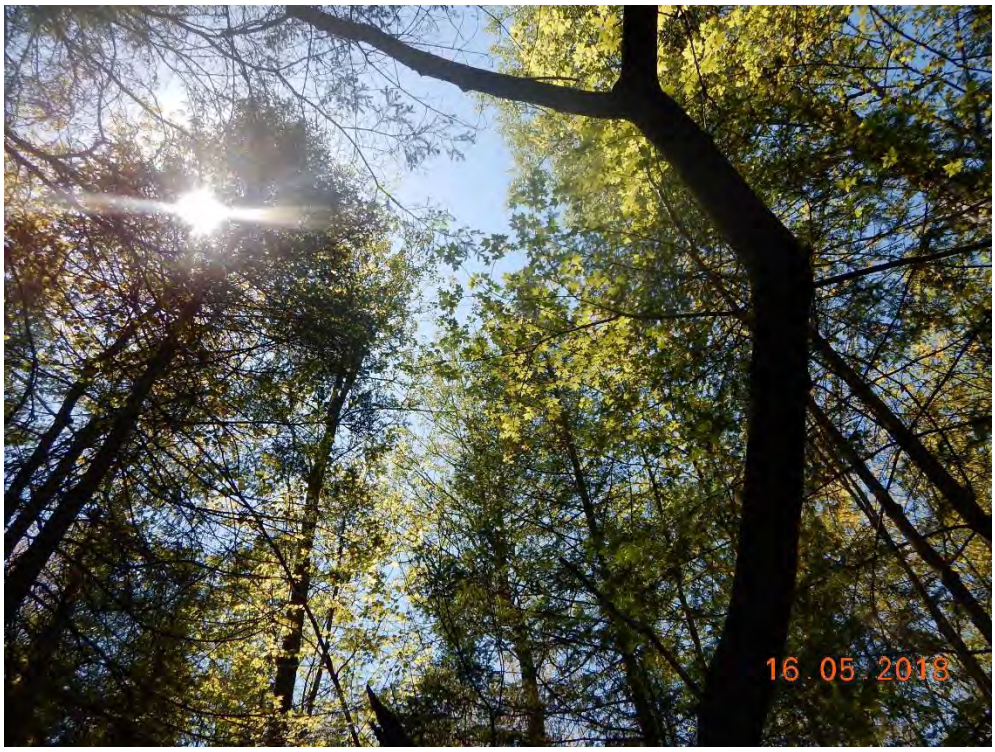
ENVIRONMENTAL IMPACT STATEMENT



6688 Franktown Road, Ottawa, ON

Project No.: CP-17-0503

Prepared for:

Bing Professional Engineering Inc.
248 Huntsville Drive
Ottawa, Ontario
K2T 0C3

Prepared by:

McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road, R.R.3
Carp, Ontario
K0A 1L0

McINTOSH PERRY

ENVIRONMENTAL IMPACT STATEMENT
6688 FRANKTOWN ROAD, OTTAWA, ON

Prepared for:

Bing Professional Engineering Inc.
248 Huntsville Drive
Ottawa, Ontario
K2T 0C3

Prepared by:

McINTOSH PERRY

McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road, R.R.3
Carp, Ontario
K0A 1L0

Version 001
August 31, 2018

Written by: Heather Lunn, B.A.
Terrestrial Ecologist
McIntosh Perry Consulting Engineers Ltd.

Reviewed by: Matthew Wheeler, B.A.
Senior Ecologist
McIntosh Perry Consulting Engineers Ltd.

TABLE OF CONTENTS

Tables

Figures

Appendices

1.0 PROPERTY INFORMATION AND INTRODUCTION

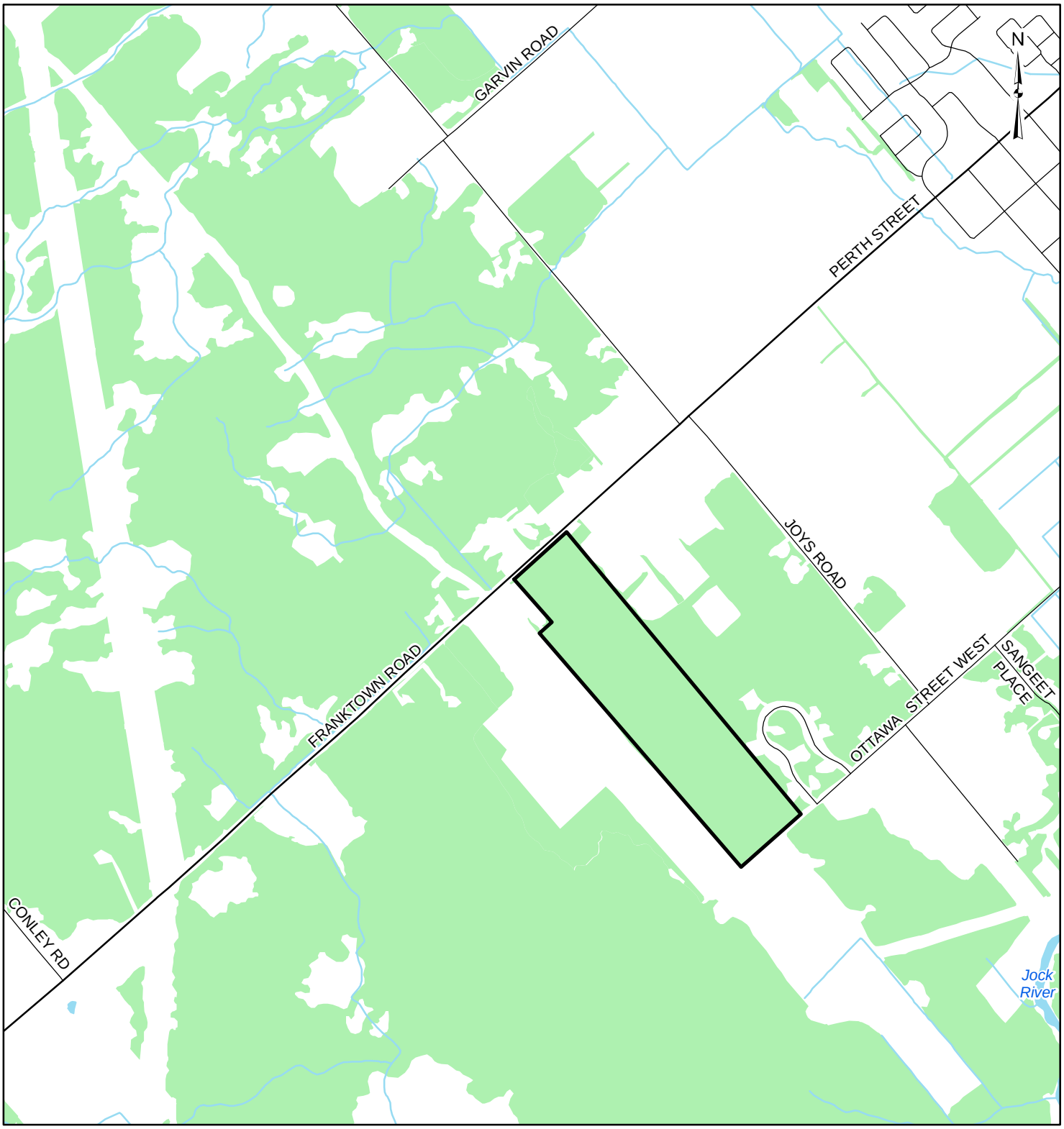
The subject property this Environmental Impact Statement (EIS) will examine is a 39.89 hectares (ha) parcel of land located at 6688 Franktown Road, Property Identification Number 039330007, and is legally known as "PCL 19-1, SEC GB-3; PT LT 19, CON 3, PT 1, 4R7040; GOULBOURN." The subject property is located west of the Village of Richmond, with 259.47 metres of frontage on the south side of Franktown Road, approximately 620 m west of Joy's Road, and also has frontage on Ottawa Street West at the south end of the subject property.

The subject property was part of a Zoning By-law Amendment in 2007 (By-law No. 2007-385), which amended the former Township of Goulbourn Zoning By-law No. 40-99, now reflected in the City of Ottawa Zoning By-law 2008-250. The amendment changed the zoning category applicable to the front (northern) portion of the subject lands (approximately 22 hectares) to site-specific Rural Institutional "RI[643r]" Zone. The RI[643r] Zone permits a place of worship, day nursery, accessory pagoda and accessory rooming house. The zoning category applicable to the rear (southern) portion of the subject lands (approximately 18 hectares) is site-specific Rural Countryside "RU[644r]" Zone.

The subject property is located within the jurisdiction of the Ministry of Natural Resources and Forestry's (MNRF) - Kemptville District.

The City of Ottawa requires an EIS be carried out for the subject property, as it relates to the proposed development plans and their impact on the property's natural heritage features and ecological function. This EIS report assesses the potential impacts that the development of a place of worship and associated infrastructure may have upon the existing woodlands, natural heritage features, including Significant Woodlands and species at risk (SAR) and their habitat.

McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) was retained by Mr. Bingfeng Li of Bing Professional Engineering Inc. (Bing Professional Engineering) in order to carry out an EIS to assess the existing natural heritage features, as well as to complete targeted SAR surveys within subject property boundaries. The following EIS summarizes the findings of these surveys, outlines potential impacts as a result of the proposed development, and provides recommendations in order to mitigate anticipated impacts on natural heritage features. The information contained in this report represents surveys undertaken in the spring and summer of 2018, and does not represent year-round data.



600 300 0 600

Scale 1:20,000 Metres

LEGEND

- Site Boundary
- Wooded Area
- Watercourse
- Waterbody

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2018.

CLIENT: BING PROFESSIONAL ENGINEERING

PROJECT: EIS
6688 FRANKTOWN ROAD

TITLE: SITE LOCATION

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

PROJECT NO:	CP-17-0503
Date	Aug. 31, 2018
GIS	SK
Checked By	MG

FIGURE: 1

H:\01 Project - Proposals\2017 Jobs\CP\0CP-17-0503 Bing Proffesional Eng Inc_Proposed Temple SPA_6688 Franktown Road\15 - GIS\mxd\Env\0CP-17-0503_01_EIS_SiteLocation_6688Franktown.mxd

2.0 METHODOLOGY

In order to acquire information on habitat present within and adjacent to the area of proposed development, field investigations were carried out on May 16, May 30, June 28, July 13, and July 30, 2018, by H. Lunn of McIntosh Perry (**Table 1**). The field investigations were carried out on the subject property (6688 Franktown Road), within the area of proposed development and the remaining portions of the subject property. The area surveyed will be hereafter referred to in this report as the "study area". The field investigations were conducted to provide an inventory and assessment of the natural heritage features of the study area. The field investigations included identification of the following features within the study area, in addition to targeted SAR surveys:

- Existing vegetation communities;
- Significant woody vegetation;
- Areas of critical or significant habitat (i.e., Significant Valleylands, Significant Woodlands, Significant Wildlife Habitat, Provincially Significant Wetlands (PSWs), etc.);
- Soil types;
- Areas of groundwater recharge and discharge, drainage patterns, watercourses, wetland habitat, other areas of surface water;
- SAR and their habitat, and
- Resident or migratory bird and other wildlife species.

Table 1 outlines activities carried out within the study area during the 2018 field investigations.

Table 1: Summary of Field Investigation Activities

Date (2018)	Personnel Involved	Weather Conditions	Purpose of Visit
May 16	H. Lunn	23°C, sunny, no precipitation, low wind	Existing environmental conditions survey (including identification of vegetation and wildlife species present and determining vegetation community boundaries) and species at risk habitat screening.
May 30	H. Lunn	23°C, partly cloudy, no precipitation, no wind	Targeted Eastern Whip-poor-will survey.
June 28	H. Lunn	24°C, partly cloudy, no precipitation, no wind	Targeted Eastern Whip-poor-will survey.
July 13	H. Lunn	28°C, sunny, no precipitation, mod wind	Existing environmental conditions survey (including identification of vegetation and wildlife species present and determining vegetation community boundaries) and species at risk habitat screening.
July 30	H. Lunn	20°C, clear, no precipitation, no wind	Targeted Eastern Whip-poor-will survey.

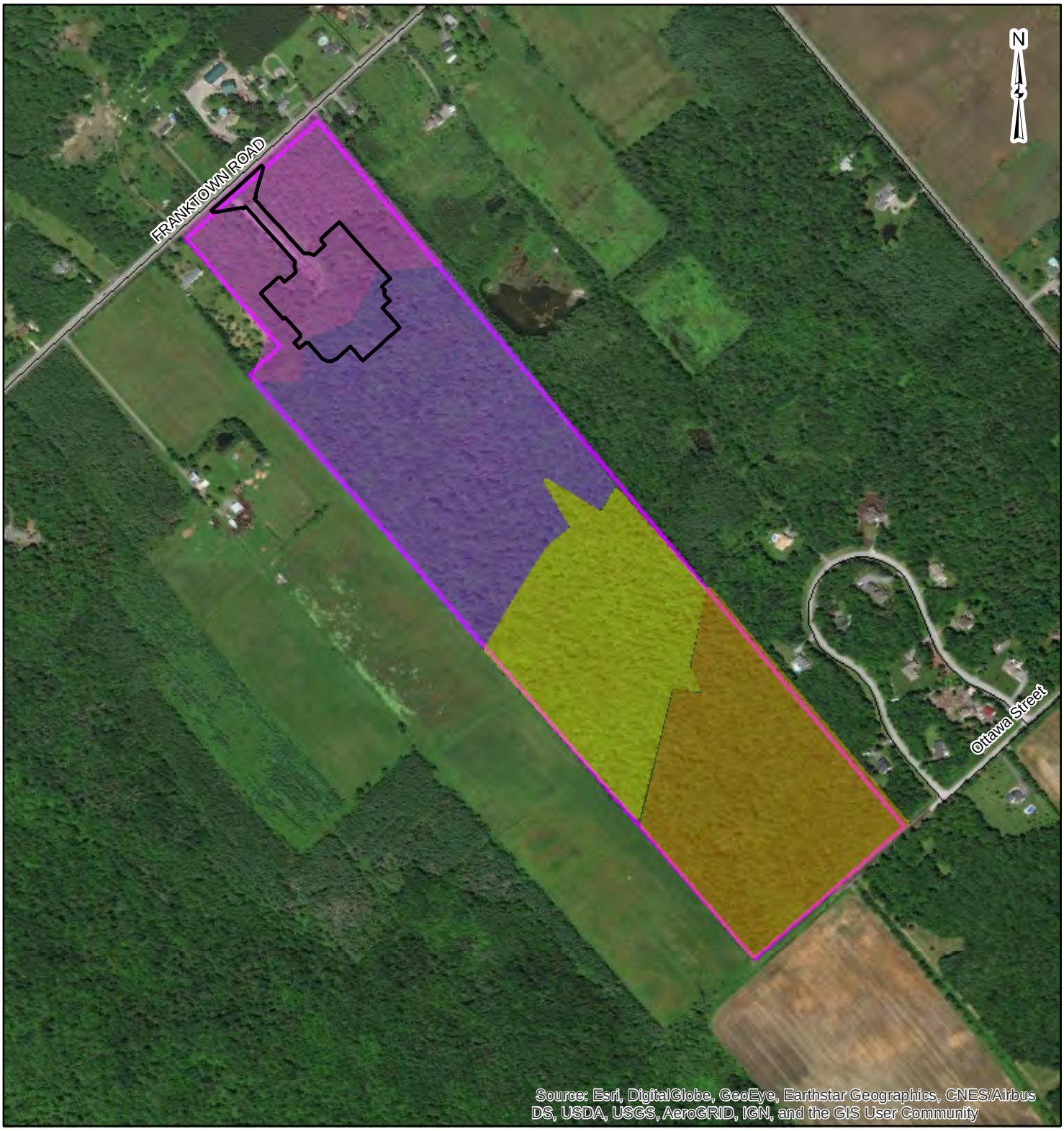
The May 16 and July 13, 2018 field investigations included vegetation surveys within the study area. These surveys included a visual search for sensitive and at-risk vegetation, such as butternut (*Juglans cinerea*). The vegetation communities observed within the study area were characterized using the Ecological Land Classification (ELC) protocol (Lee et. al., 1998), and delineated on an aerial photograph (**Figure 2**). During the field investigations, observations of wildlife species were made through sight, sound, and physical evidence.

