

Ontario Ministry of Transportation

## **Highway 17 Planning Study**

**From 2.2 km east of Highway 531 easterly to 8.0 km east of Highway 630, GWP 5670-10-00**

### **SUMMARY OF EXISTING ENVIRONMENTAL CONDITIONS AND CONSTRAINTS REPORT**

AECOM  
300 Water Street  
Whitby, ON, Canada L1N 9J2  
[www.aecom.com](http://www.aecom.com)

905 668 9363 tel  
905 668 0221 fax

**Project Number: 60241599**

**Date: March, 2013**

Ce document hautement spécialisé n'est disponible qu'en anglais en vertu du règlement 411/97, qui en exempte l'application de la Loi sur les services en français. Pour de l'aide en français, veuillez communiquer avec le ministère des Transports, Bureau des services en français au : 905-704-2045 ou 905-704-2046

## AECOM Signatures



**Report Prepared By:**

---

Fred Leech, BScAg.  
Senior Environmental Planner



**Report Reviewed By:**

---

Brenda Jamieson, P.Eng.  
Project Manager

# Table of Contents

	page
<b>1. Introduction and Purpose of Document .....</b>	<b>1</b>
<b>2. Overview of study area Environmental Conditions and Constraints .....</b>	<b>3</b>
<b>3. Natural Environment.....</b>	<b>7</b>
3.1 Physiography and Geology .....	7
3.1.1 Physiography .....	7
3.1.2 Geology .....	7
3.2 Hydrogeology.....	7
3.3 Surface Drainage.....	8
3.4 Fish and Fish Habitat.....	9
3.4.1 Fish Species at Risk and Provincially Rare Fish Species .....	9
3.5 Terrestrial and Wetland Habitat.....	10
3.5.1 Terrestrial Habitat .....	10
3.5.2 Wetlands.....	10
3.5.3 Plant Species at Risk and Provincially Rare Plant Species .....	10
3.6 Wildlife and Avian .....	10
3.6.1 Overview.....	10
3.6.2 Specialized Habitat for Wildlife .....	10
3.6.2.1 Waterfowl Concentration Areas.....	11
3.6.2.2 Specialized Raptor Nesting Habitat.....	11
3.6.2.3 Amphibian and Reptile Habitat.....	11
3.6.2.4 Animal Movement Corridors.....	11
3.6.2.5 Large Mammals.....	11
3.6.3 Wildlife Species at Risk and Provincially Rare Wildlife Species .....	12
3.7 Designated Areas .....	13
<b>4. Socio-Economic Environment.....</b>	<b>15</b>
4.1 Regional Setting and Economy .....	15
4.1.1 District of Nipissing .....	15
4.1.2 Township of Bonfield .....	15
4.1.3 Municipality of Calvin .....	15
4.1.4 Township of Papineau-Cameron.....	15
4.2 Residential .....	16
4.3 Commercial / Business.....	16
4.4 Provincial Parks.....	19
4.4.1 Mattawa River Provincial Park (Waterways Class) .....	19
4.4.2 Samuel de Champlain Provincial Park .....	19
4.4.3 Amable du Fond River Provincial Park (Waterway Class & Living Legacy Site) .....	19
4.5 Community / Recreational / Tourist Facilities .....	19
4.5.1 Community.....	19
4.5.1.1 Community Features .....	19
4.5.1.2 School Bus Routes.....	20
4.5.1.3 Emergency Service Providers .....	20
4.5.2 Recreational.....	20
4.5.2.1 Canoe Trails .....	20
4.5.2.2 Snowmobile Trails .....	20

4.5.2.3	Hiking Trails.....	20
4.5.3	Tourist Facilities.....	20
4.6	Property Waste and Contamination.....	20
4.7	Highway Noise.....	22
4.7.1	Existing Highway 17 Noise Levels.....	22
4.7.2	Existing Highway Noise Sensitive Receptors.....	22
4.8	Agriculture.....	23
<b>5.</b>	<b>Cultural Environment .....</b>	<b>24</b>
5.1	Built Heritage and Cultural Landscapes .....	24
5.2	Archaeology .....	27
<b>6.</b>	<b>Transportation Facilities and Utilities.....</b>	<b>29</b>
6.1	Provincial Highways.....	29
6.2	Municipal Roads .....	29
6.3	Private Entrances Along Highway 17.....	30
6.4	Ottawa Valley / Canadian Pacific Railway Line.....	34
6.5	Utilities .....	35
<b>7.</b>	<b>Additional Environmental Conditions and Constraints Information.....</b>	<b>37</b>
<b>8.</b>	<b>References.....</b>	<b>39</b>

## List of Exhibits

	Page / Following Page
Exhibit 1-1: study area .....	1
Exhibit 2-1: Natural Environment Existing Conditions and Constraints.....	4
Exhibit 2-2: Socio-Economic Environment Existing Conditions and Constraints .....	5
Exhibit 2-3: Cultural Environment Existing Conditions and Constraints .....	6
Exhibit 3-1: Quaternary Geology and Water Wells.....	8
Exhibit 3-2: Thermal Designation of Watercourses within the Highway 17 study area .....	9
Exhibit 4-1: Identification of Business/Tourist Operations Within and Adjacent to the study area .....	16
Exhibit 4-2: Location of Business/Tourist Operations Within and Adjacent to the study area .....	18
Exhibit 4-3: Identified Areas of Interest (AOIs) with Respect to the study area .....	21
Exhibit 4-4: Existing Highway 17 Noise Levels.....	22
Exhibit 4-5: Existing Highway 17 Noise Sensitive Receptors.....	23
Exhibit 5-1: Cemeteries, Heritage Structures and Cultural Landscapes in the study area .....	24
Exhibit 5-2: Registered Archaeological Sites within 1 km of the study area .....	28
Exhibit 6-1: Existing Sideroads Connecting to Highway 17 in the study area.....	29
Exhibit 6-2: Existing Private Entrances Along Highway 17 in the study area.....	30
Exhibit 6-3: Utilities Along and Adjacent to Highway 17 .....	35
Exhibit 7-1: Potential Environmental Data Sources.....	37

# 1. Introduction and Purpose of Document

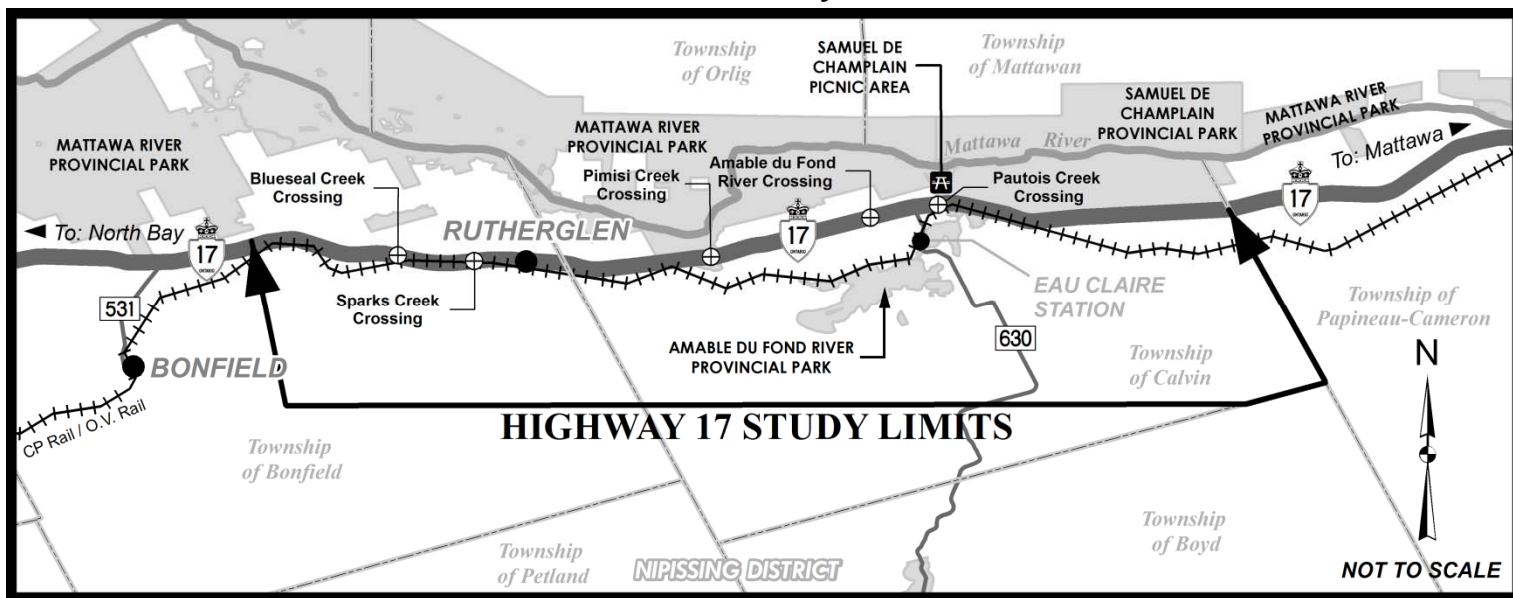
The Ministry of Transportation (MTO) has retained AECOM to undertake a Planning, Preliminary Design and Class Environmental Assessment (Class EA) for a 23.5 km section of Highway 17 from Bonfield easterly to the boundary road between the Townships of Calvin and Papineau-Cameron, as shown in **Exhibit 1-1** below. This study is the middle of three separate Highway 17 planning projects between North Bay and the Nipissing District / Renfrew County boundary.

The purpose of the study is to identify a recommended plan for a four-lane access controlled Highway 17 within the study limits with access restricted to interchange locations. The study process and the early planning decisions that have been made are documented in the Study Design Report for this project.

As outlined in the Study Design Report for this project, the alternatives to the undertaking being carried forward for development and evaluation are the following:

- widened/improved provincial highway;
- realigned provincial highway; and
- combinations of the above.

**Exhibit 1-1: study area**



Highway planning alternatives will be generated to provide a freeway with two lanes in each direction and a 30m median within a 110m right-of-way, and access restricted to two (possibly three) interchange locations. In some areas, this will require service roads on one or both sides of the highway, each within its own 30m right-of-way.

A Recommended Plan will be selected and designated at the completion of the study to assist municipalities, landowners and businesses with planning and development in the study area. Maintaining access to the provincial parks within the study area will be a key study consideration.

As outlined in the Study Design Report for this project, the generation of highway planning alternatives will consider constraints and opportunities within the study area according to the following principles:

- **Principle 1: Minimize impacts to significant natural features, functions, systems and communities:**
  - Avoid where possible, or minimize encroachment on or loss of:
    - water bodies and associated riparian zones;
    - fish habitat;
    - species of conservation concern (vegetation, fish and wildlife);
    - Species at Risk habitat;
    - ecologically functional areas;
    - significant wildlife habitat and travel corridors. Other areas to be considered are any identified wildlife management, rehabilitation and research program sites;
    - Provincially Significant Wetlands (PSWs) and avoid impairment to wetland functions, including ecological function;
    - all other evaluated and unevaluated wetlands;
    - designated significant vegetation;
    - other important vegetation;
    - known groundwater recharge and discharge areas;
    - or impairment of ecological function to environmentally significant features, and where appropriate associated functions, including Significant Valleylands, ESAs, ANSIs, or other areas of provincial, regional or local significance; and
    - or impairment of ecological function to special spaces (including recreational activity zones).
- **Principle 2: Minimize impacts to existing and planned (approved under Official Plans) population and employment areas:**
  - Maximize separation distance from sensitive receptor locations;
  - Avoid where possible or minimize encroachment on, or loss of developed properties;
  - Minimize access impacts;
  - Maximize the access provided to major generators of economic activity;
  - Avoid where possible, or minimize encroachment on, or loss of mineral and mineral aggregate resources;
  - Avoid operating and "non-operating" waste disposal sites; and
  - Avoid where possible, minimize encroachment on, or loss of known archaeological sites/built heritage features/cultural heritage landscape areas of extreme significance.
- **Principle 3: Transportation service criteria:**
  - Generate alternatives that are efficient and direct, while meeting standards for design; and
  - Select alternatives that address the transportation problems and transportation opportunities.

The purpose of this Summary of Existing Environmental Conditions and Constraints Report is to provide highlights of the information obtained through secondary sources that will be used to generate highway planning alternatives according to the principles described above. Following evaluation of highway planning alternatives and the selection of a preferred alternative, environmental field work and other investigations of existing environmental conditions will be undertaken to provide more detailed information to support the generation and selection of preliminary design alternatives and development of the Recommended Plan.

## 2. Overview of study area Environmental Conditions and Constraints

Maps showing overviews of existing environmental conditions obtained through secondary source information are provided in the following exhibits:

- Exhibit 2-1: Natural Environment Existing Conditions and Constraints;
- Exhibit 2-2: Socio-Economic Existing Conditions and Constraints; and
- Exhibit 2-3: Cultural Environment Existing Conditions and Constraints.

The locations of transportation facilities and major utilities are shown in each of the exhibits identified above.

As indicated in Section 6.1 of the Study Design Report for this project, some key environmental conditions and constraints have been identified to be the following:

- three provincial parks: Samuel de Champlain, Mattawa River (waterways class), and Amable du Fond River (waterway class and living legacy site);
- Pimisi Roadside Picnic Area;
- OVR / CPR rail line;
- Trans Canada pipeline and Union Gas spur pipeline;
- hamlet of Rutherglen and its associated residential development, two churches and a cemetery;
- highway oriented businesses along existing Highway 17 (gas station, restaurant, outfitter);
- the Columbia Forest Products plant;
- private entrances onto existing Highway 17;
- tourist-related facilities/businesses (cabins, campgrounds, marinas, recreational areas);
- other rural residential and commercial development, including farm structures;
- aggregate sites and designated aggregate removal areas;
- waste management sites;
- Mattawa River, Amable du Fond River, the lakes and watercourses draining into them, and associated fish habitat and spawning areas;
- significant wildlife habitat (fish spawning areas, ungulate wintering yards and significant bird nesting sites) and wildlife movement;
- Provincially Significant Wetlands;
- environmental protection area (Rutherglen Moraine Shoreline and Kame ANSI); and
- recreational trails (snowmobiles, canoes, hiking trails, etc).

