documents were made available for review and comment to the public, local municipalities, government agencies, other stakeholder / interest groups, and First Nation and other Aboriginal communities on September 30, 2015, with the release of the Notice of Study Completion. The documents were also posted on the HIW website and hard copies were made available at the Britt Public Library, Town of Parry Sound Municipal Office and the HIW office from September 30, 2015 to October 30, 2015.

The comment period for **Volume B** ends on October 30, 2015. Feedback received during the review and comment period will be submitted along with the Statement of Completion to the MOECC.

10. Environmental Advantages and Disadvantages

The following section provides an assessment of the overall environmental advantages and disadvantages of the Transmission Line. Advantages include positive environmental effects such as community benefits resulting from First Nation and public job creation, and supports provision of a clean, renewable energy source to generate power.

Environmental Advantages:

- Creates opportunity for First Nation employment
- Creates direct jobs creation and increases demand for goods and services related to construction needs
- Provides positive benefit to surrounding local municipalities by utilizing local workers and procurement of local goods and services
- Indirectly benefits to service and construction industries, including suppliers for materials
- Creates induced benefits to the economic base of the community as work force spending for local goods and services is expected to increase during the construction phase
- Supports provision of an inexhaustible, clean, renewable energy source as a vital component of the HIWEC
- Compatible with mixed land use
- Parallels existing linear disturbances (e.g., existing transportation corridors such as Hwy 69/400 and Hwy 522) therefore minimizing potential effects on the environment
- Contributes to provincial government's plans and programs for reducing greenhouse gas emissions and fighting climate change
- Contributes to the Province's energy needs, particularly in northern Ontario

Environmental Disadvantages:

- Potential and temporary minor changes to habitat, behaviour and mortality risk of some avian, turtle, snake, bat and mammal SAR
- Potential and temporary minor change in vegetation and ecological community's diversity
- Potential and temporary minor change in wetland quantity and function
- Potential and temporary minor change to soil quality and quantity
- Potential and temporary minor change to groundwater quality and quantity
- Potential and temporary minor changes to fish mortality risk and fish habitat
- Potential and temporary minor changes to surface water quality
- Potential and temporary minor for socio-economic effects such as temporary nuisance from noise and dust, temporary traffic delays, temporary disruption to enjoyment of recreational trails and visual effects to land owners
- Potential and temporary minor loss of harvestable forest resources and possible decline in available game and fishery resources for public and Aboriginal use
- Change in land use to portions of properties

The ER determined that with the application of proper mitigation measures, there are no likely significant negative effects, no unresolved concerns or issues, and that the Transmission Line advantages can offset any negative environmental effects.

11. References

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