Photographs were taken during the field investigations depicting vegetation communities and natural heritage features observed within the study area. This photographic record can be found in **Appendix A** of this report (**Photos 1 – 16**).

The field investigations completed on May 30, June 28, and July 30, 2018 included targeted Eastern Whip-poor-will (*Antrostomus vociferus*) surveys (**Table 1**). All three (3) surveys were conducted between 30 minutes after sunset and 15 minutes before sunrise, during the optimal moon phase (when 50% or more of the moon face was visible, and the moon was above the horizon, with little or no cloud blocking illumination). All surveys were conducted on evenings with little to no wind, no precipitation and nighttime temperatures above 10°C. Survey locations were established prior to conducting the night surveys to ensure that each survey location was easily accessed in the dark to alleviate safety concerns. Three (3) survey points were located within the study area. These points are outlined on **Figure 3**. Due to accessibility issues in the dark, the survey points were located a maximum of 200 metres from the proposed development area. Survey periods at each point lasted 6 minutes, after which time the surveyor determined the relative location of any calling Whip-poor-wills.

Background information on wildlife and plant species, and other significant natural heritage features known to occur within or adjacent to the study area, was obtained from the following sources:

- The MNRF – Kemptville District (received July 31, 2018 – **Appendix B**)
- The Natural Heritage Information Centre (NHIC) database accessed via the MNRF's Make a Map: Natural Heritage Areas http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US. This search tool allows areas to be searched at up to 1 km^2 grid resolution and provides reports concerning rare species tracked by the NHIC. Information for each 1 km^2 square within the study area was reviewed for occurrences of rare species tracked by NHIC.
- The MNRF's Land Information Ontario (LIO) Metadata Management Tool, this tool contains information (e.g., location of PSW's, SAR element occurrences, etc.) licensed under the Open Government Licence for Ontario.
- Data from the Ontario Breeding Bird Atlas Database (OBBA) was accessed from the data summaries page of the Atlas of the Breeding Birds of Ontario website (http://www.birdsontario.org/atlas/datasummaries.jsp?lang=eng). Information for each 10 km^2 grid square was reviewed for the study area.
- Habitat in the study area was evaluated by use of aerial photography accessed through Google Earth aerials and StreetView mapping.
- Vascular Plants of the City of Ottawa, with the Identification of Significant Species (Brunton, 2005)



LEGEND

- Site Boundary
- Previously Cleared Area (Area of Proposed Development)
- Fresh - Moist Deciduous Forest Ecosite FOD7
- Fresh - Moist White Cedar - Hardwood Mixed Forest FOMM7
- Fresh - Moist White Cedar - Balsam Fir Coniferous Forest FCM-4-3
- Yellow Birch Mineral Deciduous Swamp Type SWDM4-4

250 125 0 250

Scale 1:8,000 Metres

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2018.

CLIENT: BING PROFESSIONAL ENGINEERING

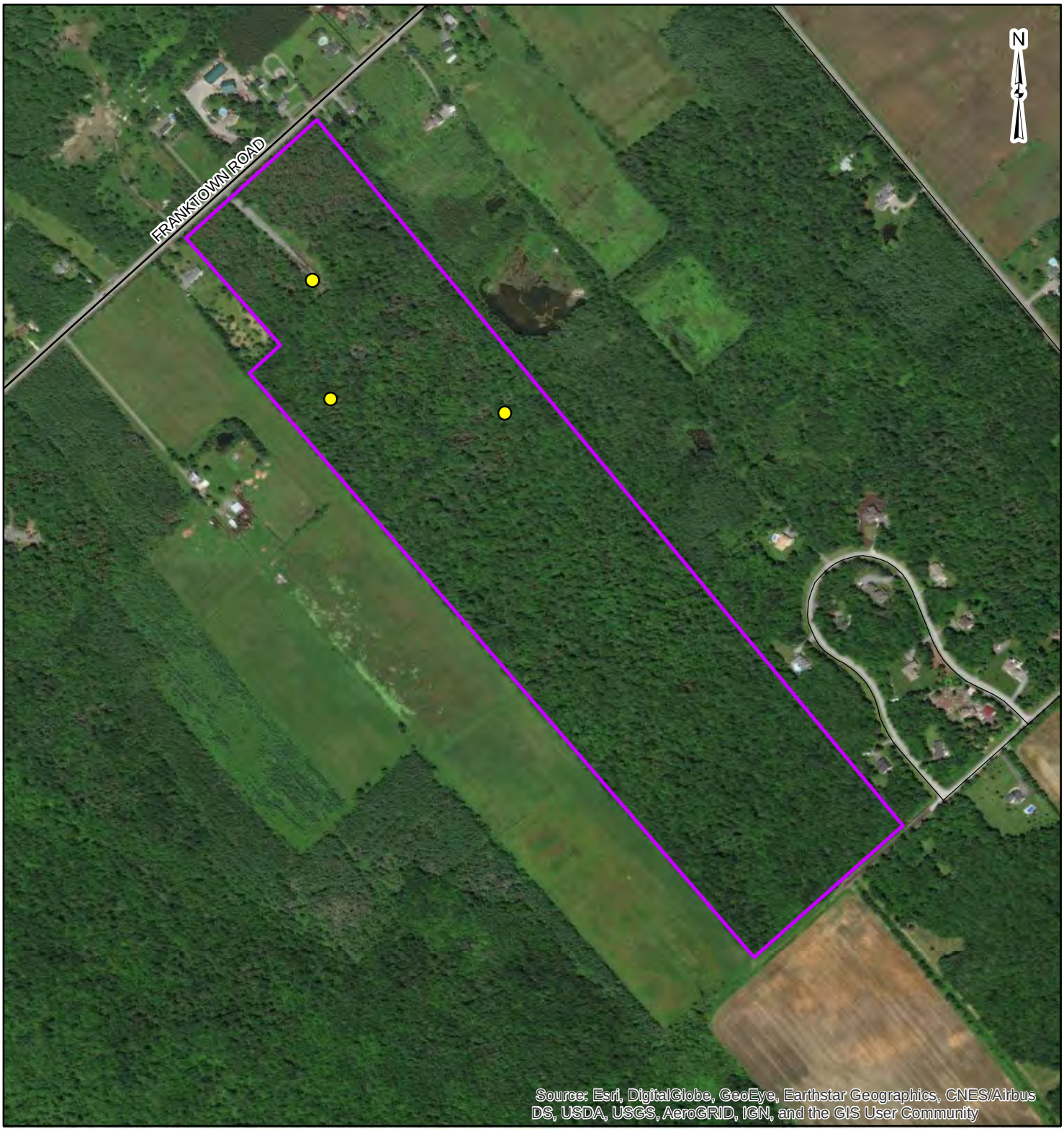
PROJECT: EIS
6688 FRANKTOWN ROAD

TITLE: VEGETATION COMMUNITIES

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

PROJECT NO:CP-17-0503		FIGURE:
Date	Aug., 31, 2018	2
GIS	SK	
Checked By	HL	

H:\01 Project - Proposals\2017 Jobs\CP\OCP-17-0503 Bing Proffesional Eng Inc- Proposed Temple SPA_6688 Franktown Road\15 - GIS\mxd\Env\OCP-17-0503_02_EIS_VegetationCommunities_6688Franktown.mxd



LEGEND

- Site Boundary
- Eastern Whip-poor-will Survey Point

250 125 0 250

Scale 1:8,000 Metres

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2018.

CLIENT: BING PROFESSIONAL ENGINEERING

PROJECT: EIS
6688 FRANKTOWN ROAD

TITLE: EASTERN WHIP-POOR-WILL SURVEY POINTS

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

PROJECT NO:CP-17-0503	
Date	Aug., 31, 2018
GIS	SK
Checked By	HL

FIGURE: 3

H:\01 Project - Proposals\2017 Jobs\CP\0CP-17-0503 Bing Proffesional Eng Inc- Proposed Temple SPA_6688 Franktown Road\15 - GIS\mxd\Env\0CP-17-0503_03_EIS_EasternWhipPoorWill_6688Franktown.mxd

3.0 DESCRIPTION OF THE SITE AND THE NATURAL ENVIRONMENT

3.1 Existing Land Use

At the time of the 2018 field investigations, the subject property was undeveloped. An approximately 2 hectares (ha) sized area of the subject property was observed to have been recently cleared of all vegetation (prior to May 16, 2018) (**Photos 1 & 2**). The cleared area roughly corresponded to the area of proposed development (**Figure 4**).

During the 2018 field investigations, approximately 8% of the subject property (~2 ha), had been recently cleared of woody vegetation, while the remaining 92% was forested habitat. Schedule L2 Natural Heritage System Overlay, of the *City of Ottawa's Official Plan* (2003), identifies the subject property as an area containing 'Natural Heritage System Features'. A 'Natural Heritage System' is defined by the *Provincial Policy Statement*, 2014 (PPS) as "…a system made up of natural heritage features and areas, linked by natural corridors which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species and ecosystems". The Natural Heritage System Features present on the subject property were identified by the City of Ottawa as 'Significant Woodland'. Significant Woodland present within the study area has been identified on **Figure 5**. Land uses adjacent to the subject property included commercial and residential uses to the north, residential uses and vacant lands (potential Significant Woodland) to the east, residential uses and agricultural fields to the south, and agricultural, residential uses and PSW to the west.

LEGEND

- Site Boundary
- Area of Proposed Development

250 125 0 250

Scale 1:8,000 Metres

CLIENT:
BING PROFESSIONAL ENGINEERING

PROJECT:
EIS
6688 FRANKTOWN ROAD

TITLE:
AREA OF PROPOSED DEVELOPMENT

REFERENCE

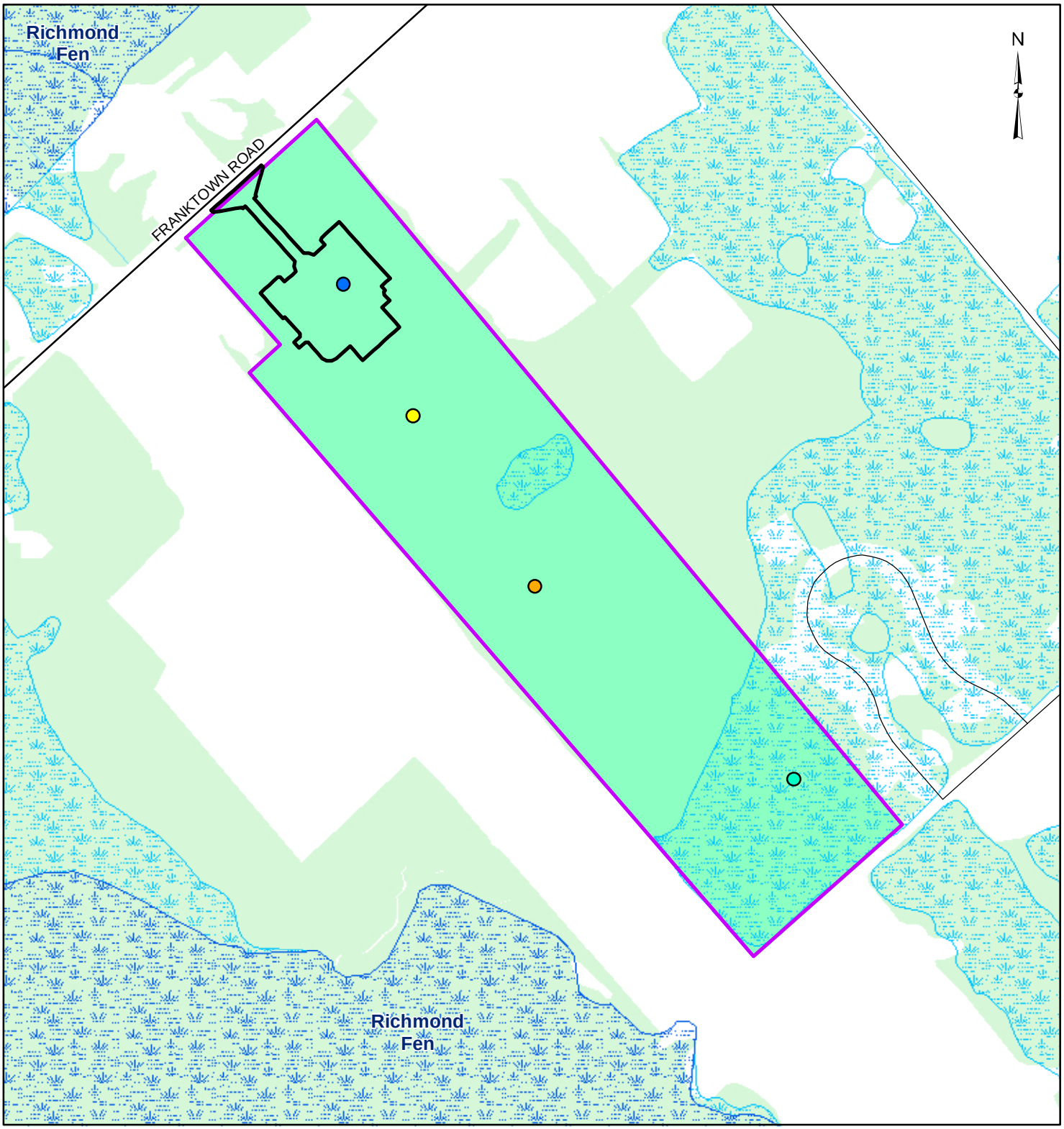
GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2018.

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

PROJECT NO:CP-17-0503	
Date	Aug., 31, 2018
GIS	SK
Checked By	HL

FIGURE: 4

H:\01 Project - Proposals\2017 Jobs\CP\OCP-17-0503 Bing Proffesional Eng Inc- Proposed Temple SPA_6688 Franktown Road\15 - GIS\mxd\Env\OCP-17-0503_04_EIS_AreaProposedDevelopment_6688Franktown.mxd



LEGEND

- Site Boundary
- Previously Cleared Area (Area of Proposed Development)
- Active Broad-winged Hawk Nest
- Amphibian Breeding Pond
- Eastern Wood-pewee Observation
- Wood Thrush Observation
- Provincially Significant Wetland
- Unevaluated Wetland
- Watercourse
- Waterbody
- Significant Woodland
- Wooded Area

250 125 0 250

Scale 1:8,000 Metres

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2018.