Additional existing conditions details are provided in the following sections of this report:

- Section 3: Natural Environment;
- Section 4: Socio-Economic Environment;
- Section 5: Cultural Environment; and
- Section 6: Transportation Facilities and Utilities.



Exhibit 2-1: Natural Environment Existing Conditions and Constraints

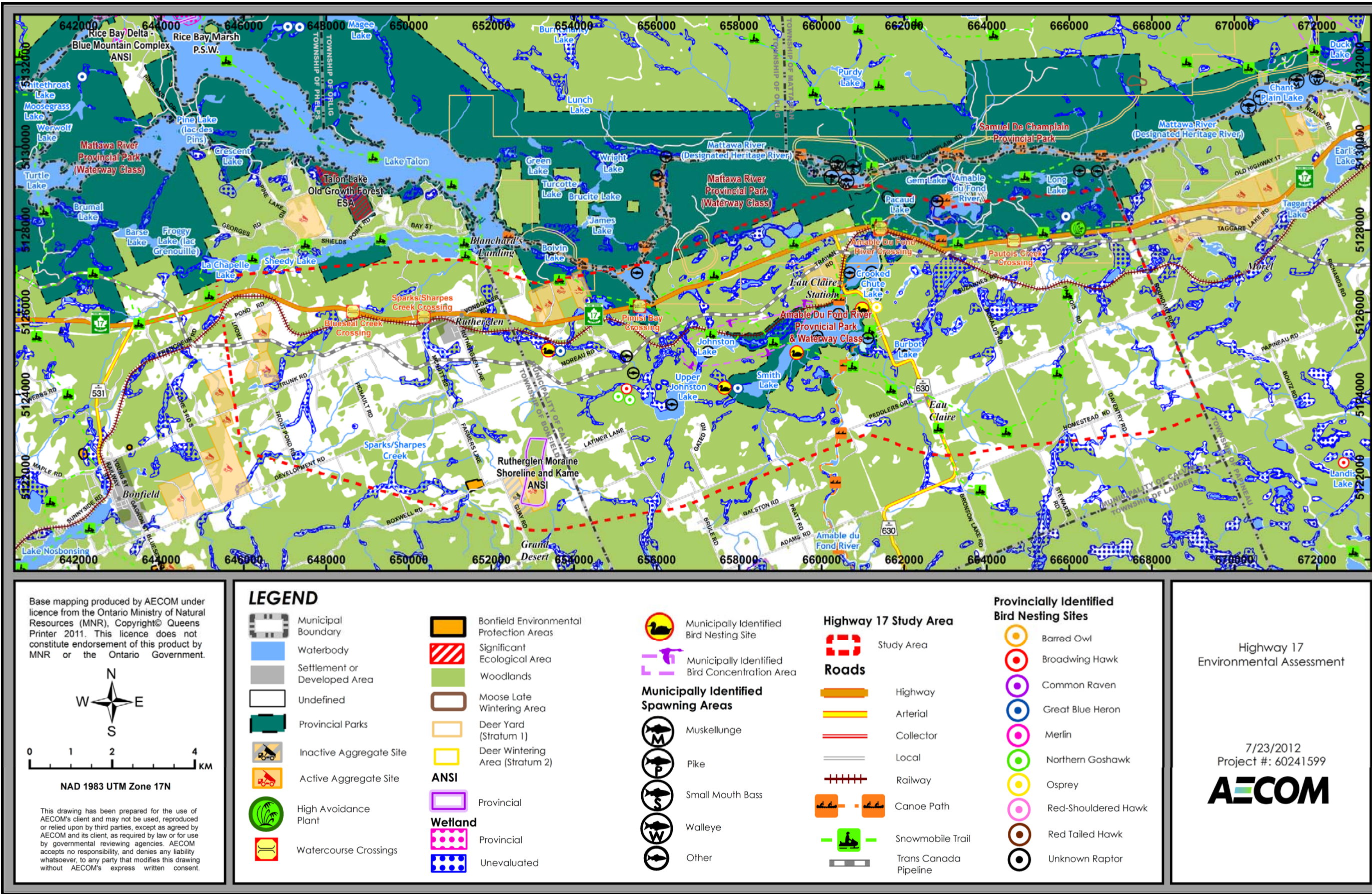
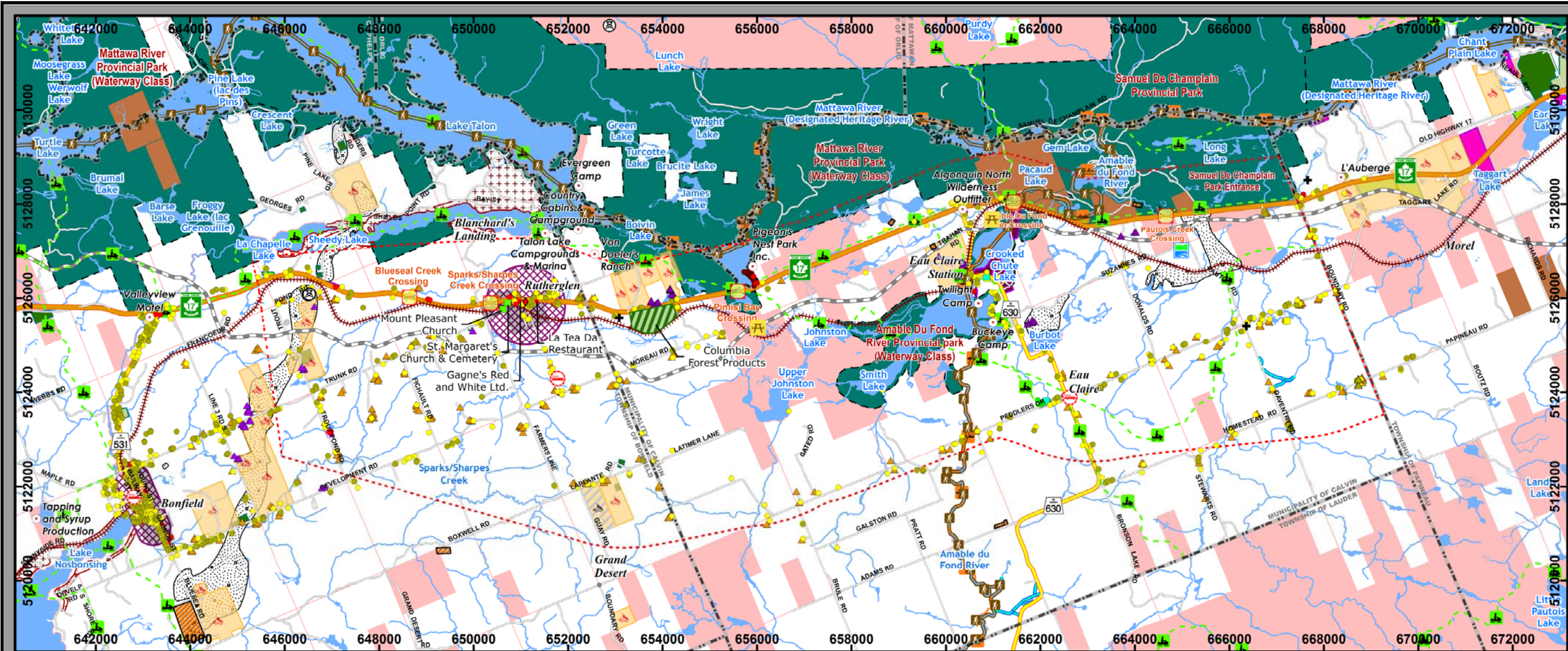
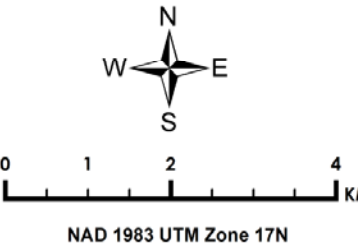




Exhibit 2-2: Socio-Economic Environment Existing Conditions and Constraints



Base mapping produced by AECOM under licence from the Ontario Ministry of Natural Resources (MNR), Copyright© Queens Printer 2011. This licence does not constitute endorsement of this product by MNR or the Ontario Government.



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

LEGEND



Municipal Boundary



Undefined



Waterbody



Settlement or Developed Area



Provincial Park



Active Aggregate Site



Inactive Aggregate Site



Watercourse Crossing



Communications Tower



Waste Management Site



Designated Community Improvement Area



Designated Recreational Area



Highway 17 Study Area



Study Area



Designated Employment Areas



Commercial - Local



Commercial - Highway & Service



Commercial - Recreational



Industrial - General



Industrial - Heavy



Industrial - Restricted



Publicly Acquired Crown Land



Unpatented Public Crown Land



Designated Aggregate Removal Area



Municipally Constructed Drain



Provincial Park Picnic Area



Provincial Park Entrance



Tourism Destination



Fire Station

Roads



Highway



Arterial



Collector



Local



Railway



Canoe Path



Snowmobile Trail



Trails



Trans Canada Pipeline

Study Area Buildings



Cemetery



Church



School



Institutional Structure



Farm Structure



Solar Collector



Industrial Structure



Commercial Structure



Recreational Structure



Residence



Sec. Structure



Camping Structure



Communications Building



Communications Tower



Unknown Structure



Utility Platform

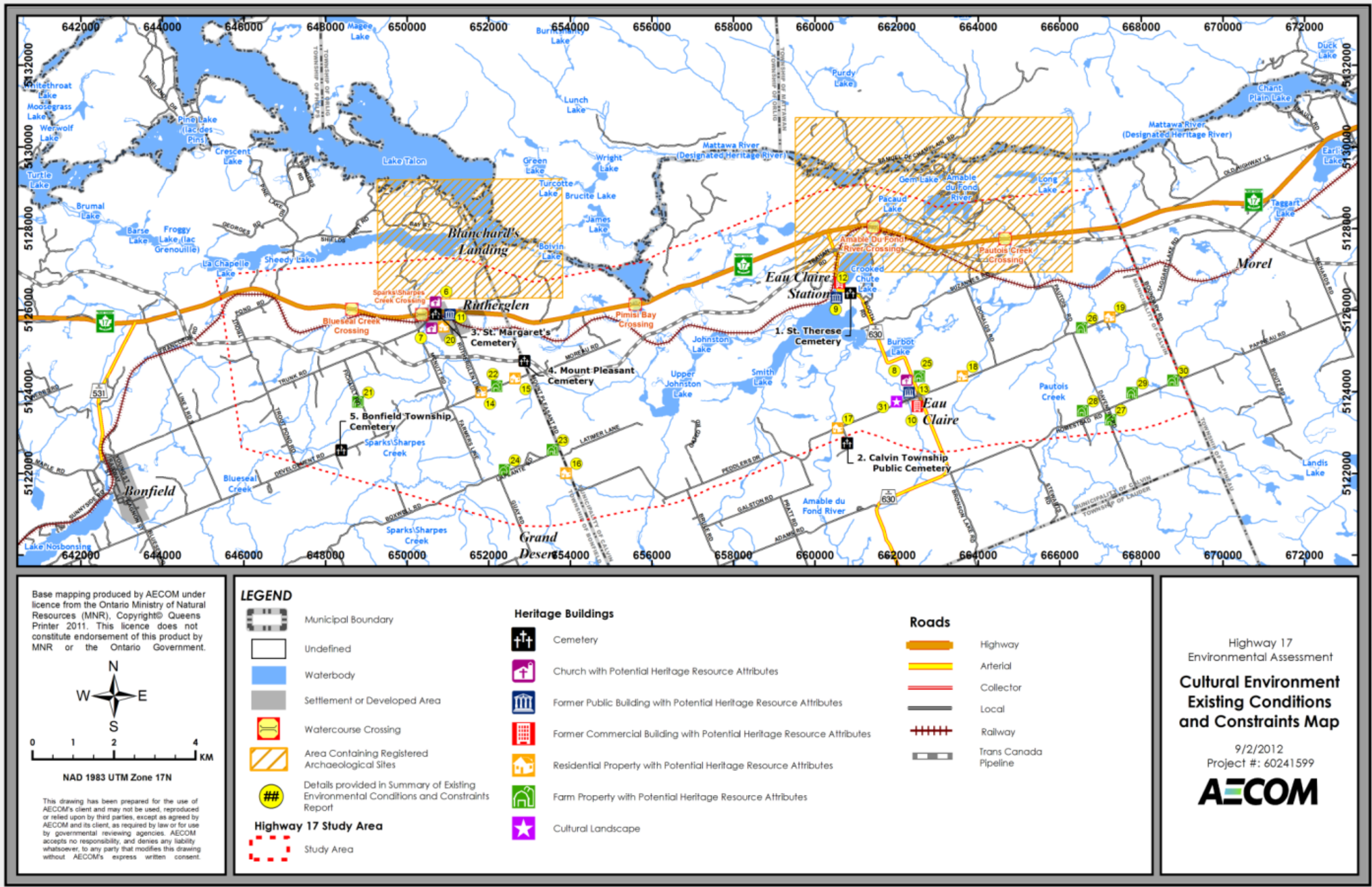
Highway 17  
Environmental Assessment

7/23/2012  
Project #: 60241599

AECOM



Exhibit 2-3: Cultural Environment Existing Conditions and Constraints



## 3. Natural Environment

### 3.1 Physiography and Geology

#### 3.1.1 Physiography

The study area is located within the Algonquin Highlands and the Highway 11 Strip physiographic regions (Chapman and Putnam, 1984). The Algonquin Highlands region is generally characterized by a thin drift of stony till overlying Precambrian bedrock knob and ridges. The Highway 11 Strip contains glaciolacustrine sands, silts and clays that are present in low-lying bedrock areas and were deposited by streams entering former glacial Lake Algonquin. A distinct east-west trending glaciofluvial spillway is found along the Mattawa River and along the Highway 17 corridor between the towns of Bonfield and Mattawa. These deposits consist of well sorted sands and gravels and are utilized locally as a source of aggregate (see **Exhibit 2-2**). A north-south trending kame moraine feature (locally referred to as the Rutherglen Kame Moraine) is found in the central-eastern portion of the study area. This feature represents the shoreline of former glacial Lake Nipissing and is often associated with significant environmental areas such as Provincial ANSIs (see **Exhibit 2-1**). In the south and southwestern portion of the study area, near Bonfield, stratified deposits of silt and clay are present, which were derived from calm deeper water areas of former glacial Lake Nipissing.