CLIENT: BING PROFESSIONAL ENGINEERING

PROJECT: EIS
6688 FRANKTOWN ROAD

TITLE: NATURAL HERITAGE FEATURES MAP

McINTOSH PERRY
115 Walgreen Road, RR3, Carp, ON K0A1L0
Tel: 613-836-2184 Fax: 613-836-3742
www.mcintoshperry.com

PROJECT NO:CP-17-0503		FIGURE:
Date	Aug., 31, 2018	5
GIS	SK	
Checked By	HL	

H:\01 Project - Proposals\2017 Jobs\CP\OCP-17-0503 Bing Proffesional Eng Inc_Proposed Temple SPA_6688 Franktown Road\15 - GIS\mxd\Env\OCP-17-0503_05_EIS_NaturalHeritageFeatures_6688Franktown.mxd

3.2 Natural Heritage System Components

Consultation with MNRF - Kemptville District, the City of Ottawa, and other background information sources (refer to Section 2.0 of this report), identified the following Natural Heritage values within and adjacent to the study area: Richmond Fen PSW (adjacent to the subject property), unevaluated wetland (adjacent to and within subject property boundaries), and Significant Woodlands (adjacent to and within subject property boundaries) (**Figure 5**).

The PPS defines Significant Wetlands as "…an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province…" (PPS, 2014). The *City of Ottawa's Official Plan* (2003), identifies wetlands as "…essential components of ecosystems that contribute to the high quality of the environment in Ottawa. Wetlands control and store surface water to assist in flood control, act as sediment traps to improve water quality, and provide habitat for a wide variety of plant and animal species and may serve as recharge areas for groundwater resources". Two areas of unevaluated wetland were identified within the study area, in addition to the Richmond Fen PSW, which was located outside of the study area, greater than 120 m away (**Figure 5**).

The PPS defines a Significant Woodland as "…an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area…". Section 2.4.2 (Natural Features and Functions in the *City of Ottawa's Official Plan* (2003), defines Significant Woodlands "…as woodlands that combine all three features listed below in a contiguous (canopy appears unbroken on an aerial photograph), forested area:

- Mature stands of trees 80 years of age or older;
- Interior forest habitat located more than 100 m inside the edge of a forest patch, and
- Woodland adjacent to a surface water feature such as a river, stream, drain, pond, or wetland, or any groundwater feature including springs, seepage areas, or areas of groundwater upwelling".

All forested vegetation communities within the study area (refer to Section 3.5 of this report for information on vegetation communities present within the study area), were considered to be Significant Woodland (**Figures 2 & 5**). These communities were contiguous within the subject property, contained moderate to mature-aged stands of trees (based on visual observation, tree coring was not performed to age the trees), interior forest habitat, and were adjacent (or within) a surface water feature (i.e., wetland).

3.3 Landforms, Soils and Geology

The physiography of the study area is within the Ottawa Valley Clay Plains (Chapman and Putnam, 2007). The bedrock geology of the study area consists of limestone, dolostone, shale, arkose and sandstone of the Ottawa Group, Simcoe Group, and/or of the Shadow Lake Formation (Ontario Geological Survey, 2011). According to the hydrogeological study completed within the study area by McIntosh Perry (2018), soils present within the study area included medium sand, silt and clay, and silty fine sand. During the May 16, 2018 field investigation,

the soils were observed to have poor drainage as was evident with the ephemeral pools (standing water), present throughout the forested habitat (**Photos 1 & 2**).

3.4 Surface Water, Groundwater and Fish Habitat

The property is located within the Rideau Watershed - the Jock River Subwatershed managed by the Rideau Valley Conservation Authority (RVCA, 2016). During the 2018 field investigations, the study area was observed to have poor drainage within the area of proposed development and forested areas of the subject property. Multiple ephemeral pools were observed throughout the forested habitat during the May 16, 2018 field investigation (**Photos 1 & 2**). Fish were not observed within these pools.

The Richmond Fen PSW was identified by background sources as located adjacent to the development lands, approximately 250 m west of the subject property boundary (**Figure 5**). Several unevaluated wetlands were also identified by background sources as within or adjacent to the study area (**Figure 5**). Background review identified the Jock River approximately 2 km south of the site. No other watercourses were identified by background sources or through the field investigation as present within or adjacent to the study area.

3.5 Vegetation Cover

Spring and summer vegetation surveys were completed on May 16 and July 13, 2018. Habitat observed during these field investigations included wetland, forested habitat, and ephemeral ponds (**Photos 1 – 11**). The following section outlines the existing vegetation communities identified within the study area. For a detailed map of vegetation communities present within the study area, refer to **Figure 2**. Photographs of the vegetation communities can be found in **Appendix A**. A complete listing of vegetation species observed within the study area during the field investigations is found in **Table 2**. No nationally, provincially or regionally rare or endangered plant species were observed during the field investigations.

3.5.1 Vegetation Community 1: Fresh – Moist Lowland Deciduous Forest Ecosite (FOD7)

Vegetation Community 1 was classified through ELC as a Fresh – Moist Lowland Deciduous Forest Ecosite (FOD7) (**Photos 3 & 4**). This community was located at the north end of the property, adjacent to Franktown Road (**Figure 2**). Approximately half of this community had been recently removed prior to the 2018 field investigations (**Photos 5 & 6**). However, remaining portions of the canopy were dominated by poplar species, red maple, and green ash. Understory species were regenerating after vegetation removal, and included species such as sensitive fern, marsh fern, alternate-leaved dogwood, dwarf raspberry. These species are indicative of moist to wet soils. As this community no longer represented contiguous forested habitat, it would not be classified as Significant Woodland. Refer to **Table 2** for a complete listing of species observed within this community.

3.5.2 Vegetation Community 2: Fresh – Moist White Cedar – Hardwood Mixed Forest (FOMM7)

Vegetation Community 2 was classified through ELC as a Fresh – Moist White Cedar – Hardwood Mixed Forest (FOMM7) (**Photos 7 & 8**). This community was located south of Vegetation Community 1 (**Figure 2**). A small portion of this community had also been recently removed prior to the 2018 field investigations. This canopy in this community was dominated by eastern white cedar (*Thuja occidentalis*) and red maple (*Acer rubrum*).

The understory was heavily vegetated. The remaining portion of this community is classified as Significant Woodland (not the previously removed portion) (**Figure 5**). Refer to **Table 2** for a complete listing of species observed during the field investigation.

Table 2: Vegetation Species observed within the Study Area

Common Name	Scientific Name	Status According to Brunton (2005)	Fresh – Moist Lowland Deciduous Forest Ecosite (FOD7)	Fresh – Moist White Cedar – Hardwood Mixed Forest (FOMM7)	Fresh – Moist White Cedar – Balsam Fir Coniferous Forest (FOCM-4-3)	Yellow Birch Mineral Deciduous Swamp Type (SWDM4-4)
Tree Species						
Eastern white cedar	*Thuja occidentalis*	Common		X	X	
Balsam fir	*Abies balsamea*	Common		X	X	
Basswood	*Tilia americana*	Common	X	X		X
Bur oak	*Quercus macrocarpa*	Common	X	X		X
Black ash	*Fraxinus nigra*	Common	X	X		X
Yellow birch	*Betula alleghaniensis*	Common	X	X		X
White birch	*Betula papyrifera*	Common	X	X		X
American elm	*Ulmus americana*	Common	X			X
Balsam poplar	*Populus balsamifera*	Common	X	X		
Freeman's maple	*Acer freemanii*	Common	X			X
Black cherry	*Prunus serotina*	Common	X	X		
Scots pine	*Pinus sylvestris*	Rare (frequently planted)	X			
Red maple	*Acer rubrum*	Common	X	X		X
Black spruce	*Picea mariana*	Uncommon (locally abundant)		X	X	
Trembling aspen	*Populus tremuloides*	Common	X	X		

Common Name	Scientific Name	Status According to Brunton (2005)	Fresh – Moist Lowland Deciduous Forest Ecosite (FOD7)	Fresh – Moist White Cedar – Hardwood Mixed Forest (FOMM7)	Fresh – Moist White Cedar – Balsam Fir Coniferous Forest (FOCM-4-3)	Yellow Birch Mineral Deciduous Swamp Type (SWDM4-4)
Green ash	*Fraxinus pennsylvanica*	Common	X	X		X
Largetooth aspen	*Populus grandidentata*	Common	X	X		
Blue beech	*Carpinus caroliniana*	Common (local)		X		
White pine	*Pinus strobus*	Common			X	
Shrub Species						
Red raspberry	*Rubus idaeus*	Uncommon (slowly spreading from cultivation)	X	X		
Virginia creeper	*Parthenocissus quinquefolia*	Uncommon		X	X	X
Bush honeysuckle	*Diervilla lonicera*	Common		X		
Red elderberry	*Sambucus racemosa*	Common				X
Poison ivy	*Toxicodendron rydbergii*	Common	X	X	X	X
Riverbank grape	*Vitis riparia*	Common	X	X		X
Currant sp.	*Ribes* sp.	N/A				X
Glossy buckthorn	*Rhamnus frangula*	Common (aggressive invasive)	X	X		
Fly honeysuckle	*Lonicera canadensis*	Common	X	X		

Common Name	Scientific Name	Status According to Brunton (2005)	Fresh – Moist Lowland Deciduous Forest Ecosite (FOD7)	Fresh – Moist White Cedar – Hardwood Mixed Forest (FOMM7)	Fresh – Moist White Cedar – Balsam Fir Coniferous Forest (FOCM-4-3)	Yellow Birch Mineral Deciduous Swamp Type (SWDM4-4)
Prickly gooseberry	*Ribes cynosbati*	Common				X
Dwarf raspberry	*Rubus pubescens*	Common	X	X		X
Virgin's bower	*Clematis virginiana*	Common	X			
Alternate leaf dogwood	*Cornus alternifolia*	Common	X			
Herbaceous Species						
Sedge spp.	*Cyperaceae spp.*	N/A	X	X	X	X
Lady fern	*Athyrium filix-femina*	Common	X	X		X
Cinnamon fern	*Osmundastrum cinnamomeum*	Common		X		X
Oak fern	*Gymnocarpium dryopteris*	Common		X	X	
Club moss sp.	*Lycopodiopsida* sp.	N/A		X	X	
Bracken fern	*Pteridium aquilinum*	Common		X	X	
Royal fern	*Osmunda regalis*	Common		X		X
Bladder sedge	*Carex intumescens*	Common		X		X
Sarsaparilla	*Aralia nudicaulis*	Common	X	X		
Sensitive fern	*Onoclea sensibilis*	Common	X	X		X
Goldenrod sp.	*Solidago* sp.	N/A		X		

Common Name	Scientific Name	Status According to Brunton (2005)	Fresh – Moist Lowland Deciduous Forest Ecosite (FOD7)	Fresh – Moist White Cedar – Hardwood Mixed Forest (FOMM7)	Fresh – Moist White Cedar – Balsam Fir Coniferous Forest (FOCM-4-3)	Yellow Birch Mineral Deciduous Swamp Type (SWDM4-4)
Common wood sorrel	Oxalis montana	Common		X		
Indian cucumber	*Medeola virginiana*	Common (local)		X		
Starflower	*Lysimachia borealis*	Common		X		
Yellow avens	*Geum aleppicum*	Common		X		
Enchanter's nightshade	*Circaea canadensis*	Common		X		X
Fringed loosestrife	*Lysimachia ciliata*	Common		X		
Foamflower	*Tiarella cordifolia*	Common		X		X
Red trillium	*Trillium erectum*	Common		X		
Rose twisted-stalk	*Streptopus lanceolatus*	Uncommon		X		
Bunchberry	*Cornus canadensis*	Common		X		
Barren strawberry	*Geum fragarioides*	Common				X
Marginal wood fern	*Dryopteris marginalis*	Common		X	X	
Shinleaf	*Pyrola elliptica*	Common		X		
Red baneberry	*Actaea rubra*	Common		X		
White trillium	*Trillium grandiflorum*	Common		X		

Common Name	Scientific Name	Status According to Brunton (2005)	Fresh – Moist Lowland Deciduous Forest Ecosite (FOD7)	Fresh – Moist White Cedar – Hardwood Mixed Forest (FOMM7)	Fresh – Moist White Cedar – Balsam Fir Coniferous Forest (FOCM-4-3)	Yellow Birch Mineral Deciduous Swamp Type (SWDM4-4)
Canada mayflower	*Maianthemum canadense*	Common	X	X	X	
Helleborine	*Epipactis helleborine*	Common		X		
Jack-in-the-pulpit	*Arisaema triphyllum*	Common		X		X
Spotted Jewelweed	*Impatiens capensis*	Common	X	X		X
Blue-bead lily	*Clintonia borealis*	Common		X		
Violet sp.	*Viola* sp.	N/A		X		
Partridge berry	*Mitchella repens*	Common				X
Bedstraw sp.	*Galium* sp.	N/A	X			
Pennsylvania sedge	*Carex pennsylvanica*	Common	X			
Ostrich fern	*Matteuccia struthiopteris*	Common	X	X		
Marsh fern	*Thelypteris palustris*	Common	X			

3.5.3 *Vegetation Community 3: Fresh – Moist White Cedar – Balsam Fir Coniferous Forest (FOCM4-3)*

Vegetation Community 3 was classified through ELC as a Fresh – Moist White Cedar – Balsam Fir Coniferous Forest (FOCM 4-3) (**Photos 9 & 10**). This community was present south of Vegetation Community 2 (**Figure 2**). Moderately-aged eastern white cedar and balsam fir dominated the canopy in this community. The understory was heavily vegetated. This community was classified as Significant Woodland (**Figure 5**). Refer to **Table 2** for a complete listing of species observed during the field investigation.

3.5.4 *Vegetation Community 4: Yellow Birch Mineral Deciduous Swamp Type (SWDM4-4)*

Vegetation Community 4 was classified through ELC as a Yellow Birch Mineral Deciduous Swamp Type (SWDM4-4) (**Photo 11**). This community was located south of Vegetation Community 3, on the southern end of the study area (**Figure 2**). The location of this community roughly corresponds with the location of an unevaluated wetland identified by background information provided by the MNRF as located within the study area (**Figure 5**). The area was dominated by moderately-aged deciduous tree species, including red maple, yellow birch, American elm, and black ash. The understory was heavily vegetated. This community was classified as Significant Woodland (**Figure 5**). Refer to **Table 2** for a complete listing of species observed during the field investigation.

3.6 Habitat for Species at Risk & Significant Wildlife Habitat

Background information obtained from the sources listed in Section 2.0 of this report, indicated that SAR habitat was potentially present within the study area. These species have been listed in **Table 3**. Given habitat observed during the site visits and direct observation of SAR, a determination was made as to whether these species had potential to be or were present within the study area (**Table 3**).

Table 3: Species at Risk Potentially or Confirmed to be Present within the Study Area

*Common Name	Scientific Name	Provincial Status (ESA, 2007)	Federal Status (SARA Schedule 1)	Potential/Unconfirmed or Confirmed Habitat Present within Property Boundaries
Birds				
Bald Eagle[3]	*Haliaeetus leucocephalus*	Special Concern	NAR	None
Bank Swallow[3, 4]	*Riparia riparia*	Threatened	Threatened	None
Barn Swallow[3, 4]	*Hirundo rustica*	Threatened	Threatened	None
Black Tern[4]	*Chlidonias niger*	Special Concern	NAR	None
Bobolink[1, 3, 4]	*Dolichonyx oryzivorus*	Threatened	Threatened	None
Canada Warbler[4]	*Cardellina Canadensis*	Special Concern	Threatened	Potential/Unconfirmed
Chimney Swift[3, 4]	*Chaetura pelagica*	Threatened	Threatened	None
Common Nighthawk[3, 4]	*Chordeiles minor*	Special Concern	Threatened	Potential/Unconfirmed
Eastern	*Sturnella magna*	Threatened	Threatened	None

*Common Name	Scientific Name	Provincial Status (ESA, 2007)	Federal Status (SARA Schedule 1)	Potential/Unconfirmed or Confirmed Habitat Present within Property Boundaries
Meadowlark[1, 3, 4]				
Eastern Wood-pewee[3, 4]	*Contopus virens*	Special Concern	Special Concern	Confirmed
Evening Grosbeak[4]	*Coccothraustes vespertinus*	Special Concern	No Status	None
Grasshopper Sparrow[4]	*Ammodramus savannarum*	Special Concern	Special Concern	None
Horned Grebe[3]	*Podiceps auritus*	Special Concern	Special Concern	None
Least Bittern[3, 4]	*Ixobrychus exilis*	Threatened	Threatened	None
Loggerhead Shrike[3, 4]	*Lanius ludovicianus*	Endangered	Endangered	None
Peregrine Falcon[3]	*Falco peregrinus*	Special Concern	Special Concern	None
Red-headed Woodpecker[3, 4]	*Melanerpes erythrocephalus*	Special Concern	Threatened	None
Short-eared Owl[4]	*Asio flammeus*	Special Concern	Special Concern	None
Whip-poor-will[3, 4]	*Antrostomus vociferous*	Threatened	Threatened	Potential/Unconfirmed (none detected during 2018 targeted surveys)
Wood Thrush[3,4]	*Hylocichla mustelina*	Special Concern	Threatened	Confirmed
Yellow Rail[1, 3]	*Coturnicops noveboracensis*	Special Concern	Special Concern	None
Turtles				
Blanding's Turtle[2, 3]	*Emydoidea blandingii*	Threatened	Threatened	None
Common Snapping Turtle[2, 3]	*Chelydra serpentina*	Special Concern	Special Concern	None
Insects				
Bogbean Buckmoth[3]	*Hemileuca sp.*	Endangered	Endangered	None
Gypsy Cuckoo Bumble Bee[3]	*Bombus bohemicus*	Endangered	Endangered	None
Monarch[3]	*Danaus plexippus*	Special Concern	Special Concern	None
Mammals				
Little Brown Myotis[3]	*Myotis lucifugus*	Endangered	Endangered	None
Eastern Small-footed Myotis[3]	*Myotis leibii*	Endangered	Endangered	None
Northern	*Myotis*	Endangered	Endangered	Potential/Unconfirmed

*Common Name	Scientific Name	Provincial Status (ESA, 2007)	Federal Status (SARA Schedule 1)	Potential/Unconfirmed or Confirmed Habitat Present within Property Boundaries
Myotis[3]	*septentrionalis*			
Tri-coloured Bat[3]	*Perimyotis subflavus*	Endangered	Endangered	None
Plants				
Butternut[3]	*Juglans cinerea*	Endangered	Endangered	Potential/Unconfirmed (none observed, therefore not present on subject property)
Eastern Prairie Fringed Orchid[3]	*Platanthera leucophaea*	Endangered	Endangered	None

*This table was assembled from various sources of background information. The following information sources were consulted to compile background information: 1 – LIO geodatabase (MNRF, 2018); 2 – Ontario Reptile and Amphibian Atlas (Ontario Nature, 2018); 3 – MNRF Background Information Request (Smithers, 2018); 4 – Atlas of the Breeding Birds of Ontario (Bird Studies Canada et al., 2008)

Of the SAR identified by background information as potentially present within the study area, habitat observed during field investigations within the study area does not appear to be suitable for the life processes of the following SAR: Eastern prairie fringed-orchid, Tri-coloured Bat, Eastern Small-footed Myotis, Little Brown Myotis, monarch, gypsy cuckoo bumble bee, bogbean buckmoth, Common Snapping turtle, Blanding's Turtle, Yellow Rail, Short-eared Owl, Red-headed Woodpecker, Peregrine Falcon, Loggerhead Shrike, Least Bittern, Horned Grebe, Grasshopper Sparrow, Evening Grosbeak, Eastern Meadowlark, Chimney Swift, Bobolink, Black Tern, Barn Swallow, Bank Swallow, and Bald Eagle. In addition, although habitat was observed to be suitable for the Butternut, the species was not observed to be present within the study area, or within 50 m of the study area. These species will not be discussed further in this report.

Suitable habitat for the following species was confirmed, or was deemed to be potentially present within the study area, during the 2018 field investigations: Eastern Whip-poor-will (potential/unconfirmed), Common Nighthawk (potential/unconfirmed), Canada Warbler (potential/unconfirmed), Eastern Wood-pewee (confirmed), Wood Thrush (potential/unconfirmed), and Northern Myotis (potential/unconfirmed).

The Eastern Whip-poor-will is listed as a threatened species on the *Species at Risk in Ontario* (SARO) list. The species and its habitat are afforded protection under the *Endangered Species Act*, 2007 (ESA). The species and its nest and eggs are also protected under the *Migratory Birds Convention Act*, 1994 (MBCA). Habitat preferred by the Eastern Whip-poor-will includes areas with a mix of open and forested areas, such as savannahs, open woodlands or openings in more mature, deciduous, coniferous, and mixed forests. Targeted surveys for Eastern Whip-poor-will were conducted by McIntosh Perry on May 30, June 28, and July 30, 2018 (**Figure 3**). No Whip-poor-wills were detected within the study area or on adjacent lands during these surveys. Therefore, it can be concluded that this species did not utilize the subject property for breeding purposes during the 2018 season.

Characteristic habitat of the Common Nighthawk includes open areas with little to no ground vegetation, such as logged or burned-over areas, forest clearings, rock barrens, peat bogs, lakeshores, and mine tailings. The species will also nest in cultivated fields, orchards, urban parks, along gravel roads and railways and flat rooftops. The Common Nighthawk is listed as special concern on the SARO list. As such, the species and its habitat are not afforded protection under the ESA. The species and its nest and eggs are protected, however,

under the MBCA. In addition, due to the fact that the species is special concern on the SARO list, habitat for the species would be considered Significant Wildlife Habitat and would be protected under the PPS. The recently logged area of the subject property would have provided suitable nesting habitat for this species. If the species was utilizing the study area for breeding and nesting purposes during the 2018 season, it would have been detectable during the targeted evening Whip-poor-will surveys. No observations were made of the Common Nighthawk during the 2018 field investigations. Therefore, it can be concluded that the species did not utilize the study area for breeding or nesting purposes during the 2018 season.

The Eastern Wood-pewee prefers mid-canopy layer of forest clearings and edges of intermediate to mature-aged deciduous and mixed forests with little understory vegetation. The species is listed as special concern on the SARO list. As such, the species is not afforded protection under the ESA. The species and its nest and eggs are protected, however, under the MBCA. In addition, due to the fact that the species is special concern on the SARO list, habitat for the species would be considered Significant Wildlife Habitat and would be protected under the PPS. During the July 13, 2018 field investigation a male Eastern Wood-pewee was observed singing within forested habitat of the study area (**Figure 5**). The observation was made during the species' breeding season in suitable breeding/nesting habitat and would classify the Eastern Wood-pewee as a "possible breeder" within the study area, under the Ontario Breeding Bird Atlas' *Breeding Evidence Codes*.

Habitat preferred by the Canada Warbler includes a range of wet deciduous and coniferous forested habitat, with a well-developed, dense understory. The species is listed as special concern on the SARO list. As such, the species is not afforded protection under the ESA. The species and its nest and eggs are protected, however, under the MBCA. This species was not confirmed to be breeding within the study area during the 2018 field investigations. However, there is potential that the species could be present given available habitat observed to be present within the study area.

The Wood Thrush prefers mature deciduous and mixed forests for breeding and nesting habitat. This species is listed as special concern on the SARO list. As such, the species is not afforded protection under the ESA. The species and its nest and eggs are protected, however, under the MBCA. In addition, due to the fact that the species is special concern on the SARO list, habitat for the species would be considered Significant Wildlife Habitat and would be protected under the PPS. A male Wood Thrush was observed singing during the June 28, 2018 evening survey, within the forested habitat on the subject property (**Figure 5**). The observation was made during the species' breeding season, in suitable breeding/nesting habitat, and would classify the Wood Thrush as a "possible breeder" within the study area, under the Ontario Breeding Bird Atlas' *Breeding Evidence Codes*.

In the active season, the Northern Myotis is known to roost under loose bark and in tree cavities. This species is listed as endangered on the SARO list and is afforded species and habitat protection under the ESA. Targeted surveys were not conducted within the study area for the species as the proposed development was not anticipated to require the removal of woody vegetation (i.e., habitat for the species, if present, would not be impacted by the proposed development). However, given the presence of cavity trees within the forested areas of the study area (**Photo 12**), there is the potential that this species could be present.

3.7 Wildlife & Significant Wildlife Habitat

The study area is located in the St. Lawrence Lowlands Ecoregion within the Mixed Plains Ecozone (Ecological Stratification Working Group, 1996). Characteristic wildlife present within this Ecoregion include: black bear (*Ursus americanus*), moose (*Alces alces*), white-tailed deer (*Odocoileus virginianus*), hare (*Lepus americanus*), chipmunk (*Tamias striatus*), waterfowl, turtles, snakes, and various bird species (Ecological Stratification Working Group, 1996).

The following section outlines the existing wildlife observations from the 2018 field investigations within the study area. **Table 4** lists the species observed during the 2018 field investigations. Habitat present within the study area represented appropriate breeding/nesting/foraging habitat for all wildlife species observed.

Table 4: Wildlife Species Observed within the Study Area.

Species Name	Resident/ Seasonally	Evidence
Birds		
White-throated Sparrow (*Zonotrichia albicollis*)	Seasonally	Singing male, within appropriate breeding habitat, during appropriate breeding season (singing male)
Song Sparrow (*Melospiza melodia*)	Seasonally	Singing male
Black-capped Chickadee (*Poecile atricapillus*)	Resident	Singing male
Barred Owl (*Strix varia*)	Resident	Visual observation
Broad-winged Hawk (*Buteo platypterus*)	Seasonally	Female making anxiety calls, nest observed (**Photos 13 & 14)**
American Goldfinch (*Spinus tristis*)	Resident	Singing male
Red-eyed Vireo (*Vireo olivaceus*)	Seasonally	Singing male
Scarlet Tanager (*Piranga olivacea*)	Seasonally	Singing male
Great-crested Flycatcher (*Myiarchus crinitus*)	Seasonally	Singing male
Eastern Wood-pewee	Seasonally	Singing male
Ovenbird (*Seiurus aurocapilla*)	Seasonally	Singing male
Black-throated Green Warbler (*Setophaga virens*)	Seasonally	Singing male
Yellow-rumped Warbler (*Setophaga coronata*)	Seasonally	Singing male
Common Yellowthroat (*Geothlypis trichas*)	Seasonally	Singing male
Northern Waterthrush (*Parkesia noveboracensis*)	Seasonally	Singing male
American Redstart (*Setophaga ruticilla*)	Seasonally	Singing male
Alder Flycatcher (*Empidonax alnorum*)	Seasonally	Singing male
Black-and-white Warbler (*Mniotilta varia*)	Seasonally	Singing male
Eastern Phoebe (*Sayornis phoebe*)	Seasonally	Singing male
American Crow (*Corvus brachyrhynchos*)	Resident	Foraging, calling
Blue Jay (*Cyanocitta cristata*)	Resident	Foraging, calling
Warbling Vireo (*Vireo gilvus*)	Seasonally	Singing male
Downy Woodpecker (*Picoides pubescens*)	Resident	Foraging, calling
Pileated Woodpecker (*Hylatomus pileatus*)	Resident	Foraging, calling

Species Name	Resident/ Seasonally	Evidence
Wood Thrush	Seasonally	Singing male
Amphibians		
Wood Frog (*Lithobates sylvaticus*)	Resident	Visual observation
Northern Leopard Frog (*Lithobates pipiens*)	Resident	Visual observation
American Toad (*Anaxyrus americanus*)	Resident	Full chorus of males singing
Eastern Gray Treefrog (*Hyla versicolor*)	Resident	Full chorus of males singing
Green Frog (*Lithobates clamitans*)	Resident	Visual observation
Mammals		
Red squirrel (*Tamiasciurus hudsonicus*)	Resident	Visual observation
White-tailed deer	Resident	Tracks observed

For those observations of male birds singing, within appropriate breeding habitat, during the appropriate breeding season, this quality of breeding evidence represents "possible breeder", under the Ontario Breeding Bird Atlas' *Breeding Evidence Codes* (2007). Additional breeding evidence, i.e., anxiety calling, nest observed (**Photos 11 & 12, Figure 5**), which was observed for the Broad-winged Hawk during the field investigations, represents "confirmed breeding". Bird species observed (with the exception of the Blue Jay, Barred Owl, American Crow, and Broad-winged Hawk), their nests and eggs are protected under the MBCA. The Blue Jay, Barred Owl, Broad-winged Hawk, their nests and eggs, are afforded protection under the *Fish and Wildlife Conservation Act*, 1997 (FWCA). In addition, the forested habitat in which the Broad-winged Hawk nest was present, would be considered Significant Wildlife Habitat [specialised raptor nesting habitat – *Significant Wildlife Habitat Technical Guide* (OMNR, 2000)], and would be afforded protection under the PPS. Protection measures that pertain to the SAR observed during the field investigations (i.e., Eastern Wood-pewee and Wood Thrush), and associated Significant Wildlife Habitat, are discussed in Section 3.7 of this report.

During the May 30, 2018 evening field investigation, full choruses of Eastern Gray Treefrogs and American Toads were observed calling in the ephemeral ponds of the study area. In particular, there was a large congregation of frogs in the pond around which vegetation had recently been cleared (refer to **Figure 5** for the location of this pond, and to (**Photos 15 & 16**). Amphibian woodland breeding ponds, which can be ephemeral, are important to local amphibian populations, and are considered Significant Wildlife Habitat, afforded protection under the PPS. Other ephemeral ponds that would be suitable for amphibian breeding were also observed within the forested habitat of the study area during the May 16, 2018 field investigation (**Photos 1 & 2**).