#### 3.1.2 Geology

The study area is located within the Central Gneiss Belt of Ontario on the southern portion of the Canadian Shield. The bedrock geology of the study area is dominated by metamorphosed granitic gneisses, with occasional small outcrops of carbonate metasediments such as marble (Lumbers, 1966).

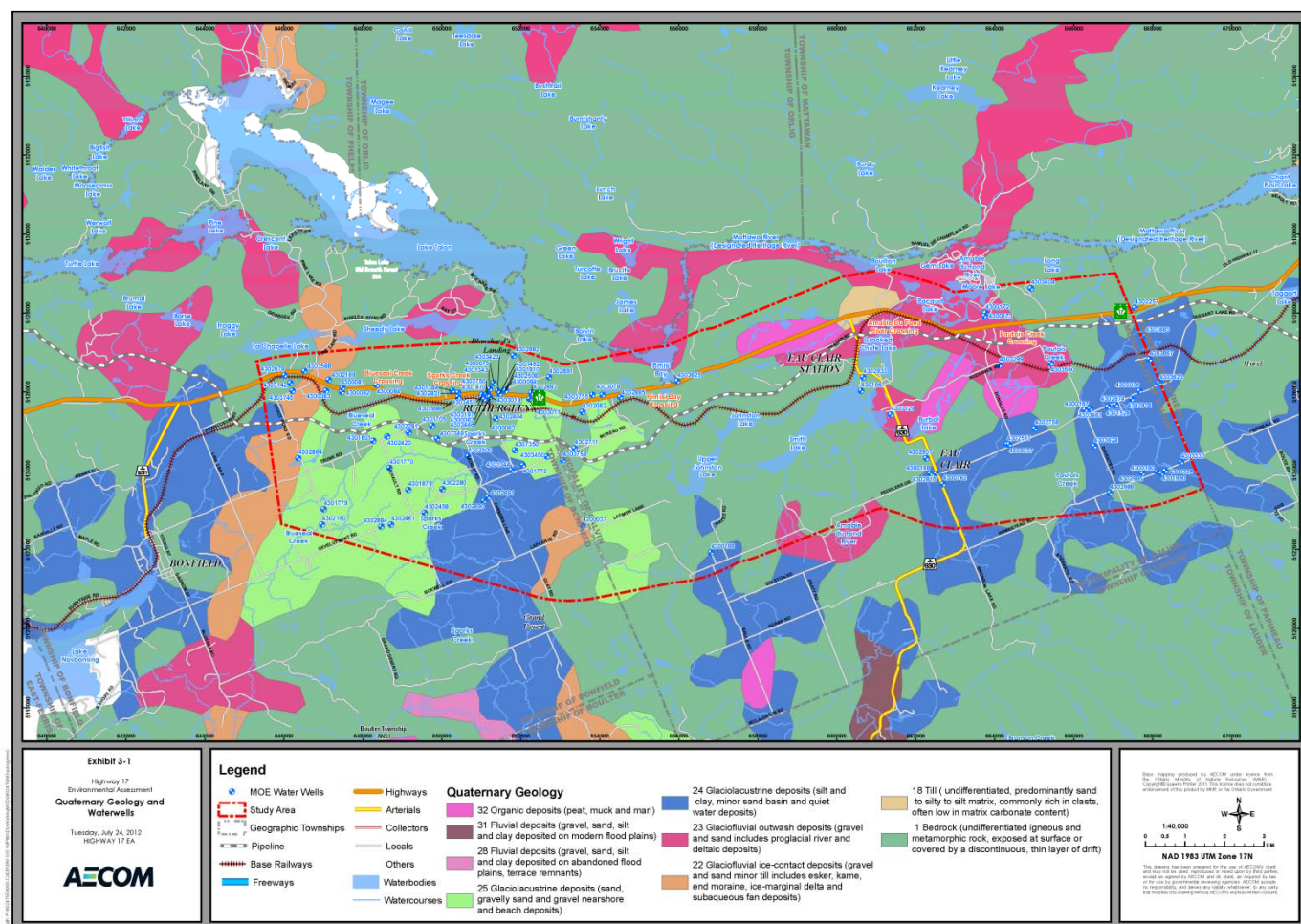
### 3.2 Hydrogeology

A search of the MOE water well database shows that there are approximately 171 groundwater wells within the study area (**Exhibit 3-1**). Private groundwater users within the study area typically obtain potable water from wells completed in bedrock aquifers, however, where outwash and kame deposits are present, these units are utilized as a groundwater resource. Wells range in depth from less than 10 m to 100 m below ground surface (mbgs). Wells screened in overburden aquifers are generally shallower (less than 10 m in depth) than wells completed in bedrock aquifers. Groundwater levels in the study area range from 0 mbgs to greater than 20 mbgs. It is expected that in low lying areas and near watercourses, the groundwater table will be at or near surface (i.e., < 1 mbgs).

Due to the abundance of high permeability outwash and kame deposits in the study area, it is expected that groundwater recharge will dominate over runoff. Infiltration rates will be high where sands and gravels are present at surface and will be low where clay, till or bedrock deposits are present at surface. The Rutherglen Kame Moraine is expected to act as a locally important recharge area that supports various flora and fauna in the Rutherglen Moraine Shoreline and Kame ANSI.



### Exhibit 3-1: Quaternary Geology and Water Wells



### 3.3 Surface Drainage

Existing Highway 17 has five major watercourse crossings: Blueseal Creek (a tributary of Sparks Creek), Sparks (Sharpes) Creek, Pimisi Bay, Amable du Fond River, and Pautois Creek, all of which are tributaries of the Mattawa River to the north of the study area. All of these watercourses have a number of tributaries, and the sub-watersheds of some of them include small lakes within the study area.

Blueseal Creek drains the westernmost portion of the study area, with Sparks (Sharpes) Creek draining the area immediately west of the Rutherglen Moraine (**Exhibit 3-1**). The east-central portion of the study area is drained by the Amable du Fond River and its tributaries. The main branch of the river flows through Upper Johnston Lake, Crooked Shoot Lake, and Smith Lake. The Amable du Fond River ultimately drains into the Mattawa River at a point within Samuel de Champlain Provincial Park. The easternmost portion of the study area is drained by Pautois Creek which also flows north and empties into Moore Lake within Samuel de Champlain Provincial Park. The creek and its main tributaries, including Little Pautois Creek and Bronson Creek, are known to have extensive wetlands associated within them (**Exhibit 2-1**).

### 3.4 Fish and Fish Habitat

Existing Highway 17 has five major watercourse crossings: Blueseal Creek, Sparks (Sharpes) Creek, Pimisi Bay, Amable du Fond River, and Pautois Creek. The fish community in the study area can be described according to thermal preference of the fish community found within a waterbody. Thermal designations for the watercourses within the study area are provided in **Exhibit 3-2**. The three major community types are defined below (Wright and Imhof, 2001):

- **Coldwater** – Fish community comprised primarily of fish species intolerant of water temperatures that exceed 22°C in the summer and are usually found only in groundwater rich areas.
- **Coolwater/Transitional Water** – Fish communities comprised of species that can tolerate more variable water temperatures and conditions. This will include species that are coolwater tolerant and some species of salmonids that can tolerate maximum summer water temperatures up to 24°C for brief periods of time. These communities are often found where occasional groundwater discharges occur.
- **Warmwater** – Fish communities comprised of species that are highly tolerant of wide temperature and flow fluctuations, and can withstand water temperatures in excess of 26°C for prolonged periods of time.

#### Exhibit 3-2: Thermal Designation of Watercourses within the Highway 17 study area

Waterbody Name	Sub-Watershed	Thermal Regime	In-Water Work Restriction
<b>Blueseal Creek</b>	Sharpes Creek	Coldwater	No in-water work between September 15 and April 1
<b>Sparkes (Sharpes) Creek</b>	Sharpes Creek	Coldwater	No in-water work between September 15 and April 1
<b>Mattawa River and Pimisi Bay</b> – location available to all (numerous) fish species within Mattawa River	Mattawa River	Warmwater	No in-water work between April 1 and July 15
<b>Amable du Fond River</b>	Amable du Fond River	Warmwater	No in-water work between April 1 and July 15
<b>Pautois Creek</b>	Pautois Creek	Coldwater	No in-water work between September 15 and April 1

Known fish spawning areas, some of which are shown in **Exhibit 2-1**, include areas of Upper Johnston Lake, Smith Lake, Pimisi Bay, Burbot Lake, Pacaud Lake, Moore Lake, and Crooked Chute Lake as well as Blueseal Creek, Sparks (Sharpes) Creek, Pautois Creek and the Amable du Fond and Mattawa Rivers. Areas of known fish spawning will be confirmed through correspondence with MNR and field investigations where required.

#### 3.4.1 Fish Species at Risk and Provincially Rare Fish Species

Three aquatic species at risk have been recorded in the greater area containing the Highway 17 study area: Lake sturgeon (*Acipenser fulvescens*), northern brook lamprey (*Ichthyomyzon fossor*), and Aurora trout (*Salvelinus fontinalis timagamiensis*). Of these three, occurrences of northern brook lamprey have been recorded within the Highway 17 study area. Northern brook lamprey has been classified as *Special Concern* under the Species at Risk Act. The northern brook lamprey is a non-parasitic lamprey species that is found in clear streams of varying sizes.

### 3.5 Terrestrial and Wetland Habitat

#### 3.5.1 Terrestrial Habitat

Locations of significant natural heritage designations are illustrated in **Exhibit 2-1**, and discussed in greater detail in the following section.

The Highway 17 study area is contained in the Great Lakes - St. Lawrence Forest Region; typified by a mixed hardwood forest community. It also exhibits examples of the transition into the Boreal Forest Region to the north; characterized by cooler micro-climates populated with black spruce, poplar and birch.

#### 3.5.2 Wetlands

Although there are no Provincially Significant Wetlands known within the Highway 17 study area, there are 7 large unevaluated wetland systems associated with study area lakes and streams, and over 40 smaller unevaluated wetlands. The designation of wetlands as either locally or provincially significant is completed through standardized assessment developed by the Ontario Ministry of Natural Resources, known as the Ontario Wetland Evaluation System, which takes into consideration their biological, social, hydrological and special features.

It is noted that a number of wetland areas have not been evaluated according to the Ontario Wetland Evaluation System, e.g. the Blueseal Creek wetland area. It is believed that this wetland, and potentially others within the study area would be identified as a Provincially Significant Wetland if a formal evaluation were conducted (MNR, 2012).

#### 3.5.3 Plant Species at Risk and Provincially Rare Plant Species

Two plant species considered rare in Ontario are known to exist in the Highway 17 study area: water awlwort (*Subularia aquatica*) and American waterwort (*Elatine americana*) (NHIC, 2012). Both species are ranked S3 indicating they are Vulnerable in Ontario due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making them vulnerable to extirpation. These wetland species are often found in association, in clayey to sandy soils in shallow waters of rivers and lakes.

### 3.6 Wildlife and Avian

#### 3.6.1 Overview

Expansion of the existing Highway 17 corridor has the potential to affect core habitat (large blocks of wildlife habitat), interior and deep interior forest habitat, as well as specialized or sensitive wildlife habitat (SSWH) areas. A number of area-sensitive bird species and rare bird species were observed within the study area as a part of Breeding Bird Atlas Surveys (BSC, 2005). There are over 126 breeding bird species recorded in the various vegetation units throughout the study area, including 5 bird species at risk. Wildlife species at risk are discussed in greater detail in **Section 3.6.3**.

#### 3.6.2 Specialized Habitat for Wildlife

The *Significant Wildlife Habitat Technical Guide* (OMNR, 2000) reports *specialized habitats* include:

- Areas that support wildlife species that have highly specific habitat requirements
- Areas with exceptionally high species diversity or community diversity
- Areas that provide habitat that greatly enhances a species' survival

*“The ecological function of specialized habitats is to enhance and, in some cases, ensure the survival of the associated wildlife species that depend on them. Protection and maintenance of these areas will contribute to higher biodiversity within the area. Loss or degradation of these areas and features could seriously stress and even eliminate the wildlife populations that intrinsically depend upon them.”*

A variety of specialized habitat for wildlife exists within the Highway 17 study area. Such habitat includes, but is not limited to, grasslands, forest interior, amphibian woodland breeding ponds, turtle nesting habitat, specialized raptor nesting habitat, moose-specific areas (including mineral licks).

#### 3.6.2.1 Waterfowl Concentration Areas

Municipal Official Plans have provided locations of Waterfowl Concentration Areas, municipal nesting sites, and fish spawning records. For information on fish spawning locations, please refer to **Section 3.4**. One known Waterfowl Concentration Area exists surrounding Johnston Lake, south of Eau Clair Station and west of Amable du Fond River Provincial Park.

#### 3.6.2.2 Specialized Raptor Nesting Habitat

Provincially identified nesting sites for great blue heron, broadwing hawk, and northern goshawk are located within the study area. These species require specialized nesting habitat for their long-term survival. Locations of nesting sites are shown on the Natural Environment Constraints Map.