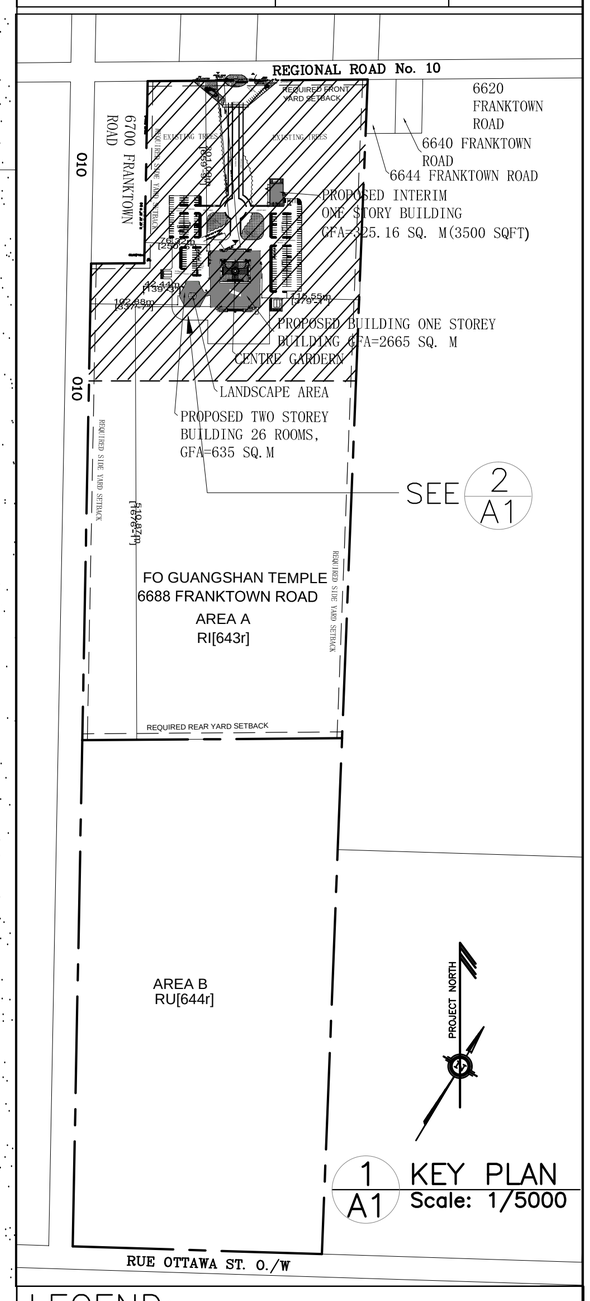
4.0 DESCRIPTION OF THE PROPOSED PROJECT

The proposed development within the study area involves the construction of a place of worship and residential accommodations. Refer to **Figure 6** for the site plan for the proposed development. The place of worship is one-storey with a gross floor area of 2,655 square metres. The residential component, referred to as a rooming house, is two-storeys with a gross floor area of 635 square metres. While the main Foguanshan Temple and rooming house are in construction, a small one-storey, 327 square metre one-storey building will be used as an interim prayer facility. Upon completion of the main facilities, the interim prayer facility will be converted to an accessory storage unit.

The proposed temple is oriented towards Franktown Road with a singular point of vehicular ingress and egress, and will be privately serviced. The proposed development will also include associated landscaping and parking. Parking will be located in the front and interior side yards. The majority of the study area's existing vegetation will be maintained and plantings will be proposed throughout the developed portion of the subject property. Two loading spaces are proposed southeast of the temple, with a proposed garbage storage area adjacent to the loading spaces.

6688 FRANKTOWN ROAD SITE STATISTICS

LEGAL DESCRIPTION	039330007 CON 3 E PT LOT 19 RP 4R–7040; PART 1			
ZONING	RI–RUAL INSTITUTIONAL ZONE			
	RI [643R]			
SETBACKS (TABLE 223–RI ZONE PROVISIONS)				
	REQUIRED(M)		PROVIDED(M)	
Minimum Front Yard	6m		6m	
Minimum Rear Yard	7.5m		7.5m	
Minimum Interior Side	6m		6m	
Minimum Corner Side Yard	6m		6m	
HEIGHT OF BUILDING	REQUIRED(M)		PROVIDED(M)	
Maximum Principal Building Height	10m		10m	
COVERAGE CALCULATIONS	SM	SF	ACRES	%
Building Area(Max Lot Coverage=55%)	4604	49557.04357	1.1377	2.06%
Paved Area	33627	361958.0157	8.3094	15.01%
Landscaped Area	185800	1999934.556	45.912	82.93%
Site Area	224031	2411449.615	55.359	100%
LANDSCAPE	REQUIRED(%)		PROVIDED	
Minimum Landscaped Area	20		82.93%	
LANDSCAPED BUFFER	REQUIRED(M)		PROVIDED(M)	
Minimum Width of Landscaped buffer(Table 110)	3m		3m	
GROSS FLOOR AREA (GFA)	SM		SF	
Provided Building One	2665.0		28685.8	
Provided Building One	635.0		6835.0	
Total GFA	3300.0		35520.8	
PARKING REQUIREMENTS (AREA"D"ON SCHEDULE 1A– PARKING REQUIREMENT FOR PLACE OF WORSHIP APPLIES TO ASSEMBLY AREA ONLY) (1974 SQM + 32 ROOMING UNITS)	REQUIRED		PROVIDED	
NUMBER OF PARKING SPACE				
Standard Parking–2.6W x 5.2L	207		217	
Accessible Parking–Type A 3.4W x 5.2L	7		9	
Total Number of Parking	214		226	
BICYCLE PARKING	GFA(SM)	REQUIRED	PROVIDED	
All Other (ie. Place Of Assembly)=1 Per 1500 SM Of GFA	2770.0	2	18	
DRIVEWAYS AND AISLE REQUIREMENTS (SECTION 107)	REQUIRED(MIN)		PROVIDED	
Two–Way Driveway	6.7		6.9	
Two–Way Parking Aisle	6.7		6.9	
LOADING REQUIRMENTS (SECTION 113) (ie. Size:3.5Wx9.0L Parallel;3.5Wx7.0L Other;4.2M Vert CLR)	REQUIRED		PROVIDED	
All Other Uses W/GFA From 2,000–4,999 SM	2		5	



1 KEY PLAN (A1) Scale: 1/5000

LEGEND:

- Wheelchair Accessible Etrance
- Main Entrance
- Exit
- Property Line
- Setback lines
- Chain link fence
- Proposed Building Area
- Parking Lot
- Fire Route
- Ramp
- Waking Space(Bricks)
- Planter (See details)
- Existing Trees
- Landscape Area
- Deck

SCALE: 1 5 10 15 20 25 30 35 40 45 50 55 60

2 (A1) PRELIMINARY SITE PLAN Scale: 1/500

PROPOSED FOGUANGSHAN TEMPLE NEW BUILDING AT

6688 FRANKTOWN RD.
OTTAWA, ON

SUSAN D. SMITH ARCHITECT

941 MERIVALE RD.
OTTAWA, ONTARIO
K1Z 6A1
613–722–5327
s.smith@sdsarch.ca

SITE PLAN

NOTES:
1. All dimensions are to be checked on site. Discrepancies or ambiguities should be reported prior to work on site or ordering of materials.
2. All work to be in accordance with the Ontario Building Code, latest edition.

SITE PLAN

SCALE	AS NOTES
Drawn	
Checked	
Date	MAR/2018
JOB #	

A1

5.0 IMPACT ASSESSMENT & RECOMMENDATIONS

The following sections outline and assess any potential impacts that are expected as a result of the proposed development. Recommendations for mitigation measures to avoid these impacts are outlined in Section 6.0 of this report.

5.1 Natural Heritage System Components, Surface Water, Groundwater and Fish Habitat

The area of recent vegetation clearing represents the location of proposed development (area of proposed development - **Figure 4**). This area is located directly adjacent to Franktown Road (south of Franktown Road), which will ensure that no further removal of woody vegetation, or development, will occur within the Significant Woodland present south of the previously cleared area (**Figure 5**). The location of the proposed development will also protect the integrity and contiguous nature of the remaining Significant Woodland.

Unevaluated wetland habitat is present in southern portions of the subject property (**Figure 5**). PSW (Richmond Fen), is also located to the southwest of the subject property (**Figure 5**). Given that both of these areas are located greater than 700 m from the area of proposed development, impacts are not anticipated to wetland habitat as a result of the proposed development.

5.2 Vegetation Cover

Removal of vegetation is not anticipated as a result of the proposed development, as the development is proposed to occur within the previously cleared area identified on **Figure 4**. Therefore, impacts to vegetation cover is not anticipated as a result of the proposed development.

5.3 Habitat for Species at Risk & Significant Wildlife Habitat

The Northern Myotis (endangered – unconfirmed/potential habitat), Eastern Wood-Pewee (special concern – confirmed habitat) and Wood Thrush (special concern – confirmed habitat) have appropriate habitat present within forested habitat present on the subject property (**Figure 5**). Due to their status of 'special concern', habitat for the Eastern Wood-Pewee and Wood Thrush would be considered Significant Wildlife Habitat. Given that the area of proposed development does not provide habitat for these species (i.e., forested habitat has been previously removed), and that the remaining forested habitat will remain untouched, it is not anticipated that these species will be negatively impacted by the proposed development.

5.4 Wildlife & Significant Wildlife Habitat

Twenty-one (21) species of migratory birds were observed to be possible breeders within the study area during the 2018 field investigations (**Table 4**). In addition, a Broad-winged Hawk, protected under the FWCA, was confirmed to be breeding within the study area (**Photos 13 & 14, Figure 5**). Therefore, if construction is proposed between April 15 and August 15, of any year, the area where construction is proposed to occur, must be screened by an avian specialist prior to construction. This is recommended in order to prevent negative impacts to migratory birds and other bird species (especially those that are known to nest within recently cleared areas, such as the Killdeer), their nests and eggs, which are protected under the MBCA or the FWCA. In addition, the forested habitat in which the Broad-winged Hawk nest was present, would be considered

Significant Wildlife Habitat [specialised raptor nesting habitat – *Significant Wildlife Habitat Technical Guide* (OMNR, 2000)], and would be afforded protection under the PPS. Impacts are not anticipated to this habitat, or the nest, as a result of the proposed development.

There were multiple ephemeral ponds observed within forested habitat of the subject property during the 2018 field investigations that would be appropriate amphibian woodland breeding ponds (Significant Wildlife Habitat) (**Photos 1 & 2**). An amphibian woodland breeding pond was observed within the proposed area of development during the May 16 and May 30, 2018 field investigations (multiple species of frogs were observed in full chorus in this pond) (**Photos 15 & 16, Figure 5**). Woody vegetation had mostly been cleared from the periphery of the pond at the time of the 2018 field investigations. However, the frogs remained present to breed within this pond during the 2018 breeding season. Although this pond is proposed to be destroyed as a result of the development, the proposed development includes a stormwater retention basin that will likely have standing water during the amphibian breeding period, and would potentially provide replacement breeding habitat for the frogs. In addition, the ephemeral ponds present within the existing forested habitat, will remain protected within Vegetation Communities 2, 3, and 4 (**Figure 2**).

6.0 RECOMMENDED MITIGATION

In order to minimize or eliminate environmental impacts and to help achieve ecological and environmental improvements from the proposed construction and development, the following mitigation measures are recommended:

- During construction, the Contractor should have a spill kit on-hand at all times, in case of spills.
- In accordance with Appendix 10 of the *Environmental Impact Statement Guidelines* (October 2015) for the City of Ottawa, no clearing of any vegetation should occur between April 15 and August 15, unless a qualified biologist has determined that no nesting is occurring within 5 days prior to the clearing. Note: these dates are based upon breeding bird nesting data for eastern Ontario, provided by Environment Canada. The nests and eggs of many species are protected under federal and/or provincial legislation (i.e., MBCA, FWCA).
- In accordance with Table 1 of the City of Ottawa's *Protocol for Wildlife Protection during Construction* (August 2015), prior to removal of any shrubs or trees in March through mid-August (breeding migratory birds) or mid-October through March (for cavity trees or other den sites), a biologist should be retained to inspect the habitat for active nests or dens. If none are determined to be present, removal should occur within a few days of the inspection (same day if possible during sensitive periods). Thickets or woodlands should not be removed during sensitive times of year (i.e., March through mid-August for the breeding season, Mid-October through March for overwintering wildlife). The *Canadian Wildlife Service does not support relying on inspections for migratory bird nests in such habitats due to the difficulty of locating all nests and risk to birds.*
- Should any SAR be discovered during construction, a management biologist at MNRF – Kemptville District should be contacted immediately and operations modified to avoid any negative impacts to SAR or their habitat until further direction is provided by MNRF.
- To prevent the introduction and spread of invasive plant species into the site and adjacent Significant Woodland, equipment utilized during construction should be inspected and cleaned in accordance with the *Clean Equipment Protocol for Industry* (**Appendix C**).

7.0 SUMMARY

This EIS supports development of a place of worship on the property at 6688 Franktown Road, legally known as “PCL 19-1, SEC GB-3; PT LT 19, CON 3, PT 1, 4R7040; GOULBOURN.”.

This EIS has assessed existing land use and determined the impacts to surrounding natural heritage features (i.e., PSW, Significant Woodland, unevaluated wetland, Significant Wildlife Habitat, etc.), and SAR/SAR habitat as a result of the proposed development. Any future development on the subject property should only occur within the area proposed for development (**Figure 4**), which has been previously cleared of vegetation. If the recommendations and mitigation measures provided in Sections 5.0 and 6.0 of this report are followed, the development proposed is not anticipated to negatively impact the majority of natural heritage features observed to be present within the study area.

8.0 LIMITATIONS

The investigations undertaken by McIntosh Perry with respect to this report and any conclusions or recommendations made in this report reflect McIntosh Perry's judgment based on the site conditions observed at the time of the site inspection(s) on the date(s) set out in this report and on information available at the time of the preparation of this report.

This report has been prepared for specific application to this site and it is based, in part, upon visual observation of the site and terrestrial investigations at various locations during a specific time interval, as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, or portions of the site which were unavailable for direct investigation.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions and recommendations in this report may be necessary.

If you have any question, comments, or concerns, please do not hesitate to contact the undersigned at McIntosh Perry at 613-836-2184 (Ext. 2277) or 613-267-6524 (Ext. 211).

Sincerely,
McIntosh Perry Consulting Engineers Ltd.

Heather Lunn B.A.
Terrestrial Ecologist

9.0 REFERENCES

Bird Studies Canada. 2007. Breeding Evidence Codes. Retrieved from Bird Studies Canada's Website: https://www.bsc-eoc.org/dataentry/codes.jsp?page=breeding

Brunton, D. 2005. Vascular Plants of the City of Ottawa, with the Identification of Significant Species.

Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier (eds.). 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp.

City of Ottawa. May 2003. Official Plan.

City of Ottawa. August 2015. Protocol for Wildlife Protection during Construction. Planning and Growth Management.

City of Ottawa. October 2015. Environmental Impact Statement Guidelines. Planning and Growth Management.

Crins, W.J., P.A. Gray, P.W.C. Uhlig, and M.C. Wester. 2009. The Ecosystems of Ontario, Part 1: Ecozones and Ecoregions. Inventory, Monitoring and Assessment Section. Science and Information Branch. Ontario Ministry of Natural Resources. Ontario, Canada: Queen's Printer for Ontario. 87p.

Ecological Stratification Working Group. 1996. A National Ecological Framework for Canada. Agriculture and Agri-Food Canada, Research Branch, Centre for Land and Biological Resources Research, and Environment Canada. State of the Environment Directorate; Ecozone Analysis Branch, Ottawa/Hull.

Government of Canada. (1994). *Migratory Birds Convention Act.* Retrieved from Government of Canada Justice Laws Website: http://laws-lois.justice.gc.ca/eng/acts/m-7.01/FullText.html

Government of Ontario. (1997). *Fish and Wildlife Conservation Act.* Retrieved from Government of Ontario website: https://www.ontario.ca/laws/statute/97f41

Government of Canada. (2002). *Species at Risk Act.* Retrieved from Government of Canada Justice Laws Website: http://laws-lois.justice.gc.ca/eng/acts/s-15.3/FullText.html

Government of Ontario. (2007). *Endangered Species Act.* Retrieved from Government of Ontario website: https://www.ontario.ca/laws/statute/07e06?search=e+laws

Lee, HT, WD Bakowsky, J Riley, J Bowles, M Puddister, P Uhlig and S McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, South Central Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.

Ministry of Natural Resources and Forestry. July 31, 2018. Personal Communication with Scott Smithers, Management Biologist with Kemptville District.

Ontario Ministry of Natural Resources and Forestry. (2007, July 02). Land Information Ontario. Retrieved from https://www.javacoeapp.lrc.gov.on.ca/geonetwork/srv/en/main.home

Ontario Ministry of Natural Resources. March 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Toronto: Queen's Printer for Ontario. 248 pp.

Ontario Nature. 2018. Ontario Reptile and Amphibian Atlas: A citizen science project to map the distribution of Ontario's reptiles and amphibians. Ontario Nature. http://www.ontarionature.org/atlas. Accessed 09 August 2018.

Provincial Policy Statement, 2014. Ministry of Municipal Affairs and Housing.

Rideau Valley Conservation Authority (RVCA). (2016). *Jock River Ashton to Dwyer Hill Catchment, Jock River Subwatershed Report 2016*. Retrieved from RVCA website: https://watersheds.rvca.ca/subwatersheds-reports/jock-river/catchment-reports-jock-river/jock-river-ashton-to-dwyer-hill/full-catchment-report-jock-river-ashton

APPENDIX A - PHOTOGRAPHS

Photo 1: Ephemeral pond, appropriate for amphibian breeding, observed in forested habitat of the study area, May 16, 2018.

Photo 2: Ephemeral pond, appropriate for amphibian breeding, observed in forested habitat of the study area, May 16, 2018.

Photo 3: Vegetation Community 1 - Fresh – Moist Lowland Deciduous Forest Ecosite (FOD7), facing southeast, May 16, 2018.

Photo 4: Vegetation Community 1 - Fresh – Moist Lowland Deciduous Forest Ecosite (FOD7), facing south, July 13, 2018.

Photo 5: Recently cleared area, area of proposed development, facing south, May 13, 2018.

Photo 6: Recently cleared area, area of proposed development, facing south, July 13, 2018.

Photo 7: Vegetation Community 2 - Fresh – Moist White Cedar – Hardwood Mixed Forest (FOMM7), facing south, May 16, 2018.

Photo 8: Vegetation Community 2 - Fresh – Moist White Cedar – Hardwood Mixed Forest (FOMM7), facing south, July 13, 2018.

Photo 9: Vegetation Community 3 - Fresh – Moist White Cedar – Balsam Fir Coniferous Forest (FOCM 4-3), facing south, May 16, 2018.

Photo 10: Vegetation Community 3 - Fresh – Moist White Cedar – Balsam Fir Coniferous Forest (FOCM 4-3), facing northwest, July 13, 2018.

Photo 11: Vegetation Community 4 - Yellow Birch Mineral Deciduous Swamp Type (SWDM4-4), facing south, July 13, 2018.

Photo 12: Example of cavity tree observed within forested habitat, July 13, 2018.

Photo 13: Adult Broad-winged Hawk observed making anxiety calls in proximity to a nest (see next photo), July 13, 2018.

Photo 14: Broad-winged Hawk nest observed (location on Figure 5), July 13, 2018.

Photo 15: Ephemeral pond (amphibian woodland breeding pond), multiple species of frogs in full chorus were observed in this pond during the May 30, 2018 field investigation, facing east, May 16, 2018.

Photo 16: Ephemeral pond (amphibian woodland breeding pond), multiple species of frogs in full chorus were observed in this pond during the May 30, 2018 field investigation, facing north, May 16, 2018.

APPENDIX B - CORRESPONDENCE

Ministry of Natural Resources and Forestry

Kemptville District

10 Campus Drive
Postal Box 2002
Kemptville ON K0G 1J0
Tel.: 613 258-8204
Fax: 613 258-3920

Ministère des Richesses naturelles et des Forêts

District de Kemptville

10, promenade Campus
Case postale, 2002
Kemptville ON K0G 1J0
Tél.: 613 258-8204
Téléc.: 613 258-3920

Ontario

Tues July 31, 2018

Heather Lunn
McIntosh Perry
115 Walgreen Road
R.R. #3 Carp, ON
K0A 1L0
(613) 836-2184
h.lunn@mcIntoshperry.com

Attention: Heather Lunn

Subject: Information Request - Developments
Project Name: Franktown Road EIS
Site Address: 6688 Franktown Road
Our File No. 2018_GOU-0001

Natural Heritage Values

The Ministry of Natural Resources and Forestry (MNRF) Kemptville District has carried out a preliminary review of the above mentioned area in order to identify any potential natural resource and natural heritage values.
The following Natural Heritage values were identified for the general subject area:

- Provincially Significant Wetlands

Municipal Official Plans contain information related to natural heritage features. Please see the local municipal Official Plan for more information, such as specific policies and direction pertaining to activities which may impact natural heritage features. For planning advice or Official Plan interpretation, please contact the local municipality. Many municipalities require environmental impact studies and other supporting studies be carried out as part of the development application process to allow the municipality to make planning decisions which are consistent with the Provincial Policy Statement (PPS, 2014).

The MNRF strongly encourages all proponents to contact partner agencies and appropriate municipalities early on in the planning process. This provides the proponent with early knowledge regarding agency requirements, authorizations and approval timelines; Ministry of the Environment and Climate Change (MOECC) and the local Conservation Authority may require approvals and permitting where natural values and natural hazards (e.g., floodplains) exist.

As per the Natural Heritage Reference Manual (NHRM, 2010) the MNRF strongly recommends that an ecological site assessment be carried out to determine the presence of natural heritage features and species at risk and their habitat on site. The MNRF can provide survey methodology for particular species at risk and their habitats.

The NHRM also recommends that cumulative effects of development projects on the integrity of natural heritage features and areas be given due consideration. This includes the evaluation of the past, present and possible future impacts of development in the surrounding area that may occur as a result of demand created by the presently proposed project.

Significant Wildlife Habitat

Section 2.1.5 d) of the PPS states: *Development and site alteration shall not be permitted in significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.* It is the responsibility of the approval authority to identify significant wildlife habitat or require its identification. The MNRF has several guiding documents which may be useful in identification of significant wildlife habitat and characterization of impacts and mitigation options:

- Significant Wildlife Habitat Technical Guide, 2000
- The Natural Heritage Reference Manual, 2010
- Significant Wildlife Habitat Mitigation Support Tool, 2014
- Significant Wildlife Habitat Criteria Schedule for Ecoregion 5E and 6E, 2015

The habitat of special concern species (as identified by the Species at Risk in Ontario list) and Natural Heritage Information Centre tracked species with a conservation status rank of S1, S2 and S3 may be significant wildlife habitat and should be assessed accordingly.

Species at Risk

A review of the Natural Heritage Information Centre (NHIC) and internal records indicate that there is a potential for the following threatened (THR) and/or endangered (END) species on the site or in proximity to it:

- Bank Swallow (THR)
- Barn Swallow (THR)
- Blanding's Turtle (THR)
- Bobolink (THR)
- Eastern Meadowlark (THR)
- Little Brown Myotis (END)
- Bogbean Buckmoth (END)
- Butternut (END)
- Chimney Swift (THR)
- Eastern Prairie Fringed Orchid (END)
- Eastern Whip-poor-will (THR)
- Gypsy Cuckoo Bumble Bee (END)
- Least Bittern (THR)

- Loggerhead Shrike (END)
- Eastern Small-footed Myotis (END)
- Northern Myotis (END)
- Tri-coloured Bat (END)

All endangered and threatened species receive individual protection under section 9 of the ESA and receive general habitat protection under Section 10 of the ESA, 2007. Thus any potential works should consider disturbance to the individuals as well as their habitat (e.g. nesting sites). General habitat protection applies to all threatened and endangered species. Note some species in Kemptville District receive regulated habitat protection. The habitat of these listed species is protected from damage and destruction and certain activities may require authorization(s) under the ESA. For more on how species at risk and their habitat is protected, please see: https://www.ontario.ca/page/how-species-risk-are-protected.

If the proposed activity is known to have an impact on any endangered or threatened species at risk (SAR), or their habitat, an authorization under the ESA may be required. It is recommended that MNRF Kemptville be contacted prior to any activities being carried out to discuss potential survey protocols to follow during the early planning stages of a project, as well as mitigation measures to avoid contravention of the ESA. Where there is potential for species at risk or their habitat on the property, an Information Gathering Form should be submitted to Kemptville MNRF at sar.kemptville@ontario.ca.

The Information Gathering Form may be found here:
http://www.forms.ssb.gov.on.ca/mbs/ssb/forms/ssbforms.nsf/FormDetail?OpenForm&ACT=RDR&TAB=PROFILE&ENV=WWE&NO=018-0180E

For more information on the ESA authorization process, please see:
https://www.ontario.ca/page/how-get-endangered-species-act-permit-or-authorization

One or more special concern species has been documented to occur either on the site or nearby. Species listed as special concern are not protected under the ESA, 2007. However, please note that some of these species may be protected under the Fish and Wildlife Conservation Act and/or Migratory Birds Convention Act. Again, the habitat of special concern species may be significant wildlife habitat and should be assessed accordingly. Species of special concern for consideration:

- Bald Eagle (SC)
- Common Nighthawk
- Eastern Wood-Pewee (SC)
- Peregrine Falcon (SC)
- Wood Thrush (SC)
- Monarch (SC)
- Snapping Turtle (SC)
- Horned Grebe (SC)
- Yellow Rail (SC)
- Red-headed Woodpecker (SC)

If any of these or any other species at risk are discovered throughout the course of the work, and/or should any species at risk or their habitat be potentially impacted by on site activities, MNRF should be contacted and operations be modified to avoid any negative impacts to species at risk or their habitat until further direction is provided by MNRF.

Please note that information regarding species at risk is based largely on documented occurrences and does not necessarily include an interpretation of potential habitat within or in proximity to the site in question. Although this data represents the MNRF's best current available information, it is important to note that a lack of information for a site does not mean that additional features and values are not present. It is the responsibility of the proponent to ensure that species at risk are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the activities carried out on the site.

The MNRF continues to strongly encourage ecological site assessments to determine the potential for SAR habitat and occurrences. When a SAR or potential habitat for a SAR does occur on a site, it is recommended that the proponent contact the MNRF for technical advice and to discuss what activities can occur without contravention of the Act. For specific questions regarding the Endangered Species Act (2007) or SAR, please contact MNRF Kemptville District at sar.kemptville@ontario.ca.

The approvals processes for a number of activities that have the potential to impact SAR or their habitat have recently changed. For information regarding regulatory exemptions and associated online registration of certain activities, please refer to the following website: https://www.ontario.ca/page/how-get-endangered-species-act-permit-or-authorization.

Please note: The advice in this letter may become invalid if:

- The Committee on the Status of Species at Risk in Ontario (COSSARO) re-assesses the status of the above-named species OR adds a species to the SARO List such that the section 9 and/or 10 protection provisions apply to those species; or
- Additional occurrences of species are discovered on or in proximity to the site.

The MNRF would like to request that we continue to be circulated on information with regards to this project. If you have any questions or require clarification please do not hesitate to contact me.

Sincerely,

Scott Smithers
Management Biologist
Scott.smithers@ontario.ca

Encl.\
-ESA Infosheet
-NHIC/LIO Infosheet

APPENDIX C – CLEAN EQUIPMENT PROTOCOL FOR INDUSTRY

Clean Equipment Protocol for Industry

Inspecting and cleaning equipment for the purposes of invasive species prevention

Invasive Species Centre
Catalyst for research and response

Ontario

Peterborough County Stewardship

Ontario Invasive Plant Council

Publication Information

Halloran, Joe, Anderson, Hayley and Tassie, Danielle. 2013. Clean Equipment Protocol for Industry. Peterborough Stewardship Council and Ontario Invasive Plant Council. Peterborough, ON.

Printed April 2013
Peterborough, Ontario

ISBN: (to be confirmed)

This document was prepared for the Canada-Ontario Invasive Species Centre and the Ontario Ministry of Natural Resources by the Peterborough Stewardship Council and the Ontario Invasive Plant Council.

Inquiries regarding this document can be directed to the Ontario Invasive Plant Council
PO Box 2800, 4601 Guthrie Drive
Peterborough, ON
K9J 8L5

Phone: (705) 748-6324
Email: info@ontarioinvasiveplants.ca

For more information on invasive plants in Ontario, visit www.ontario.ca/invasivespecies, www.ontarioinvasiveplants.ca, www.invadingspecies.com or www.invasivespeciescentre.ca

Table Of Contents

Introduction

Why Invasive Plants are a Problem

Invasive alien species are "a growing environmental and economic threat to Ontario. Alien species are plants, animals and microorganisms that have been accidentally or deliberately introduced into areas beyond their normal range. Invasive species are defined as harmful alien species whose introduction or spread threatens the environment, the economy, or society, including human health (Government of Canada 2004)." (Ontario Invasive Species Strategic Plan, 2012). The great majority of plant invasions occur in habitats that have been disturbed either naturally or by humans (Rejma´nek 1989; Hobbs and Huenneke 1992; Hobbs 2000).

The ecological effects of invasive species are often irreversible and, once established, they are extremely difficult and costly to control or eradicate. According to Pimental et al. (1999), invasive species in the U.S. cause economic and environmental damages totalling over $138 billion per year, with agricultural weed control and crop losses totalling approximately $34 billion per year. Exact figures for the total economic and environmental damages are not available for Canada. In Ontario however, the costs of dealing with just one invasive species is astonishing; Zebra Mussels cost Ontario power producers who draw water from the lake $6.4 million per year in increased control/operating costs and about $1 million per year in research costs (Colautti et al. 2006).