#### 3.6.2.3 Amphibian and Reptile Habitat

Wooded areas and open meadows with associated water bodies are numerous within the Highway 17 study area and likely provide suitable habitat for several species of reptile and amphibian. A review of the Ontario Herpetofaunal Summary Atlas produced records of eight amphibian frog species within the study area including, American Toad, Spring Peeper, Gray Treefrog, Wood Frog, Green Frog, Northern Leopard Frog, Mink Frog and Bullfrog. Amphibian breeding habitat likely exists within study area wetlands, and associated vegetation communities. There are also numerous reports of Blanding's Turtle, Snapping Turtle and Eastern Painted Turtle within the study area. Furthermore, three salamander species, Red Spotted newt, Blue Spotted Salamander, and Northern Redback Salamander have occurrences within the study area.

#### 3.6.2.4 Animal Movement Corridors

As described in the SWHTG (OMNR, 2000), *animal movement corridors are 'elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another.'* A wide variety of animal movement corridors exist within the Highway 17 study area. Areas possibly being used as corridors include riparian zones and shorelines, stream valleys, woodlands, and anthropogenic features such as hydro and Trans-Canada pipeline corridors, abandoned road and rail allowances and fencerows. Streams and areas connecting two wetlands may also be animal movement corridors.

#### 3.6.2.5 Large Mammals

Moose, deer and black bear represent the largest mammals inhabiting the area. Habitat for these animals is in reasonable supply throughout the study area and there is a Moose Aquatic Feeding Area in the southern portion of the study area. The MNR values mapping indicates Stratum 1 Deer Wintering Yard from Pimisi Bay eastward with concentrated wintering yards located in the Bolvin Lake, Bouillon Lake and northwest of the Highway 630 / Highway 17 junction.



### 3.6.3 Wildlife Species at Risk and Provincially Rare Wildlife Species

A preliminary search using secondary sources was conducted to identify any possible Species at Risk recorded within the Highway 17 study area. Species that have been identified by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and/or by the Committee on the Status of Species at Risk in Ontario (COSSARO) as either *Endangered* or *Threatened* were cross-referenced with historical records. A discussion of select individual species and their habitat is provided below:

The Bobolink (*Dolichonyx oryzivorus*) species has been identified as *Threatened* by COSEWIC and is listed on Schedule 1 of the Federal Species at Risk Act (the SARA) and as *Threatened* under the Provincial Endangered Species Act (2009). This species was recorded as a part of the Ontario Breeding Bird Atlas. A ground nesting bird, the preferred habitat for this species includes open meadows and hayfields (MNR, 2011). Suitable habitat for this species exists throughout the study area, and particularly wherever agricultural practices exist.

Barn Swallow (*Hirundo rustica*) species has been identified as *Threatened* by COSEWIC and is listed on Schedule 1 of the Federal Species at Risk Act and as *Threatened* under the Provincial Endangered Species Act. Also recorded during the Ontario Breeding Bird Atlas (2005), this species utilizes manmade structures for nesting, and feeds on flying insects over open fields. Suitable habitat for this species may exist wherever suitable nesting structures exist adjacent to open fields (e.g. agricultural lands, wetlands, large forest openings and road right-of-ways).

Eastern Meadowlark (*Sturnella magna*) species has been identified as *Threatened* by COSEWIC and is listed on Schedule 1 of the Federal Species at Risk Act and as *Threatened* under the Provincial Endangered Species Act. Recorded within the study area during the Ontario Breeding Bird Atlas (2005), this grassland species utilizes pastures and open meadows as nesting habitat. Suitable habitat for this species may exist in the western part of the study area, or wherever agricultural practices exist.

The Loggerhead shrike (*Lanius ludovicianus*) has been classified as *Threatened* under the Provincial Endangered Species Act. A grassland species, the Loggerhead shrike requires pasture or other grasslands with spiny, multi-branched shrubs (or barbed wire fencing) on which to impale their prey (MNR, 2009).

The Chimney Swift (*Chaetura pelagica*) has been classified as *Endangered* by COSEWIC and is listed on Schedule 1 of the Federal Species at Risk Act and as *Threatened* under the Provincial Endangered Species Act. Chimney swifts are found close to open water where they forage on flying insects. Chimneys and other manmade structures provide suitable nesting habitat, therefore this bird can now be found closer to urban settlements than in the past (MNR, 2009).

The Whip-poor-will (*Caprimulgus vociferus*) has been classified as *Threatened* by COSEWIC and is listed on Schedule 1 of the Federal Species at Risk Act and as *Threatened* under the Provincial Endangered Species Act. Nesting directly on the forest floor, the whip-poor-will requires large tracts of forest containing open spaces (MNR, 2009). Much of the Highway 17 study area is wooded, and therefore there are several areas where suitable whip-poor-will habitat could be located.

The Blanding's Turtle (*Emydoidea blandingii*) species has been identified as *Threatened* by COSEWIC and is listed on Schedule 1 of the SARA, as well as provincially under the Endangered Species Act (2009). Historical records of this species were identified as a part of the NHIC screening. A long-lived species, the Blanding's turtle uses the shallow areas of large wetlands and lakes with plenty of aquatic vegetation (MNR, 2011). Nesting habitat could include roadway shoulders. Several wetlands are located within the study area, as well as larger bodies of water and slow moving streams, that could provide suitable habitat for Blanding's turtle.

The Milksnake (*Lampropeltis triangulum*) was also identified during the NHIC screening. This species is listed as a species of *Special Concern* federally under the Species at Risk Act, and also provincially under the Endangered Species Act. Milksnakes are typically found in a wide variety of habitats including fields, swamps and open woodlots (COSEWIC, 2002). Suitable habitat exists throughout the Highway 17 study area.

The Bald Eagle (*Haliaeetus leucocephalus*) was also identified during the NHIC screening. This species is listed as a species of *Special Concern* federally under the Species at Risk Act, and also provincially under the Endangered Species Act. Bald Eagles nest in a variety of habitats and forest types, almost always near a major lake or river where they do most of their hunting. Suitable habitat exists throughout the Highway 17 study area.

The Canada Warbler (*Cardellina canadensis*) is a small, brightly-coloured songbird which was also identified during the NHIC screening. This species is listed as a species of *Threatened* federally under the Species at Risk Act, and *Special Concern* provincially under the Endangered Species Act. The Canada Warbler breeds in a range of deciduous and coniferous trees, usually wet forest areas with well-developed, dense shrub layers. Suitable habitat exists throughout the Highway 17 study area.

The Common Nighthawk (*Chordeiles minor*) was also identified during the NHIC screening. This species is listed as a species of *Threatened* federally under the Species at Risk Act, and *Special Concern* provincially under the Endangered Species Act. Traditional habitat for this species consists of open areas with little to no ground vegetation such as logged or burned-over areas, forest clearings, rock barrens, peat bogs and lakeshores. This species tends to occupy natural sites but can also nest in cultivated fields, orchards, urban parks, mine tailings and along gravel roads and railways. As such suitable habitat exists throughout the study area.

The Olive-sided Flycatcher (*Contopus cooperi*) was also identified during the NHIC screening. This species is listed as a species of *Threatened* federally under the Species at Risk Act, and *Special Concern* provincially under the Endangered Species Act. Habitat for this species is most often found along natural forest edges and openings in vegetated areas consisting of coniferous or mixed forest adjacent to rivers or wetlands and as such, suitable habitat exists throughout the study area.

The Snapping Turtle (*Chelydra serpentina*) species has been identified as *Special Concern* by COSEWIC as well as provincially under the Endangered Species Act (2009). Historical records of this species were identified as a part of the NHIC screening. Snapping Turtles spend most of their lives in water preferring shallow waters where they can hide under soft mud and leaves with only their noses exposed (MNR, 2011). Nesting habitat is usually gravelly or sandy areas along stream but can include roadway shoulders dams and aggregate pits. Several wetlands and areas of aggregate extraction are located within the study area, as well as larger bodies of water and slow moving streams, all of which could provide suitable habitat for this species.

It should be noted that the study area has not been extensively surveyed for occurrences of species at risk. It is anticipated that additional species will be identified through future phases of the study and it should be noted that though there is no known occurrence, the Eastern Hog-Nosed Snake (*Heterodon platirhinos*) which is identified as *Threatened* under SARA and the Monarch Butterfly (*Danaus plexippus*) which is *Special Concern* under SARA, are also presumed to occur within the study area (MNR, 2012). The provincial Natural Heritage Information Centre, Ministry of Natural Resources, and Fisheries and Oceans Canada do not provide consistent data on species at risk in this area.

### 3.7 Designated Areas

Rutherglen Moraine Shoreline ANSI is located on private land and is approximately 72 ha in size. Its location is shown on **Exhibit 2-1**. According to the MNR, this feature represents an important area of a north-south trending end moraine that extends for 12 km from the edge of the Algonquin Highlands to the Mattawa River. The moraine

was formed while submerged in post- Algonquin Lake Payette. This particular area is unique as it remained submerged through Lake Sheguiandah.

## 4. Socio-Economic Environment

### 4.1 Regional Setting and Economy

The study area is situated in the Townships of Bonfield, Calvin and Papineau-Cameron located in the District of Nipissing. The study area is predominantly rural, with the Hamlet of Rutherglen being the most populated area (less than 500 residents), but also includes the communities of Eau Claire and Eau Claire Station. The combined population of the Township of Papineau-Cameron, the Municipality of Calvin and the Township of Bonfield is less than 4,000 people (source: Stats Canada, 2011 Census data). The most significant industries in the area are forestry, farming and tourism.

While the highway runs adjacent to the Canadian Pacific Railway line there are no stations in the study area.

The study area includes three provincial parks: Mattawa River Provincial Park, Samuel de Champlain Provincial Park and Amable du Fond River Provincial Park.

The sections that follow provide further detail on the relevant socio-economic features in the study area.

#### 4.1.1 District of Nipissing

The District of Nipissing is a census division located between Quebec and Timiskaming to the north, Renfrew County, Parry Sound, Haliburton on the southeast, Parry Sound on the southwest, and Sudbury on the northwest. It has a population of 84,736 and a land area of 17,104 km<sup>2</sup> (Statistics Canada 2011). The District of Nipissing is comprised of one city, three towns, seven townships and two unorganized areas. The district is primarily a census division and does not have an upper tier administration, therefore the government services are provided by the towns and townships or provincial government.

#### 4.1.2 Township of Bonfield

The Township of Bonfield consists of a vast rural area and encompasses the communities of Bonfield, Rutherglen, Blanchard's Landing and Great Desert. The population of this township is 2,016 people and it occupies an area of 208.43km<sup>2</sup> (Canada Census, 2011). There are some small farming operations, but the primary economic activities are forestry, logging, tourism and a growing number of cottage industries. In 1986 the Township of Bonfield celebrated its 100th anniversary. It was inducted into the Canadian Railway Hall of Fame on October 8th, 2002 as the historic location where the first spike was driven in the CPR Trans-Continental Railway.

#### 4.1.3 Municipality of Calvin

The Municipality of Calvin is located along the Mattawa River and Trans Canada Highway 17. According to the Canada 2011 Census, there are approximately 568 people living in this township that occupies an area of 140.69km<sup>2</sup>. This is a farming community with a long history of logging. Notable landmarks of the area include the Samuel de Champlain Provincial Park, the Canadian Ecology Centre, the Eau Claire Gorge, and access to Algonquin Provincial Park.

#### 4.1.4 Township of Papineau-Cameron

The Township of Papineau-Cameron is located on the southern side of the Mattawa and Ottawa Rivers. There is development along Highway 17 which traverses through this area, but most of this township is rural. The Township

has a mix of industrial, commercial, and residential with the main employers being Tembec Forest Products, GinCor Ltd, and tourist related facilities. There is an equestrian club whose members own many of the farms in the area. According to the Canada 2011 Census there are 978 people living here and the township occupies an area of 566.74 km<sup>2</sup>.

## 4.2 Residential

The study area is sparsely populated with single residential homes along Highway 17 and connecting roads. An estimated total of 275 properties are found in the total study area (based on secondary sources), of which 70 (25%) are farm properties. The most densely populated area is the hamlet of Rutherglen, in the Township of Bonfield. Within the town there are approximately 40 homes, of which 5 (12%) are farms. Rutherglen is bisected by Highway 17 and features two churches and a general store (Gagne's Red and White).

## 4.3 Commercial / Business

**Exhibit 4-1** details the business operations located within the study area, as determined from secondary source data. The table shows the services each business provides, its North American Industry Classification System (NAICS) group and the primary type of clientele served (e.g. customers primarily passing through the area (drive-by customer) or customers who have made a trip intentionally to visit this location (destination customer)).

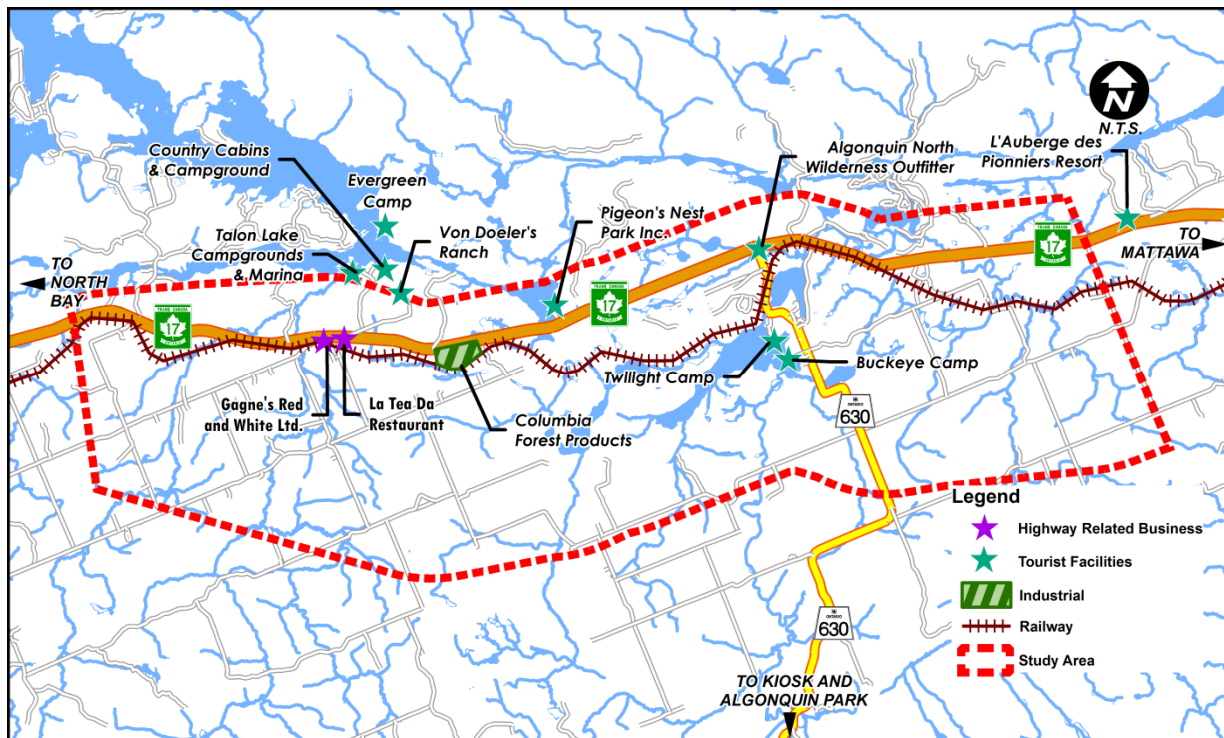
**Exhibit 4-1: Identification of Business/Tourist Operations Within and Adjacent to the study area**

#	Business Name	Location	Services	NAICS	Clientele
<b>1. Tourist Facilities</b>					
1.1	Pigeon's Nest Park Inc	Pimisi Bay	<ul style="list-style-type: none"> <li>• Campground</li> </ul>	<ul style="list-style-type: none"> <li>• RV Parks and Campgrounds</li> </ul>	<ul style="list-style-type: none"> <li>• Destination</li> </ul>
1.2	Country Cabins and Campground (to immediate north of study area, but is accessed from Hwy 17)	Talon Lake	<ul style="list-style-type: none"> <li>• Campground</li> <li>• Holiday cabins</li> <li>• Fishing trips</li> <li>• Boat rentals</li> </ul>	<ul style="list-style-type: none"> <li>• Recreational and Vacation Camps</li> </ul>	<ul style="list-style-type: none"> <li>• Destination</li> </ul>
1.3	Talon Lake Campground and Marina (to immediate north of study area, but is accessed from Hwy 17)	Talon Lake	<ul style="list-style-type: none"> <li>• Campground</li> <li>• Cottages</li> <li>• Boat rental</li> <li>• Canoe rental</li> <li>• Water taxis</li> <li>• Bait and fishing tackle</li> <li>• General store</li> </ul>	<ul style="list-style-type: none"> <li>• Recreation and Vacation Camps</li> </ul>	<ul style="list-style-type: none"> <li>• Destination</li> </ul>
1.4	Buckeye Camp	Eau Claire (Highway 630)	<ul style="list-style-type: none"> <li>• Campground</li> <li>• Cabins</li> <li>• Fishing</li> <li>• Boating</li> <li>• Hiking</li> </ul>	<ul style="list-style-type: none"> <li>• Recreation and Vacation Camps</li> </ul>	<ul style="list-style-type: none"> <li>• Destination</li> </ul>
1.5	Van Doeler's Ranch	Rutherglen	<ul style="list-style-type: none"> <li>• Horse riding</li> <li>• Cabins</li> <li>• Campground</li> <li>• Horse riding trails</li> </ul>	<ul style="list-style-type: none"> <li>• Recreation and Vacation Camps</li> </ul>	<ul style="list-style-type: none"> <li>• Destination</li> </ul>

#	Business Name	Location	Services	NAICS	Cienteles
1.6	L'Auberge des Pionniers Resort	Mattawa	<ul style="list-style-type: none"> <li>• Cabins</li> <li>• Fishing</li> <li>• Boating</li> <li>• Canoe/kayak rental</li> <li>• Hiking trails</li> <li>• Skiing</li> <li>• Snowshoeing</li> <li>• Snowmobiling</li> </ul>	<ul style="list-style-type: none"> <li>• Recreation and Vacation Camps</li> </ul>	<ul style="list-style-type: none"> <li>• Destination</li> </ul>
1.7	Twilight Camp	Eau Claire (Amable Du Fond Provincial Park)	<ul style="list-style-type: none"> <li>• Campground</li> <li>• Cottages</li> <li>• Boating</li> <li>• Motor rentals</li> </ul>	<ul style="list-style-type: none"> <li>• Recreation and Vacation camps</li> </ul>	<ul style="list-style-type: none"> <li>• Destination</li> </ul>
1.8	Algonquin North Wilderness Outfitter	Eau Claire	<ul style="list-style-type: none"> <li>• Guided Canoe and Portage trips</li> <li>• Canoe rentals</li> </ul>	<ul style="list-style-type: none"> <li>• This study is the middle of three separate Highway 17 route planning projects between North Bay and the Nipissing District / Renfrew County boundary.</li> </ul>	<ul style="list-style-type: none"> <li>• This study is the middle of three separate Highway 17 route planning projects between North Bay and the Nipissing District / Renfrew County boundary.</li> </ul>
<b>2. Highway Related Businesses</b>					
2.1	Gagne's Red and White Ltd	Rutherglen	<ul style="list-style-type: none"> <li>• Gas station</li> <li>• Post office</li> <li>• General store</li> <li>• LCBO</li> </ul>	<ul style="list-style-type: none"> <li>• Gasoline Station with Convenience store</li> </ul>	<ul style="list-style-type: none"> <li>• Drive-by</li> </ul>
2.2	La Tea Da Restaurant	Rutherglen (on Highway 17)	<ul style="list-style-type: none"> <li>• Restaurant/Cafe</li> <li>• Art Gallery</li> </ul>	<ul style="list-style-type: none"> <li>• Full Service Restaurant</li> </ul>	<ul style="list-style-type: none"> <li>• Drive-by</li> </ul>
<b>3. Industrial</b>					
3.1	Columbia Forest Products	Rutherglen	<ul style="list-style-type: none"> <li>• Wood manufacturer</li> </ul>	<ul style="list-style-type: none"> <li>• Building material dealer</li> </ul>	<ul style="list-style-type: none"> <li>• Destination</li> </ul>

Many of these businesses are “destination locations” such as campgrounds or cottages while others depend on drive-by customers such as gas stations and restaurants. Tourism is a key element in the economic profile of the area. Their locations are shown in **Exhibit 4-2** below.

## Exhibit 4-2: Location of Business/Tourist Operations Within and Adjacent to the study area



Gagne's Red and White Store Ltd. (Esso), 1402 Hwy 17 East, Rutherglen, facing southwest from Highway 17  
(Google Earth Pro)

## 4.4 Provincial Parks

The study area is home to three Provincial Parks – all of which are popular tourist sites and attract visitors to the area.

### 4.4.1 Mattawa River Provincial Park (Waterways Class)

The Mattawa River runs parallel to Highway 17 and in 1970 a 33km section of the river was designated as the Mattawa Provincial Park. The park also includes a 122m ribbon of land either side of the river. The river features several stretches of rapids, an 8m waterfall and 14 portages. The park is a popular location for canoeing, white water rafting, boating, fishing and swimming. The park encompasses several lakes including Talon Lake and Turtle Lake which has docking facilities for boats. There are also a number of picnic and camping sites within the park as well as designated hiking trails and snowmobile routes. There are at least four access roads to the park from Highway 17. Visitor statistics are not available for waterway class Provincial Parks. The river is home to the Mattawa River Canoe Race which runs the full length of the river from Olmstead Beach to Mattawa – approximately 64km and takes place annually in July. (Source: Parks Ontario). Highway 17 crosses through the edge of the park at Pimisi Bay.

### 4.4.2 Samuel de Champlain Provincial Park

The Mattawa River also runs through the Samuel de Champlain Provincial Park, a popular location for hiking, boating, fishing, swimming and canoeing and includes camping and picnic areas. The park is 25.5km<sup>2</sup> and is classed as a Natural Environment Park. The park features the Voyageur Heritage Centre which provides information on the role of the Mattawa River in the fur trade. The park is also home to the Canadian Ecology Centre, an outdoor education centre providing education on sustainable forestry. In 2010 there were 50,185 visitors to the park (Source: Parks Ontario statistics 2010). Highway 17 runs along the southern side of the park and is the principal access route to the park.

### 4.4.3 Amable du Fond River Provincial Park (Waterway Class & Living Legacy Site)

The Amable du Fond River flows from Pipe Lake and joins the Mattawa River in the Samuel de Champlain Provincial Park. The park provides an access point to Algonquin Provincial Park for canoeists and is an established ecological link between Samuel de Champlain and Algonquin Provincial Parks. The park is located south of Highway 17 and also contains Crooked Chute and Smith Lakes. It can be accessed both from Highway 17 and via Samuel de Champlain Provincial Park and is a popular location for canoeing, camping and hiking. Visitor statistics are not available for waterway class Provincial Parks. There are also a number of holiday cottages within the park. The Canadian Pacific Railway line runs along the North West perimeter of the park.

Amable du Fond River provides a recreational link between Samuel de Champlain Provincial Park and Algonquin Provincial Park. Retaining natural features also provides a natural corridor for animal movement north-south through the study area.

## 4.5 Community / Recreational / Tourist Facilities

### 4.5.1 Community

#### 4.5.1.1 Community Features

Community features include: places of worship and cemeteries, community centres, institutional facilities (e.g., fire stations), educational or health care facilities and outdoor recreational facilities / areas.



There are two churches found in the study area: St Margaret's of Scotland Anglican Church and the Mount Pleasant United Church, both located in Rutherglen. The churches are within 200m of each other and are located on the south side of Highway 17. St Margaret's Church also has a cemetery. There are no schools located within the study area limits. In Eau Claire there is a public skating rink, sports park and baseball diamond located on Peddlers Drive.

#### 4.5.1.2 *School Bus Routes*

The potential impact of highway planning alternatives to school bus routes will be assessed during their evaluation.

#### 4.5.1.3 *Emergency Service Providers*

The fire halls that service the study area are located in Bonfield, in Rutherglen, and on Highway 630 at its intersection with Peddlers Drive. Ambulance service is provided from North Bay and Mattawa. The local OPP detachment is located in North Bay.

### 4.5.2 Recreational

#### 4.5.2.1 *Canoe Trails*

There is a designated canoe trail that runs through the Mattawa River Provincial Park and into the Samuel de Champlain Provincial Park, and also passes through the study area. There is a further canoe trail running south from Samuel de Champlain Provincial Park into Amable du Fond Provincial Park, passing under Highway 17, linking the two parks. These trails are shown in **Exhibit 2-2**.

#### 4.5.2.2 *Snowmobile Trails*

There are a number of snowmobile trails in the areas surrounding and within the study area. These trails follow the aforementioned canoe trails in the Provincial Parks as well as passing through other rural lands outside of the Parks. One snowmobile trail runs directly alongside Highway 17. These trails are shown in **Exhibit 2-2**.

#### 4.5.2.3 *Hiking Trails*

As **Exhibit 2-2** shows, there are hiking trails within all three Provincial Parks in the study area. One runs east-west along the Mattawa River and a second runs north-south, linking Samuel de Champlain Provincial Park with Amable du Fond Provincial Park.

### 4.5.3 Tourist Facilities

The study area features a number of tourism-related operations such as outfitters, ranches and campsites that offer fishing and boating trips, canoeing, camping, fishing, horse riding, swimming, hiking and snowsports. These operations are described in more detail in Section 4.3 and are identified in **Exhibit 4-1** and mapped in **Exhibit 4-2**.

All of these facilities can be accessed from Highway 17 either directly or via municipal road connections.

## 4.6 Property Waste and Contamination

A contaminant overview study (COS) was undertaken in order to identify properties or lands within the study area which may pose potential environmental concerns (i.e. soil and groundwater contamination). The study is similar to a Phase I Environmental Site Assessment (ESA), with the following distinctions:

- The COS is carried out on a much larger scale than a Phase I ESA, and normally consists of numerous properties;
- The COS does not include a chain-of-title search for any properties;
- The COS does not include detailed site inspections (including building inspections) of each property;
- The COS does not include site interviews; and

- The COS does not include a Freedom of Information (FOI) request to the local municipalities or the Ministry of the Environment (MOE) for information on spills, abatement orders or other relevant environmental information from their files for any of the properties within the study area.

**Exhibit 4-3** presents Areas of Interest (AOIs) that were determined to present the highest potential for environmental concern to the roadway (and respective right-of-ways), based on an assessment of historical and/or current property information available at the time of reporting. Key criteria used to assess environmental records to select the properties with the highest potential environmental concern are as follows: evidence of confirmed impacts, spill history, operational history (i.e. type and length of historical land use), and current operations.