Invasive species can spread to new areas when contaminated mud, gravel, water, soil and plant material are unknowingly moved by equipment used on different sites. This method of spread is called an unintentional introduction, and is one of the four major pathways for invasive species introduction into a new area of Ontario (Ontario Invasive Species Strategic Plan, 2012).

Buckthorn removal, Lynde Shores Conservation Area.
Photo by: Central Lake Ontario Conservation Authority

Invasive plant seed and propagules (plant material, i.e. rhizomes) have the ability to travel sight unseen in mud attached to or lodged in various parts and spaces between parts of vehicles, machinery and other mechanical equipment. A recent study at Montana State University found that most seeds (99% on paved roads and 96% on unpaved roads) stayed attached to the vehicle after traveling 160 miles (257 km) under dry conditions.

Invasive plant species are commonly transported on or in vehicles and construction equipment when they are moved to new locations. Those vehicles include four-wheel drives, excavators, tractors, loaders, water trucks and all-terrain vehicles. Failure to properly clean vehicles and machinery of soils, mud, and contaminated water that may contain invasive species seed and propagules can result in permanent, irreversible environmental impacts. These impacts can mean substantial cost to the landowner, land manager and/or the user. Businesses may also face liability issues for activities and operations that result in the introduction of invasive species.

Some of the invasive species in Ontario which have been known to spread through equipment transfer include:

- **Common Buckthorn** *(Rhamnus cathartica)*
- **Dog-strangling Vine** *(Cynanchum rossicum)*
- **Garlic Mustard** *(Alliaria petiolata)*
- **Giant Hogweed** *(Heracleum mantegazzianum)*
- **Glossy Buckthorn** *(Frangula alnus)*
- **Japanese Knotweed** *(Polygonum cuspidatum)*
- **Miscanthus or Chinese Silver Grass** *(Miscanthus sinensis)*
- **Phragmites or Common Reed** *(Phragmites australis subsp. australis)*
- **Reed Canary Grass** *(Phalaris arundinacea)*
- **Wild Parsnip** *(Pastinaca sativa)*
- **Wild Chervil** *(Anthriscus sylvestri)*

Dog-strangling vine
(Cynachum rossicum)
Photo by: Hayley Anderson

Garlic Mustard
(Alliaria petiolata)
Photo by: Ken Towle

Phragmites
(Phragmites australis subsp. Australis)
Photo by: Michael Irvine

These plants impact biodiversity by out-competing native species for space, sunlight, and nutrients. They can also have impacts on road and driver safety by physically blocking intersection sightlines, and in the case of Phragmites and Miscanthus, may fuel intense grass fires if ignited, which can damage utility stations and hydro lines.

The harmful effects of invasive species include:

- Physical and structural damage to infrastructure
- Human health hazards (i.e. Giant Hogweed and Wild Parsnip exposure)
- Delays and increased cost in construction activities
- Environmental damage (i.e. erosion)
- Aesthetic degradation
- Loss of biodiversity
- Reduced property values
- Loss of productivity in woodlots and agriculture

Why Cleaning Vehicles and Equipment is Important

Passenger and recreational vehicles as well as heavy machinery are major vectors for spreading terrestrial invasive species into new areas.

It is much more costly to control invasive species after their establishment and spread than it is to prevent their spread. The spread of invasive species through unintentional introduction can be minimized significantly by the diligent cleaning of vehicles and equipment when leaving one site and moving to the next. In the case of large properties, cleaning before moving to a new site is recommended, even if it is within the same property.

This guide has been developed for the construction, agriculture, forestry and other land management industries, to provide equipment operators and practitioners with tools and techniques to identify and prevent the unintentional introduction of invasive species. It establishes a standard for cleaning vehicles and equipment and provides a guide where current codes of practice, industry standards or other environmental management plans are not already in place.

Passenger and recreational vehicles include:

- 2WD and 4WD cars
- 2WD and 4WD trucks
- All Terrain Vehicles (ATV's)
- Motorbikes
- Snowmobiles

Heavy machinery includes:

- Trucks
- Tractors
- Mowers
- Slashers
- Trailers
- Backhoes
- Graders
- Dozers
- Excavators
- Skidders
- Loaders
- Water Tankers and Trucks

Dog-strangling Vine plants attached to ATV.
Photo by: Francine Macdonald

Plant material attached to bobcat.
Photo by: TH9 Outdoor Services

Impacts of Invasive Species on Industry

Construction

In the UK, Japanese Knotweed (*Polygonum cuspidatum* or *Fallopia japonica*) is classified as a hazardous material. When construction occurs in established Japanese Knotweed stands workers sift the soil to remove root fragments and institute treatment plans to ensure that the Knotweed does not re-sprout, as it can damage housing foundations by growing through concrete and asphalt. The contractors must also thoroughly clean their equipment, and dispose of the contaminated soil at biohazard waste sites. While we do not have these requirements in Ontario, Japanese Knotweed is present here.

Invasive plant species can also increase site preparation and weed control costs, and reduce property values. For example, in Vermont the presence of the aquatic invasive plant Eurasian Watermilfoil (*Myriophyllum spicatum*) depressed shoreline residence property value by as much as 16.4% (Zhang and Boyle, 2010).

Forestry/Agriculture

Invasive plant species which become established in forests will out-compete native species and prevent forest re-generation after logging or natural disturbance. Dog-strangling Vine (*Cynanchum rossicum*) is of particular concern in conifer plantations. This species thrives in the filtered light and open soils of mature plantations, and suppresses seedling establishment of native hardwoods. If its invasion continues, very few juvenile trees will survive to fill the shrinking canopy of over-mature pines. Reforestation sites are also susceptible; the thick mats of vegetation and aggressive competition from Dog-strangling Vine decrease available planting space and increase costs as more mature vegetation needs to be planted in order to ensure the new vegetation can outcompete the invasive plant. As a result, expensive control programs are often required.

Land Management (Trail Use/Maintenance)

Recreational trail use and the maintenance of trails can facilitate the transport of invasive plant material and seeds, and create open and disturbed sites that are prime locations for the establishment of invasive species. Studies have proven that trails act as corridors which assist in the spread of invasive plant species. Humans, their pets, and vehicles such as ATV's can be vectors of invasion along trails because seeds and plant pieces can be carried on equipment and clothing. In addition, frequent trampling along trails alters soil properties, limits the growth of some native species, and creates conditions that may favour the growth of non-native species (Kuss et al. 1985; Marion et al. 1985; Yorks et al. 1997).

Roadsides/Utilities

Invasive species can increase the cost of roadside and utility maintenance by requiring additional maintenance and control efforts. The presence of invasive species can also provide a safety hazard. In the case of Phragmites and Miscanthus (invasive grass species), along with interrupting sight lines, the dead stalks which remain standing each autumn also provide combustible material. Fires in these stands burn intensely, and can damage utilities and hydro lines. Phragmites along roadsides is generally assumed to be spread through the transport and burial of rhizome fragments through ditching, ploughing, and other human activities that transport rhizomes on machinery. Studies have shown that vehicles and road-fill operations can transport invasive plant seeds into uninfested areas, and road construction and maintenance operations provide optimal disturbed sites for seed germination and seedling establishment (Schmidt 1989; Lonsdale & Lane 1994; Greenberg et al. 1997; Trombulak & Frissell 2000).

Steps to Prevent the Unintentional Introduction of Invasive Species from Equipment

Inspection and cleaning of all machinery and equipment should be performed in accordance with the procedures, checklists and diagrams provided in this protocol.

When visiting more than one site, always schedule work in the sites that are the least disturbed and free of known invasive species first, and visit sites with known invasive species infestations last. This will greatly reduce the risk of transferring plants to new locations.

When to Inspect

Inspection should be done before:

- Moving vehicles out of a local area of operation
- Moving machinery between properties or sites within the same property where invasive species may be present in one area, and not in another
- Using machinery along roadsides, in ditches, and along watercourses
- Vehicles using unformed dirt roads, trails or off road conditions
- Using machinery to transport soil and quarry materials
- Visiting remote areas where access by vehicles is limited

Inspection should be done after:

- Operating in areas known to have terrestrial invasive plants or are in high risk areas (i.e. recently disturbed areas near known invaded areas)
- Transporting material (i.e. soil) that is known to contain, or has the potential to contain, invasive species
- Operating in an area or transporting material that you are uncertain contain invasive species
- In the event of rain. If mud contains seeds, they can travel indefinitely until it rains or the road surface is wet, allowing for long distance transport. This may result in transporting seeds to areas where those species did not previously exist

How to Inspect

- Inspect the vehicle thoroughly inside and out for where dirt, plant material and seeds may be lodged or adhering to interior and exterior surfaces.
- Remove any guards, covers or plates that are easy to remove.
- Attention should be paid to the underside of the vehicle, radiators, spare tires, foot wells and bumper bars.

If clods of dirt, seed or other plant material are found, removal should take place immediately, using the techniques outlined below.

When to Clean

Vehicles and heavy equipment that stay on formed and sealed roads have a low risk of spreading invasive species. Cleaning is only required when inspection identifies visible dirt clods and plant material or when moving from one area to another.

Depending on the invasive species present, vehicles may need to be cleaned even when deep snow is present. Phragmites, for example, can still be spread, even in packed snow because the seed heads are usually above the surface of the snow. Other plants, such as Dog-strangling vine, will be contained beneath deep snow.

**Regular inspection of vehicles and machinery will identify if any soil or plant material has been collected on or in vehicles and machinery.*

Where to Clean

Clean the vehicle/equipment in an area where contamination and seed spread is not possible (or limited). The site should be:

- Ideally, mud free, gravel covered or a hard surface. If this option is not available, choose a well maintained (i.e. regularly mowed) grassy area.
- Gently sloping to assist in draining water and material away from the vehicle or equipment. Care should be taken to ensure that localized erosion will not be created, and that water runs back into the area where contamination occurred.
- At least 30m away from any watercourse, water body and natural vegetation.
- Large enough to allow for adequate movement of larger vehicles and equipment.

**Safely locate the vehicle and equipment away from any hazards. If mechanized, ensure engine is off and the vehicle or equipment is immobilized.*

How to Clean Inside

Clean the interior of the vehicle by sweeping, vacuuming or using a compressed air device. Particular attention should be paid to the floor, foot wells, pedals, seats and under the seats.

How to Clean Outside

Knock off all large clods of dirt. Use a pry bar or other device if necessary.

Identify areas that may require cleaning with compressed air rather than water such as radiators and grills. Clean these areas first prior to using water.

Clean the vehicle with a high pressure hose in combination with a stiff brush and/or pry bar to further assist the removal of dirt clods.

Start cleaning from the top of the vehicle and work down to the bottom.

Emphasis should be placed on the undersides, wheels, wheel arches, guards, chassis, engine bays, radiator, grills and other attachments.

When the cleaning is finished avoid driving through the waste water when removing the vehicle or equipment from the cleaning site.

For equipment such as water trucks that may be exposed to aquatic invasive species, trucks should be disinfected with bleach solution before conducting work in a new area. For further information please refer to the Invading Species Awareness Program's Technical Guidelines listed under Contacts and Resources.

Hosing down a vehicle in Queensland Australia
Photo by: TH9 Outdoor Services

Final Inspection Checklist

Conduct a final inspection to ensure the following general clean standard has been achieved:

- No clods of dirt should be visible after wash down.
- Radiators, grills and the interiors of vehicles should be free of accumulations of seed, soil, mud and plant material parts including seeds, roots, flowers, fruit and or stems.

Diagrams have been provided to assist in quickly identifying key areas to inspect and clean on a variety of vehicles associated with the targeted industries. These can be used in combination with vehicle checklists to ensure all areas of the vehicles have been inspected and cleaned.

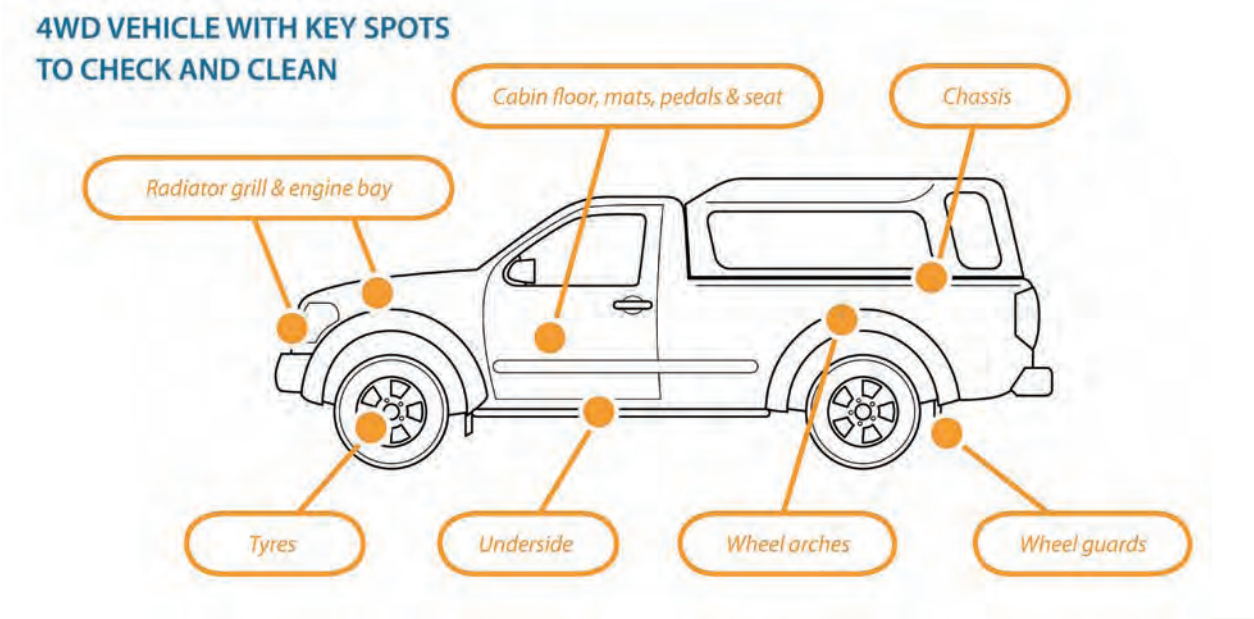
Equipment Required

- A pump and high pressure hose OR High pressure water unit
- Minimum water pressure for vehicle cleaning should be at least 90 pounds per square inch. Water can be supplied as high volume/low pressure or low volume/high pressure (NOAA Fisheries Service).
- Air compressor and blower OR Vacuum
- Shovel
- Pry bar
- Stiff brush or broom