### Exhibit 4-3: Identified Areas of Interest (AOIs) with Respect to the study area

Location ID	Address	Location	Associated Company	Details*
1	Concession 5, Lot 30, Municipality of Bonfield.	Municipality of Bonfield	Not listed	<ul style="list-style-type: none"> <li>Rural Municipal Domestic Waste Landfill, closed for &lt;20 years (as of 1991)</li> </ul>
2	Concession 9, Part 21 (N ½), Municipality of Calvin	North of Hwy 17, west of Hwy 630	Not listed	<ul style="list-style-type: none"> <li>Rural Municipal Domestic Waste Landfill, closed for &lt;20 years (as of 1991), with municipal waste received prior to 1980</li> </ul>
3	Concession 8, Part 7-8, Municipality of Calvin	North of Hwy 17, near Moore Lake	Not listed	<ul style="list-style-type: none"> <li>Rural Municipal Domestic Waste Landfill, closed for &lt;20 years (as of 1991)</li> </ul>
4	Lot 34 & 35, Concession 9 Calvin Township, Nipissing District	East of Mt. Pleasant Road (600 m), North of Moreau Road (750 m)	Columbia Forest Products Ltd.	<ul style="list-style-type: none"> <li>Certificates of Approval for glue exhaust and wood waste fuel water-tube boiler</li> <li>Hazardous waste generator number active during the following period; 1989, 1992-1996, 1999-2008, and 2010 onwards.</li> <li>One 9,092 L gasoline UST and one 13,638 L diesel UST, with year of installation unknown</li> <li>National Pollutant Release Inventory records from 2002-2009</li> </ul>
5	Boundary Road, Township of Papineau	East side of the Township of Papineau/Municipality of Calvin Townline, to the south of Concession 12/13 Road, adjacent to a wetland	Mattawa Junkyard	<ul style="list-style-type: none"> <li>Active junkyard in the 1980's</li> </ul>
6	Eau Clair Station	Approximately 450m north of Highway 17 and adjacent to a pond, in Eau Clair Station	Eau Clair Station Dump	<ul style="list-style-type: none"> <li>Active dump in the 1970's/80's</li> </ul>
7	Champlain Provincial Park	Within the Samuel de Champlain Provincial Park, approximately 575 m north of Highway 17, and 75 m west of the road, near the gravel pits at this location	Champlain Dump	<ul style="list-style-type: none"> <li>Active dump in the 1980's/90's</li> </ul>
8	1402 A Highway 17 E, Rutherglen	South of Hwy 17, within Rutherglen	ESSO	<ul style="list-style-type: none"> <li>Two single wall gasoline USTs installed in 1990 and one double wall gasoline UST installed in 2008. Total capacity of 75,000L</li> <li>One single wall diesel UST (25,000 L) installed in 1990</li> </ul>
9	625 Hwy 630, Municipality of Calvin	North of Peddler's Road and South of Suzanne's Road, on Hwy 630	Hydro One Networks	<ul style="list-style-type: none"> <li>Hydro transformer leak, unknown quantity of oil leaked to land and water</li> </ul>
10	Not Applicable	Eau Clair Station	Canadian Pacific (CP) Rail	<ul style="list-style-type: none"> <li>Railway tracks run adjacent to Highway 17, northeast of Eau Clair Station and north of Crooked Chute Lake. Railway tracks may be associated with environmental</li> </ul>

Location ID	Address	Location	Associated Company	Details*
				impacts and should be treated as a concern.
11	Part Lot 17, Concession 5, Calvin Township	Unknown	Municipality of Calvin	• TSSA Expired Facilities identified at this location, indicating potential concern for subsurface impacts.
12	1442 Lots 33 & 34, Concession 8 East, Highway 17, Rutherglen	North of Highway 17, off Talon Lake Road	Sprucewood Gas Bar	• TSSA Expired Facilities identified at this location, indicating potential concern for subsurface impacts.
13	Part Lots 23 and 24, Concession 10, Bonfield Township	Unknown	G W's Truck Stop	• TSSA Expired Facilities identified at this location, indicating potential concern for subsurface impacts.
* Note: All tank records indicate single wall steel tanks unless otherwise indicated				

## 4.7 Highway Noise

### 4.7.1 Existing Highway 17 Noise Levels

All receptors in the study area are likely to be assessed as Class 3 (rural). According to the Ministry of Transportation (MTO) *Environmental Guide for Noise* and NPC-233, ambient noise levels for this class of receptors are likely to be an  $L_{eq,24hr}$  of 45 dB(A). Due to traffic noise from Highway 17, receptors located close to Highway 17 are likely to be exposed to higher  $L_{eq,24hr}$  noise levels.

Using STAMSON, predictions have been made at specified distances from Highway 17 for the existing traffic volumes, speeds and alignment. Traffic volumes were taken from the Ministry of Transportation Provincial Highways Traffic Volumes On Demand service (6,500 per day for 2008), with a 1.5% annual growth rate to estimate for 2012.

While these values are indicative, they provide a basis for determining existing ambient noise levels within the study area. **Exhibit 4-4** summarizes the distance ranges from Highway 17 for various  $L_{eq,24hr}$  noise levels.

### Exhibit 4-4: Existing Highway 17 Noise Levels

Noise level range ( $L_{eq,24hr}$ )	Distance from Highway 17
45 dB(A) <sup>1</sup>	360 metres or greater
45 to 50 dB(A)	360 to 180 metres
50 to 55 dB(A)	180 to 90 metres
55 to 60 dB(A)	90 to 45 metres
60 to 65 dB(A)	45 to 22 metres
Greater than 65 dB(A)	Less than 22 metres
Note <sup>1</sup> : MTO <i>Environmental Guide for Noise</i> and NPC-233 provide an ambient background level of 45 dB(A) for Class 3 areas (rural). This level has been applied in this assessment for receptors not likely to experience significant levels of road traffic noise.	

### 4.7.2 Existing Highway Noise Sensitive Receptors

Categories of noise sensitive areas defined by the MTO *Environmental Guide for Noise* and found within this study area include:

- private homes such as single family residences; and
- campgrounds that provide overnight accommodation.

Categories of noise sensitive receptors identified by the MTO noise guide but not found within this study area include townhouses; multiple unit buildings; hospitals and nursing homes for the aged; hotels/motels where there are OLAs for visitors; educational facilities and daycare centres, where there are OLAs for students.

NSAs within the study area are primarily sparsely distributed private homes along Highway 17 and Highway 630, the hamlet of Rutherglen, and a significant number of other homes also sparsely distributed in the study area, but located away from major provincial roads.

Using the indicative distances provided in **Exhibit 4-4**, noise sensitive receptors have been assessed on the basis of which distance band they fall into. While these levels are not exact, **Exhibit 4-5** provides an indication of the existing noise environment for the study area.

#### Exhibit 4-5: Existing Highway 17 Noise Sensitive Receptors

Distance from Highway 17	Indicative existing noise level ( $L_{eq,24hr}$ )	Number of NSAs
360 metres or greater	45 dB(A) <sup>1</sup>	537 (82%)
360 to 180 metres	45 to 50 dB(A)	19 (3%)
180 to 90 metres	50 to 55 dB(A)	41 (6%)
90 to 45 metres	55 to 60 dB(A)	41 (6%)
45 to 22 metres	60 to 65 dB(A)	12 (2%)
Less than 22 metres	Greater than 65 dB(A)	4 (1%)
Total NSAs		654
Note <sup>1</sup> : MTO <i>Environmental Guide for Noise</i> and NPC-233 provide an ambient background level of 45 dB(A) for Class 3 areas (rural). This level has been applied in this assessment for receptors not likely to experience significant levels of road traffic noise.		

## 4.8 Agriculture

There are pockets of active farming within the study area involving primarily field crops and dairy operations. Information on these operations will be acquired during the study process.

## 5. Cultural Environment

### 5.1 Built Heritage and Cultural Landscapes

Built heritage sites and cultural landscapes within the study area include the following:

- cemeteries;
- churches with potential heritage resource attributes;
- former public buildings with potential heritage resource attributes;
- former commercial buildings with potential heritage resource attributes;
- residential properties with potential heritage resource attributes;
- farm properties with potential heritage resource attributes; and
- other cultural landscapes.

These sites are identified in **Exhibit 5-1** below, and their locations are shown in **Exhibit 2-3**.

#### Exhibit 5-1: Cemeteries, Heritage Structures and Cultural Landscapes in the study area

Map Number	Name & Location	Estimated Date	Comments, Cultural Heritage Attributes
<b>Cemeteries</b>			
1.	St. Therese Cemetery, 377 Highway 630 North, Eau Claire	19 <sup>th</sup> Century	<ul style="list-style-type: none"> <li>• Cemetery for village that has been in existence since late 19<sup>th</sup> century</li> </ul>
2.	Calvin Township Public Cemetery, 60 Peaceful Lane, Eau Claire	19 <sup>th</sup> Century	<ul style="list-style-type: none"> <li>• Cemetery for village that has been in existence since late 19<sup>th</sup> century</li> </ul>
3.	St Margaret of Scotland Cemetery, 1376 Highway 17, Rutherglen	Circa 1883	<ul style="list-style-type: none"> <li>• Very early cemetery for the area.</li> <li>• Has long-standing association with the community.</li> </ul>
4.	Mount Pleasant Cemetery, Mount Pleasant Road, Township of Bonfield	Established 1884, with earlier grave markers	<ul style="list-style-type: none"> <li>• Very early cemetery for the area.</li> </ul>
5.	Bonfield Cemetery, Development Road, Township of Bonfield	Unknown	<ul style="list-style-type: none"> <li>• Abandoned</li> <li>• Early cemetery for the area.</li> </ul>
<b>Churches with Potential Heritage Resource Attributes</b>			
6.	St Margaret of Scotland Anglican Church, Rutherglen	Established 1883	<ul style="list-style-type: none"> <li>• Good example of a Gothic Revival period church.</li> <li>• Has long-standing association with the community.</li> <li>• Contributes to the character of the area.</li> <li>• A significant local landmark</li> </ul>
7.	Mount Pleasant United Church, Rutherglen	Established 1930	<ul style="list-style-type: none"> <li>• Good example of a Gothic Revival period church.</li> <li>• Has long-standing association with the community.</li> <li>• Contributes to the character of the area.</li> <li>• A significant local landmark.</li> </ul>
8.	Eau Claire Missionary Church, Eau Claire	Established 1955	<ul style="list-style-type: none"> <li>• Has long-standing association with the community.</li> <li>• A significant local landmark.</li> </ul>

Map Number	Name & Location	Estimated Date	Comments, Cultural Heritage Attributes
<b>Former Public Buildings with Potential Heritage Resource Attributes</b>			
9.	Former SS #4B School, Highway 630, Eau Claire)	Circa 1929	<ul style="list-style-type: none"> <li>School was built in 1929 and in operation until 1946.</li> <li>A late example of a log structure, albeit heavily renovated and modified.</li> </ul>
10.	Former SS #4 School (Peddlers Drive, Eau Claire)	Circa 1947	<ul style="list-style-type: none"> <li>Was built as a two-room school in 1947 to accommodate a growing number of students.</li> <li>Now converted into a residential duplex.</li> </ul>
11.	Possible former Rutherglen Train Station, Park Street, Rutherglen	Circa 1882 (arrival of railway)	<ul style="list-style-type: none"> <li>House appears to have been associated with a rail stop.</li> <li>Contributes to heritage character of the area.</li> </ul>
<b>Former Commercial Buildings with Potential Heritage Resource Attributes</b>			
12.	Former Ryan's Store and Post Office, Highway 630, Municipality of Calvin	Circa 1865 - 1902	<ul style="list-style-type: none"> <li>A fair example of an early mercantile structure.</li> <li>Built by W. Mackey and given to A. Ryan in 1902.</li> <li>Once of the first general stores in the area.</li> <li>Now a residential property.</li> </ul>
13.	Former Simon Stein's Cheese Factory and former local post office, vernacular – gothic revival, Peddlers Drive.	Circa 1865 - 1900	<ul style="list-style-type: none"> <li>An early structure in the area</li> <li>Was Simon Stein's cheese factory, a prominent landmark during the First World War.</li> <li>Became the local post office from 1930 to 1950 when Mr. Stein became the postmaster.</li> <li>Now a residential property</li> </ul>
<b>Residential Properties with Potential Heritage Resource Attributes</b>			
14.	Front Gables Box Bungalow, Rutherglen Line	Circa 1920 - 1950	<ul style="list-style-type: none"> <li>A good example of a box bungalow house.</li> </ul>
15.	Vernacular Residence, Development Road	Circa 1860 - 1900	<ul style="list-style-type: none"> <li>An older residence in the area.</li> <li>Contributes to the heritage character of the area.</li> </ul>
16.	Gothic Revival Residence, Mount Pleasant Road	Circa 1865 - 1900	<ul style="list-style-type: none"> <li>An older residence in the area.</li> <li>Contributes to the heritage character of the area.</li> </ul>
17.	Colonial Dutch Revival Residence, Peddlers Drive	Circa 1900 - 1945	<ul style="list-style-type: none"> <li>A fair example of a colonial Dutch revival period house.</li> </ul>
18.	Log House – Gothic Revival, Peddlers Drive	Circa 1865 - 1900	<ul style="list-style-type: none"> <li>An excellent example of the Gothic revival style, done in log construction.</li> <li>Contributes to the heritage character of the area.</li> </ul>
19.	Vernacular – Gothic Revival Residence, Peddlers Drive	Circa 1865 - 1900	<ul style="list-style-type: none"> <li>A fairly old structure for the area.</li> <li>Contributes to the heritage character of the area.</li> </ul>
20.	Vernacular Residence, Talon Crescent, Eau Claire	Circa 1880 - 1920	<ul style="list-style-type: none"> <li>Abandoned.</li> <li>May be associated with construction of the railway.</li> </ul>
<b>Farm Properties with Potential Heritage Resource Attributes</b>			
21.	Vernacular – Gothic Revival House and Gambrel-Roofed Barn, Fichault Road	House Circa 1865 – 1900 Barn Circa 1880 - 1920	<ul style="list-style-type: none"> <li>Both structures fairly old for the area.</li> <li>Structures serve as touchstones to the agricultural past of the area.</li> <li>Contribute to the heritage character of the area.</li> </ul>

Map Number	Name & Location	Estimated Date	Comments, Cultural Heritage Attributes
22.	Gothic Revival House and Gambrel-Roofed Barn, Development Road	House Circa 1865 – 1900 Barn Circa 1860 – 1880 (?)	<ul style="list-style-type: none"> <li>• Good local example of Gothic revival house and gambrel-roofed barn.</li> <li>• Structures serve as touchstones to the agricultural past of the area.</li> <li>• Contribute to the heritage character of the area.</li> </ul>
23.	Gothic Revival House and Gambrel-Roofed Barn, LaPlante Road	House Circa 1865 – 1900 Barn Circa 1880 - 1920	<ul style="list-style-type: none"> <li>• Both structures fairly old for the area.</li> <li>• Structures serve as touchstones to the agricultural past of the area.</li> <li>• Contribute to the heritage character of the area.</li> </ul>
24.	Gothic Revival House and Gambrel-Roofed Barn, LaPlante Road	House Circa 1865 – 1900 Barn Circa 1880 - 1920	<ul style="list-style-type: none"> <li>• Both structures fairly old for the area.</li> <li>• Structures serve as touchstones to the agricultural past of the area.</li> <li>• Contribute to the heritage character of the area.</li> </ul>
25.	Log House and Gambrel Roofed Barn; Gable-Roofed Barns, Highway 630 North	House Circa 1865 – 1900 Barn Circa 1860 - 1880	<ul style="list-style-type: none"> <li>• Both structures fairly early for the area.</li> <li>• Structures serve as touchstones to the agricultural past of the area.</li> <li>• Contribute to the heritage character of the area.</li> </ul>
26.	Log House and Gambrel Roofed Barn, Peddlers Drive	House Circa 1865 – 1900 Barn Circa 1860 - 1880	<ul style="list-style-type: none"> <li>• A good example of the Gothic revival style, done in log construction.</li> <li>• Contributes to the heritage character of the area.</li> </ul>
27.	Vernacular – Gothic Revival House and Gambrel-Roofed Barn, Daventry Road	House Circa 1865 – 1900 Barn Circa 1880 - 1920	<ul style="list-style-type: none"> <li>• Both structures fairly early for the area.</li> <li>• Structures serve as touchstones to the agricultural past of the area.</li> <li>• Contribute to the heritage character of the area.</li> </ul>
28.	Craftsman Box Bungalow and Gambrel-Roofed Barn, Homestead Road	House Circa 1900 - 1945 Barn Circa 1880 - 1920	<ul style="list-style-type: none"> <li>• Craftsman period structures are fairly uncommon for the area. Barn may be quite early.</li> <li>• Structures serve as touchstones to the agricultural past of the area.</li> <li>• Contribute to the heritage character of the area.</li> </ul>
29.	Arts and Crafts House and Gambrel-Roofed Barn, Homestead Road	House Circa 1900 - 1945 Barn Circa 1880 - 1920	<ul style="list-style-type: none"> <li>• Fairly early structures for the area. Arts and Crafts period houses are uncommon here.</li> <li>• Structures serve as touchstones to the agricultural past of the area.</li> <li>• Contribute to the heritage character of the area.</li> </ul>
30.	Two Gambrel-Roofed Barns, Homestead Road	1 <sup>st</sup> Barn dated 1887 on sign 2 <sup>nd</sup> Barn Circa 1880 - 1920	<ul style="list-style-type: none"> <li>• Both structures fairly early for the area.</li> <li>• Structures serve as touchstones to the agricultural past of the area.</li> <li>• Contribute to the heritage character of the area.</li> </ul>
<b>Other Cultural Landscapes</b>			
31.	Former School House Site, Now Calvin Community Centre	Unknown	<ul style="list-style-type: none"> <li>• Associated with the Calvin community.</li> <li>• Plaque has been removed from the cairn in front of the building.</li> </ul>
32.	OVR / CPR Rail	Reached Calvin Township by 1881. Reached Eau Claire by 1894	<ul style="list-style-type: none"> <li>• Railway was instrumental in promoting settlement and commerce in the area.</li> </ul>
33.	Highway 17	First constructed in 1930s	<ul style="list-style-type: none"> <li>• Instrumental in encouraging further settlement in the area and allowing local resources to be taken to wider markets.</li> </ul>
34.	Eau Claire Gorge former log slide site	Log slide was used in 1870's to early 20 <sup>th</sup> century	<ul style="list-style-type: none"> <li>• Log slide was used to bypass the gorge.</li> <li>• It was dismantled in late 1930s, but cut out area is still visible on the landscape.</li> </ul>
35.	Eau Claire	Village in existence since late 19 <sup>th</sup> century	<ul style="list-style-type: none"> <li>• Associated with events that made significant contributions to the broad patterns of history.</li> <li>• Was once a stop on the railway line (station now gone), and the site of a number of schools, churches, homesteads, stores.</li> </ul>

Map Number	Name & Location	Estimated Date	Comments, Cultural Heritage Attributes
36	Rutherglen	First settled in late 1880's. One of earliest settlements in the area.	<ul style="list-style-type: none"> <li>Associated with events that made significant contributions to the broad patterns of history.</li> </ul>

## 5.2 Archaeology

A Stage 1 overview and background study was conducted in accordance with the Ministry of Tourism, Culture and Sport standards, in order to gather information about known and potential cultural heritage resources within the study area.

The study area falls within Northern Ontario, as defined by the *2011 Standards and Guidelines for Consultant Archaeologists*. Geographically, it falls within the southernmost portion of the Canadian Shield. There has been limited archaeological research in this part of Ontario; however, through archaeological evidence it is known that both the Nipissing District in general and the Mattawa River environs specifically witnessed significant First Peoples land use and settlement from the period immediately following glaciation to more recent times. The archaeological record typically reflects patterns that are typical for both southern and northern Ontario patterns, as one might expect of an area that is somewhat intermediary between these two zones. Some of the earlier periods of First Peoples settlement in the immediate area are more poorly known, largely due to lack of archaeological study and development-driven archaeological assessments but also due to the fact that some of the more typical landscape features on which sites of these periods are found (e.g., glacial shorelines) are absent, not yet well-documented, or now destroyed by aggregate extraction and other ground altering activities. More recent periods are slightly better known. Perhaps the best archaeologically known period of native settlement in this part of Northern Ontario is the fur trade period. That this is the case stems from the fact that the interest of archaeologists has often focused on historic portage routes – the Voyageur Route, for example – and more accessible river- and lake-side locations.

According to the Ministry of Tourism, Culture and Sport's database, there are 13 registered archaeological sites within one kilometre of the study area. Ten of the sites were identified during archaeological activities within Samuel de Champlain Provincial Park conducted by David Slattery; none of these have been assigned a precise cultural or temporal affiliation and are given various functional designations (camp, village, lithic, scatter, portage, pit, mining station). The three others were registered by Provincial archaeologists during a 1974 survey along the Mattawa River. One of these is a long-use fishing station, another is a Middle Woodland camp and a third has no assigned cultural or temporal affiliation. The latter three sites are well outside of the current study area. Of the registered sites in Samuel de Champlain Provincial Park seven fall within or along the northern edge of the study area, with the remainder falling outside of the study area. All of the registered sites identified to date are adjacent to watercourses or water bodies. None of the sites have seen full-scale excavation.

The low number of registered archaeological sites in the vicinity of the study area is not necessarily a reflection of the amount of past settlement. The study area has not witnessed a significant amount of formal archaeological survey, resulting in only a low number of reported sites. That there are numerous potential unregistered sites in the study area is suggested by reports of local residents finding artifacts on their properties or on lands within the study area. The local museum at Mattawa reports having been given artifacts reportedly found along the river. There may also be potential for rock art sites and First Nations spiritual places, none of which are typically registered with the province of Ontario. Local First Nations, heritage experts and Provincial Park staff will need to be consulted to collect a better inventory of known cultural heritage resources of this nature.



**Exhibit 5-2: Registered Archaeological Sites within 1 km of the study area**

<b>Borden Number</b>	<b>Name</b>	<b>Type</b>	<b>Cultural/Temporal Affiliation</b>	<b>Researcher</b>
CbGr-3	La Grandemere	camp, fishing station	"Prehistoric and Historic"	Wright and Wright (1974)
CbGr-4	Gilligan's Island	camp	Middle Woodland	Wright and Wright (1974)
CbGs-10	Marshall	unknown	Unknown	Wright and Wright (1974)
CbGs-15	Samuel de Champlain P.P.2	lithic scatter/portage	Undetermined precontract First Peoples	Slattery (2003)
CbGs-16	Samuel de Champlain P.P.3	camp/village	Undetermined precontract First Peoples	Slattery (2003)
CbGs-20	Samuel de Champlain P.P.7	camp/village	Undetermined precontract First Peoples	Slattery (2003)
CbGs-21	Samuel de Champlain P.P.8	scatter	Undetermined precontract First Peoples	Slattery (2003)
CbGs-22	Samuel de Champlain 9	scatter/camp/village	Undetermined precontract First Peoples	Slattery (2003)
CbGs-23	Long Lake Bluff	scatter	Undetermined precontract First Peoples	Slattery (2005)
CbGs-24	Samuel de Champlain P.P. Main R	pit	Undetermined precontract First Peoples	Slattery (2005)
CbGs-25	Gap # 3	camp	Undetermined precontract First Peoples	Slattery (2005)
CbGs-26	Gap # 4	camp	Undetermined precontract First Peoples	Slattery (2005)
CbGs-27	Samuel de Champlain P.P. Staff H	mining station	Undetermined precontract First Peoples	Slattery (2005)

Note: The precise location of the above sites is confidential in order to minimize potential for looting.

The areas within which the above sites are located are shown in **Exhibit 2-3**.

## 6. Transportation Facilities and Utilities

### 6.1 Provincial Highways

Highway 17 traverses northern Ontario, providing a strategic link in the Trans-Canada Highway. Besides providing for basic travel needs for residents as well as visitors to the area, the section of Highway 17 that is the subject of this study provides a transportation corridor for long haul trucks from eastern Canada to northern Ontario and western Canada.

Highway 630 runs southerly for a distance of 28 km from Highway 17 through the hamlets of Eau Clair and Kiosk to its southerly terminus in the northerly Algonquin Park.

### 6.2 Municipal Roads

The municipal road network within the study area is shown in each of **Exhibits 2-1, 2-2 and 2-3**. There are ten existing sideroads connecting to Highway 17 within the project limits. These are identified in **Exhibit 6-1**:

**Exhibit 6-1: Existing Sideroads Connecting to Highway 17 in the study area**

NAME	STATION	LEFT OR RIGHT	TURNING LANES
<b>TOWNSHIP OF BONFIELD</b>			
Piche Road	18+274	Left	WB Right turn parallel
Trout Pond Road	19+638	Right	EB Right turn taper
Pine Lake Road	19+733	Left	WB Right turn taper
Ch. Gagne Road	23+960	Right	EB Right turn taper
Park Street	24+307	Right	EB Right turn taper
Talon Lake Road	24+439	Left	WB Right turn taper
<b>MUNICIPALITY OF CALVIN</b>			
Columbia Forest Products Road	11+483	Right	EB Right turn parallel
Highway 630	18+364	Right	EB Right turn taper WB Left turn slip around
Samuel de Champlain Provincial Park Road	23+482	Left	WB Right turn taper EB Left turn slip around
Boundary Road	10+081	Right	EB Right turn taper

The municipal road network within the study area provides local access from Highway 17 and Highway 630. For the most part, it is not comprised of interconnected roads that provide alternate access through the study area. As a result, the development and assessment of controlled access highway planning alternatives along sections of

existing Highway 17 will require consideration of alternatives that maintain this access through direct municipal road connections to Highway 17 at interchanges, or through alternate means such as service roads and new connections between existing municipal roads.

It is important to note that some of the municipal roads extending northerly from Highway 17 provide the only access to properties and businesses outside the northerly boundary of the study area.

### 6.3 Private Entrances Along Highway 17

There are 129 existing private entrances along Highway 17 within the study area. These are identified in **Exhibit 6-2**.

**Exhibit 6-2: Existing Private Entrances Along Highway 17 in the study area**

TYPE	STATION	LEFT OR RIGHT
<b>TOWNSHIP OF BONFIELD</b>		
Entrance	18+860	Left
Entrance	18+910	Right
Entrance	19+930	Right
Entrance	18+990	Right
Entrance	19+035	Left
Entrance	19+440	Left
Entrance	19+740	Right
Entrance	19+850	Left
Commercial Entrance (Closed Gas Station)	19+965	Left
Commercial Entrance (Closed Gas Station)	20+030	Left
Entrance	20+060	Left
Entrance	20+060	Right
Entrance	20+310	Right
Entrance	20+390	Left
Forest Access Entrance	20+470	Left
Entrance	20+650	Right
Field Entrance	20+715	Left
Entrance	20+280	Right
Entrance	21+300	Left
Forest Access Entrance	21+300	Right
Forest Access Entrance	21+495	Left

TYPE	STATION	LEFT OR RIGHT
Entrance	21+595	Left
Entrance	21+735	Right
Entrance	21+850	Left
Entrance	22+045	Left
Forest Access Entrance	22+300	Left
Entrance	22+450	Left
Entrance	22+995	Left
Entrance	22+995	Right
Entrance	23+120	Left
Forest Access Entrance	23+285	Right
Entrance	23+445	Left
Forest Access Entrance	23+445	Right
Entrance	23+490	Right
Entrance	23+520	Left
Entrance	23+625	Right
Forest Access Entrance	23+700	Left
Entrance (Church)	23+705	Right
Commercial Entrance	23+840	Left
Field Access Entrance	23+855	Left
Entrance	23+895	Right
Commercial Entrance	23+945	Left
Commercial Entrance (Gas Station)	24+030	Right
Entrance (Hydro Sub Station)	24+110	Right
Entrance	24+190	Right
Farm Entrance	24+255	Left
Entrance	24+255	Right
Entrance	24+300	Left
Entrance	24+345	Left
Commercial Entrance	24+345	Right
Entrance	24+385	Left
Commercial Entrance	24+395	Right
Entrance	24+400	Left

TYPE	STATION	LEFT OR RIGHT
Commercial Entrance	24+430	Right
Field Entrance	24+490	Left
Entrance	24+555	Right
Forest Access Entrance	24+580	Left
Forest Access Entrance	24+620	Left
Forest Access Entrance	24+620	Right
Farm Entrance	24+680	Right
Entrance	24+810	Right
Entrance	25+210	Left
Entrance	25+295	Right
<b>MUNICIPALITY OF CALVIN</b>		
Entrance	10+185	Left
Entrance	10+185	Right
Entrance	10+690	Right
Entrance	10+830	Right
Commercial Entrance (Gravel Pit)	10+950	Left
Entrance	11+095	Left
Entrance	11+220	Left
Entrance	11+485	Right
Entrance	11+540	Left
Entrance	11+605	Left
Entrance	11+780	Right
Entrance	11+900	Left
Entrance	11+930	Left
Entrance	11+995	Right
Entrance	12+005	Left
Forest Access Entrance	12+455	Left
Forest Access Entrance	12+690	Right
Entrance	13+170	Left
Entrance	13+400	Left
Entrance	13+550	Left
Forest Access Entrance	13+620	Right

TYPE	STATION	LEFT OR RIGHT
Entrance	13+845	Right
Entrance	13+860	Left
Entrance	13+890	Left
Entrance	13+990	Right
Entrance	14+385	Left
Entrance	14+385	Right
Forest Access Entrance	15+230	Right
Entrance	16+655	Right
Entrance	16+680	Left
Forest Access Entrance	16+890	Right
Forest Access Entrance	16+945	Right
Entrance	17+470	Left
Entrance	17+495	Left
Entrance	17+830	Left
Entrance	18+265	Left
Field Access Entrance	18+365	Left
Entrance	18+740	Left
Entrance	18+740	Right
Forest Access Entrance	18+800	Left
Entrance	19+150	Left
Entrance	19+170	Right
Entrance	19+250	Left
Entrance	19+355	Left
Forest Access Entrance	19+560	Left
Railway Tracks Access Entrance	19+695	Right
Entrance	21+890	Left
Entrance	22+120	Left
Entrance	22+135	Right
Entrance	22+910	Left
Entrance	22+990	Right
Entrance	23+055	Right
Entrance	23+305	Right

TYPE	STATION	LEFT OR RIGHT
Forest Access Entrance	23+475	Right
Entrance	23+850	Right
Entrance	24+885	Right
Entrance	25+475	Right
<b>TOWNSHIP OF PAPINEAU-CAMERON</b>		
Entrance	10+185	Left
Entrance	10+455	Left
Entrance	10+555	Left
Entrance	10+625	Left
Entrance	10+625	Right
Forest Access Entrance	10+950	Left
Entrance	11+100	Right
Entrance (L'Auberge)	11+115	Left
Field Access Entrance	11+320	Left

The development and assessment of controlled access highway planning alternatives along existing sections of Highway 17 will require consideration of alternatives for private entrances through alternate means such as service roads and new connections between existing municipal roads.

#### 6.4 Ottawa Valley / Canadian Pacific Railway Line

An OVR / CPR line runs through the study area parallel and to the south of Highway 17. Given its close proximity to Highway 17 at a number of locations (e.g. near the west study limit boundary, and west of Rutherglen) this rail line is a significant constraint to be considered in the development of highway planning alternatives. There are no stations/stops within the study area.



Railway tracks adjacent to Hwy 17, east of Eau Clair Station, facing southeast from Highway 17 (Google Earth Pro)

## 6.5 Utilities

A Trans-Canada pipeline runs through the study area parallel and to the south of Highway 17. The only location where it is close enough to existing Highway 17 to constrain highway widening and / or realignment alternatives is between the crossings of Amable du Fond River and Pautois Creek.

There is a Union Gas line along a portion of the Highway 17 right-of-way, and a Union Gas spur line running north from the Trans-Canada corridor to a distribution facility at its terminus just south of Highway 17 and west of the entrance to Samuel de Champlain Provincial Park.

There are hydro and telephone lines along much of the existing Highway 17 right-of-way.

The details of the above are provided in **Exhibit 6-3**.

### Exhibit 6-3: Utilities Along and Adjacent to Highway 17

Utility	Location	Description
Hydro One	West limit of project (Township of Bonfield) to Station 14+000 (Municipality of Calvin)	Aerial pole line along the north side of Highway 17
	Station 17+350 to 19+250 (Municipality of Calvin)	Aerial pole line along the north side of Highway 17
	Station 23+500 (Municipality of Calvin) to Station 11+400 (Township of Papineau-Cameron)	Aerial pole line along the north side of Highway 17
Bell Canada	West limit of project to Station 18+200 (Township of Bonfield)	Underground line along the south side of Highway 17
	Station 18+200 to Station 19+620 (Township of Bonfield)	Aerial pole line along the south side of Highway 17
	Station 19+620 to Station 20+050 (Township of Bonfield)	Aerial pole line and underground line along the south side of Highway 17
	Station 20+050 to Station 20+365 (Township of Bonfield)	Underground line along the north side of Highway 17
	Station 20+365 to Station 21+290 (Township of Bonfield)	Aerial pole line along the north side of Highway 17
	Station 21+290 to Station 21+550 (Township of Bonfield)	Underground line along the north side of Highway 17
	Station 21+550 to Station 21+670 (Township of Bonfield)	Aerial pole line along the south side of Highway 17
	Station 23+000 to Station 23+425 (Township of Bonfield)	Underground line along the north side of Highway 17
	Station 24+300 to Station 25+050 (Township of Bonfield)	Underground line along the south side of Highway 17
	Station 25+050 to Station 25+325 (Township of Bonfield)	Aerial pole line along the south side of Highway 17



Utility	Location	Description
	Station 25+325 (Township of Bonfield) to Station 11+800 (Municipality of Calvin)	Underground line along the south side of Highway 17
	Station 11+800 to Station 12+500 (Municipality of Calvin)	Aerial pole line along the south side of Highway 17
	Station 12+500 to Station 12+825 (Municipality of Calvin)	Underground line along the south side of Highway 17
	Station 12+825 to Station 13+950 (Municipality of Calvin)	Aerial pole line along the south side of Highway 17
	Station 17+385 to Station 18+250 (Municipality of Calvin)	Aerial pole line along the north side of Highway 17
	Station 18+250 to Station 18+350 (Municipality of Calvin)	Underground line along the south side of Highway 17
	Station 18+350 to Station 21+750 (Municipality of Calvin)	Aerial pole line along the south side of Highway 17
	Station 24+235 (Municipality of Calvin) to Station 11+300 (Township of Papineau-Cameron)	Aerial pole line along the south side of Highway 17
	Station 11+300 to Station 11+400 (Township of Papineau-Cameron)	Aerial pole line along the north side of Highway 17
Union Gas	Station 23+600 (Township of Bonfield) to Station 11+500 (Municipality of Calvin)	Buried gas line along south side of Highway 17
	Station 23+054	Union Gas distribution facility
TransCanada Pipelines	Throughout the project limit	TransCanada pipeline corridor is located to the south and runs approximately parallel to Highway 17

In addition to the above, there are local utilities along many of the municipal roads within the study area.

## 7. Additional Environmental Conditions and Constraints Information

Some of the data sources that may be used to provide additional environmental conditions and constraints information as this EA study moves forward are identified on a factor group basis in **Exhibit 7-1**.

**Exhibit 7-1: Potential Environmental Data Sources**

Potential Environmental Data Sources	
1. Natural Environment Factor Group	
<ul style="list-style-type: none"> <li>• MNR field studies</li> <li>• MNR fish records</li> <li>• MNR Natural Resource Values Information System (NRVIS)</li> <li>• Fisheries Management Plans for long-term management goals</li> <li>• Field investigations</li> <li>• Interest groups</li> <li>• Public consultation</li> <li>• PPS (2005) and associated MNR Natural Heritage Reference Manual</li> <li>• First Nations</li> <li>• Watershed and Subwatershed studies</li> <li>• Conservation Authority Fish Records</li> <li>• NHIC</li> <li>• Species at Risk Recovery Plans and Management Guidelines (where available)</li> <li>• OMNR Significant Wildlife Habitat Technical Guide (SWHTG)</li> <li>• Local Naturalist Clubs</li> <li>• Species at Risk Data Base</li> <li>• Species at Risk Act (SARA)</li> <li>• DFO Species at Risk (SAR) mapping</li> <li>• Web mapping application and Species at Risk distribution maps at <a href="http://www.conservationontario.ca/projects/DFO.html">http://www.conservationontario.ca/projects/DFO.html</a></li> <li>• Atlas of Breeding Birds of Ontario, 2001-2005 <a href="http://www.birdsontario.org/atlas/atlasmain">www.birdsontario.org/atlas/atlasmain</a></li> <li>• Environmental assessment guideline for forest habitat of migratory birds <a href="http://www.cws-scf.ec.gc.ca/publications/eval/forest/index_e.cfm">www.cws-scf.ec.gc.ca/publications/eval/forest/index_e.cfm</a></li> <li>• Wetlands Environmental Assessment Guideline (Environment Canada) <a href="http://www.cws-scf.ec.gc.ca/publications/eal/wetl/index_e.cfm">www.cws-scf.ec.gc.ca/publications/eal/wetl/index_e.cfm</a></li> <li>• Environmental Assessment Best Practice Guide for Wildlife at Risk in Canada (Environment Canada)</li> </ul>	<ul style="list-style-type: none"> <li>• Ontario Wetland Evaluation System</li> <li>• Canadian Federal Policy on Wetland Conservation</li> <li>• MNR Land Use Guidelines</li> <li>• Significant Wildlife Habitat Technical Guide</li> <li>• Bird Studies Canada</li> <li>• Groundwater Studies funded by MOE</li> <li>• Clean Water Act</li> <li>• MOE well record Data</li> <li>• Watershed and subwatershed studies</li> <li>• PPS, 2005 and associated OMNR Natural Heritage Reference Manual</li> <li>• Source Water Protection Teams</li> <li>• Topographic maps</li> <li>• Base maps</li> <li>• Watershed Management Plans</li> <li>• Watershed and Subwatershed Studies</li> <li>• Provincial Water Quality Monitoring Network</li> <li>• MOE data</li> <li>• MNR field studies</li> <li>• Stormwater Management and Watercourse impacts: <a href="http://www.sustainabletechnologies.ca/">www.sustainabletechnologies.ca/</a></li> <li>• Stormwater Management and Watercourse Impacts: The Need for a Water Balance Approach</li> <li>• Meteorological data</li> <li>• Ambient air quality from MOE and Environment Canada</li> <li>• Emission models to predict vehicle emission rates of pollutants and greenhouse gases</li> <li>• Pollutant dispersion models to predict ambient air pollutant concentrations</li> <li>• Air quality guidelines, criteria and standards</li> </ul>

## Potential Environmental Data Sources

### 2. Socio-Economic and Land Use Factor Group

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>Provincial, municipal land use plans</li> <li>Federal / provincial land use goals, objectives, policies and Policy Statements</li> <li>Current land use proposals</li> <li>Field investigations</li> <li>Public consultation</li> <li>Agency consultation</li> <li>First Nations</li> <li>Ministry of Tourism, Culture, Recreation and Sport</li> <li>Topographic maps</li> <li>Information Systems (NRVIS)</li> <li>MPAC records</li> <li>Municipal staff</li> <li>Traffic volume predictions</li> <li>Noise effect studies</li> <li>Regional and local agricultural capabilities/ soil mapping</li> <li>Ministry of Natural Resources resource maps</li> </ul> | <ul style="list-style-type: none"> <li>Interest Groups</li> <li>Geographic Information System mapping</li> <li>Ministry of Northern Development and Mining (MNDM) – Ontario Geological Survey (OGS) mapping and other databases</li> <li>Local MNDM – OGS technical expertise</li> <li>Consultation with utility providers, operators and regulatory authorities</li> <li>MOE Waste Generator Database</li> <li>MOE electronic registry for Records of Site Condition</li> <li>MOE PCB Storage Site Database</li> <li>MOE Waste Disposal Site Inventory</li> <li>Technical Standards &amp; Safety Authority</li> <li>Aerial Photographs</li> <li>Municipal Directories and Assessment Maps</li> <li>Ontario Base Map and National Topographic Series Mapping</li> <li>Historical Plans, Soils, Hydrogeological and Geological Maps</li> <li>Libraries, Historical Archives, Land Registry Offices and Municipal Offices</li> </ul> |
|---|--|

### 3. Cultural Environment Factor Group

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>Historical mapping and aerial photographs, cemetery lists, municipal, provincial and federal inventories, listings, plaques, easements and designations of National Historic Sites and under the <i>Ontario Heritage Act</i>.</li> <li>Consultation with municipal and regional heritage planning staff or designates, Municipal Heritage Committees (formerly referred to as Local Architectural Advisory Committees – LACACS), historical societies and other heritage groups as necessary</li> <li>Consultation with Ministry of Tourism, Culture Recreation and Sport</li> </ul> | <ul style="list-style-type: none"> <li>Field Survey</li> <li><i>Provincial Policy Statement</i></li> <li>Municipal heritage inventories for designated and listed built heritage structures</li> <li>Ontario Genealogical Society for Cemeteries</li> <li>Ontario Ministry of Culture (Ontario Archaeological Sites Database)</li> <li>Archaeological/heritage studies and reports</li> <li>Historical mapping</li> <li>Other published and unpublished archaeological literature</li> <li>First Nations</li> </ul> |
|---|---|

These data sources may be refined as determined appropriate during the Class EA to reflect study findings and input received through consultation and engagement.

## 8. References

The information in this report is drawn from the following:

- Land Information Ontario database;
- Highway 17 Route Planning Study, Bonfield Easterly, Geological Conditions Memorandum, AECOM (Jason Cole), April 19, 2012;
- Highway 17 Route Planning Study, Bonfield Easterly, Natural Environmental Conditions Memorandum, AECOM (Shelly Lohnes), April 20, 2012;
- Highway 17 Route Planning Study, Bonfield Easterly, Socio-Economic Existing Conditions Memorandum, AECOM (Sara Jarrett), April 19, 2012;
- Highway 17 Route Planning Study, Bonfield Easterly, Contaminant Overview Study, AECOM (Thaidra Sloane, Marie Wardman), April 20, 2012;
- Highway 17 Route Planning Study, Bonfield Easterly, Stage 1 Archaeological Assessment Memorandum, Timmins Martelle Heritage Consultants (Holly Martelle).

Each of the above cites its own references.