Cleaning station at construction site.
Photo by: Mark Heaton, OMNR

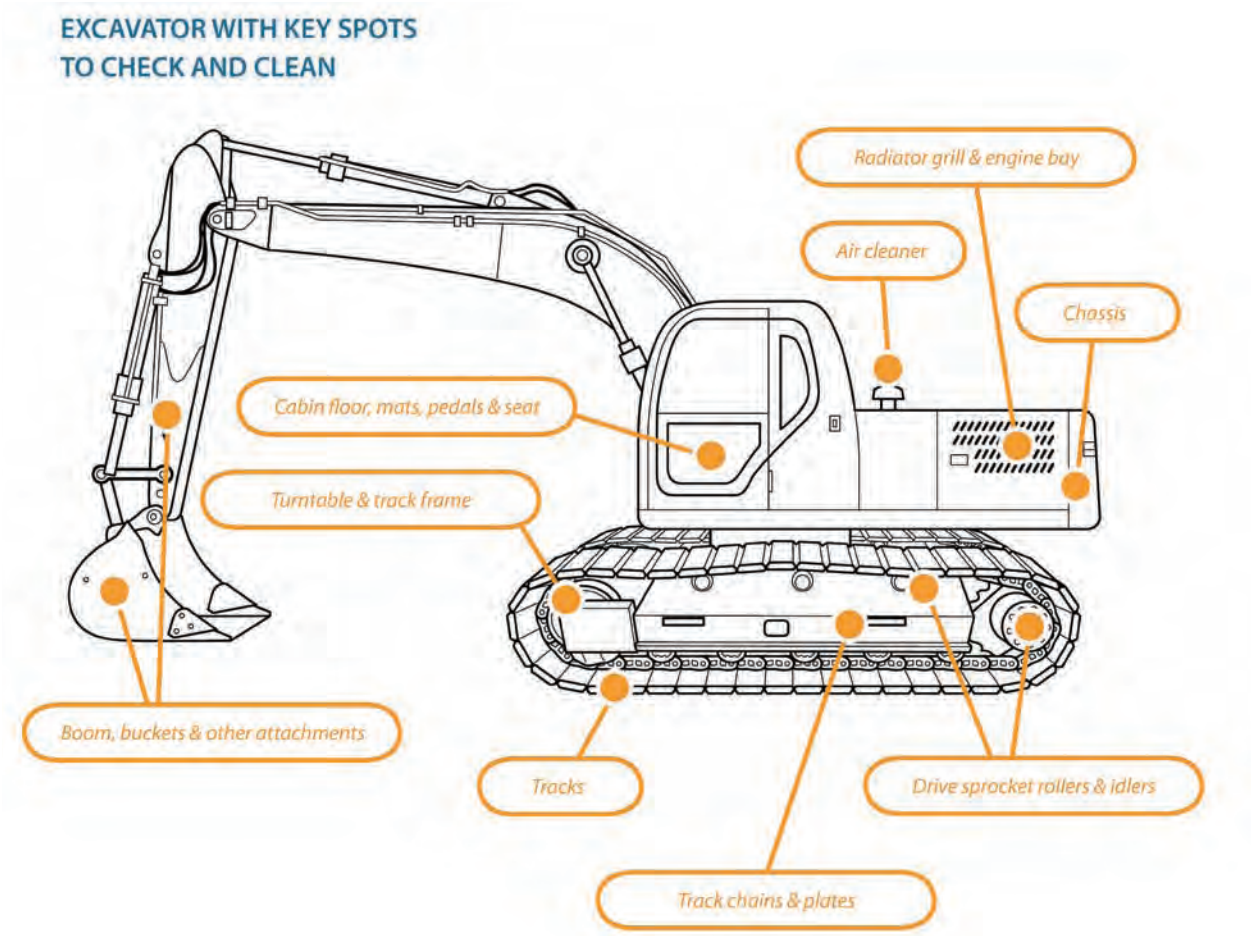
Inspection and Cleaning Diagrams and Checklists

2WD and 4WD Vehicles



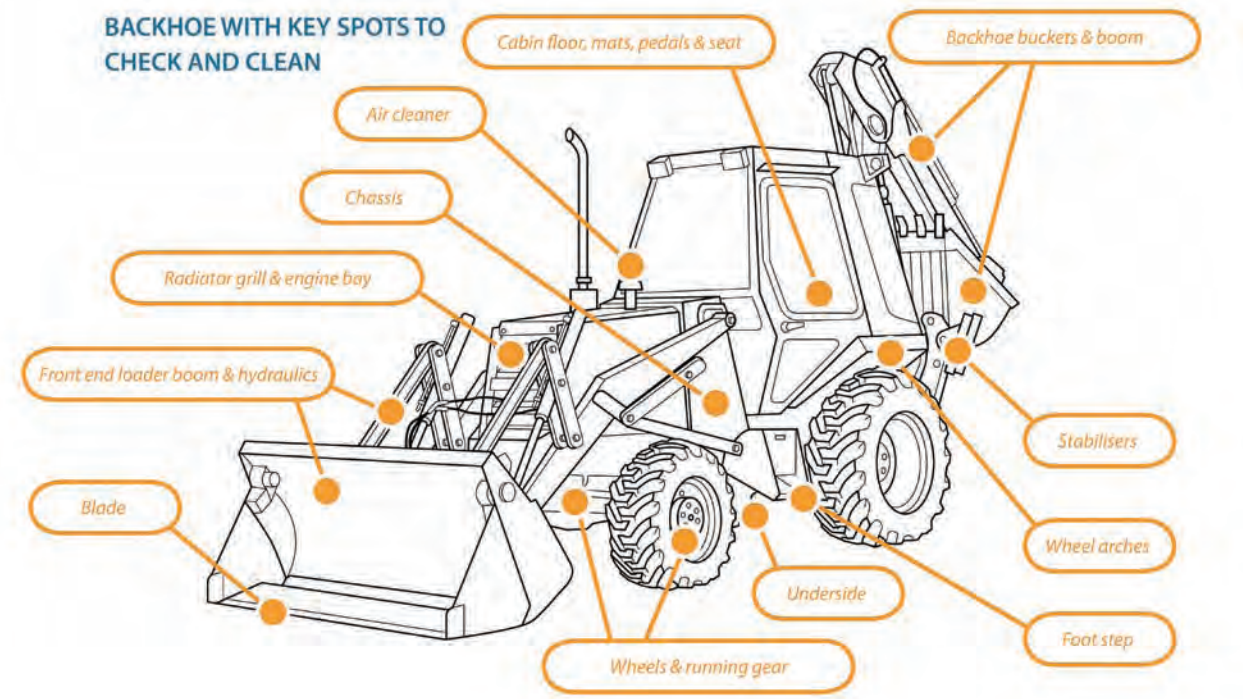
		✓
Cabin	Floor, mats, pedals, seats	
Engine	Radiators, engine bay, grill	
Body	Underside, chassis, crevices, ledges, bumper bars	
Wheels	All wheels (including spare), wheel arches, guards	
Tray	Floor, canopy (if included)	

Excavator



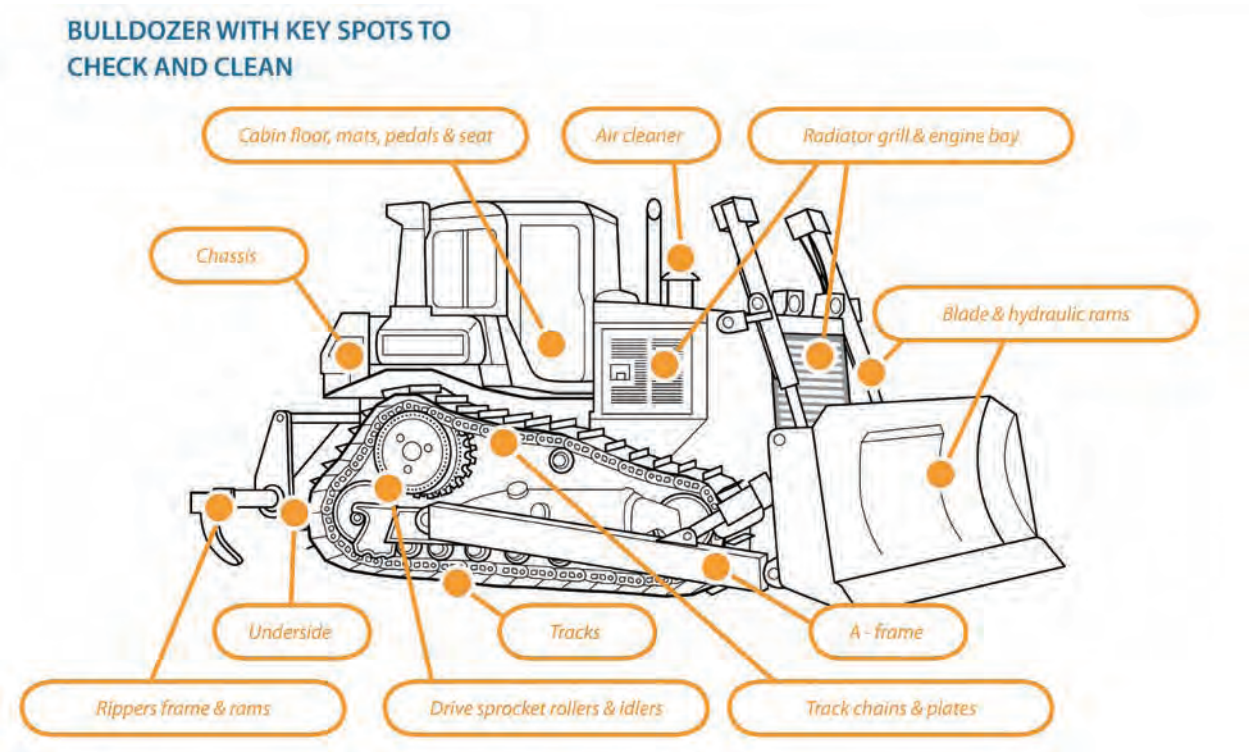
		✓
Cabin	Floor, mats, pedals, seats	
Engine	Radiators, engine bay, grill, air cleaner	
Tracks	Tracks, track frame, drive sprocket rollers, idlers	
Body Plates	Plates of cabin	
Body	Ledges, channels	
Bucket		
Booms		
Turret Pivot		

Backhoe



		✓
Cabin	Floor, mats, pedals, seats, foot step	
Engine	Radiators, engine bay, grill, air cleaner	
Wheels	All wheels (including spare), wheel arches, guards	
Front end loader	Blade, hydraulics, booms	
Backhoe	Buckets, boom, hydraulics, stabilizers	

Bulldozer



		✓
Cabin	Floor, mats, pedals, seats	
Engine	Radiators, engine bay, grill, air cleaner	
Tracks	Tracks, track frame, drive sprocket rollers, idlers	
Body Plates	Belly plates and rear plates	
Body	Ledges, channels	
Blade	Pivot points, hydraulic rams, a-frame	
Ripper	Ripper frame, ripper points	

Contacts and Resources

Ontario Invasive Species Strategic Plan 2012. Government of Ontario. Online, accessed May 8, 2012.
http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@biodiversity/documents/document/stdprod_097634.pdf

Invasive Species Management for Infrastructure Managers and the Construction Industry 2008. Wade, M. Booy, O. and White, V. Online, accessed April 27, 2012
http://www.ciria.org/service/Web_Site/AM/ContentManagerNet/ContentDisplay.aspx?Section=Web_Site&ContentID=9001

T.I.P.S (Targeted Invasive Plant Solutions) Highway Operations. British Columbia Invasive Species Council. Online, accessed May 8, 2012
http://www.bcinvasiveplants.com/iscbc/publications/TIPS/Highways_Operations_TIPS.pdf

Invading Species Awareness Program Workshop Manual: Aquatic Invasive Species: An Introduction to Identification, Collection and Reporting of Aquatic Invasive Species in Ontario Waters (includes information on decontaminating equipment).
http://www.invadingspecies.com/download/publications/manuals/WorkshopManual.pdf

Reporting Invasive Species

To report invasive species, or view maps of existing records, visit the Invading Species Awareness Program website www.invadingspecies.com/report/ or www.eddmaps.org/Ontario.

Or call the OFAH/MNR Invading Species Awareness Program Hotline at **1-800-563-7711**

Acknowledgements

We gratefully acknowledge NRM South (Tasmania, Australia) for allowing the use of their artwork and text from their "Keeping it Clean – A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens".

We also sincerely thank the Clean Equipment Protocol Working Group and the Ontario Invasive Plant Council Committees and Board of Directors for their ongoing support and valuable input into this document, and the Canada-Ontario Invasive Species Centre and Ontario Ministry of Natural Resources for the support in creating this protocol.

Clean Equipment Protocol Working Group:

Diana Shermet, Central Lake Ontario Conservation Authority; Paula Berketo, Ontario Ministry of Transportation; Travis Cameron, Ontario Ministry of Natural Resources; Jennifer Hoare, Ontario Parks; Michael Irvine, Ontario Ministry of Natural Resources; Alison Kirkpatrick, OFAH/MNR Invading Species Awareness Program; Erika Weisz, Ontario Ministry of Natural Resources; Amanda Chad, Ontario Power Generation; Nancy Vidler, Lambton Shores Phragmites Community Group; Nigel Buffone, Du Pont Canada Company; Ewa Bednarczuk, Lower Trent Conservation Authority

We also gratefully acknowledge the input and direction from Francine MacDonald, James Rockwood, Anne-Marie Roussy, Stephen Smith, Caroline Mach, Patricia Lowe, John Bowen, Karen Hartley, and the Southern Ontario Community Forest Managers group.

More Information:

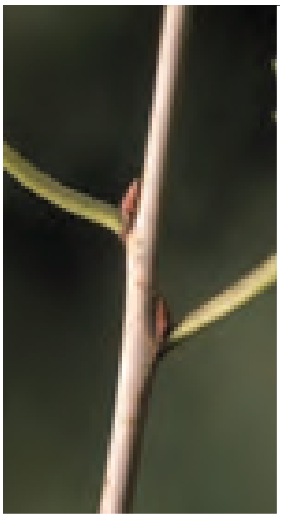
Ontario Invasive Plant Council: www.ontarioinvasiveplants.ca

Appendix A: Identification of Invasive Plants found in Ontario

- **Common Buckthorn** (*Rhamnus cathartica*) and **Glossy Buckthorn** (*Frangula alnus*)
- **Dog-strangling Vine** (*Cynanchum rossicum*)
- **Garlic Mustard** (*Alliaria petiolata*)
- **Japanese Knotweed** (*Polygonum cuspidatum*)
- **Phragmites or Common Reed** (*Phragmites australis subsp. australis*)
- **Giant Hogweed** (*Heracleum mantegazzianum*)

common & glossy buckthorn

(Rhamnus cathartica & R. frangula)



Plant type: Shrub/small tree

Arrangement: Common buckthorn are sub-opposite (almost opposite). Glossy buckthorn are alternate.

Leaf: The common buckthorn leaf is egg shaped, edge of the leaf is "pebbled" (small rounded teeth). Veins converging toward leaf top. The glossy buckthorn leaf is more slender (tear drop shaped) and smooth margined.

Bark: Smooth, young bark with prominent raised patches or lenticels; rough texture and peeling bark when mature.

Seed/Flowers: Flowers are green-yellowish, small and inconspicuous. Green berries becoming purplish/black in late summer, berry > 1 cm in diameter.

Buds/Twigs: Common buckthorn has thorn-like tip on many twigs. Glossy buckthorn buds have no bud scales and lack thorny tips to twigs.

Habitat: Various - forest, thickets, meadows, dry to moist soils.

Similar native species: Native dogwoods, which lack the thorny "tip". Native dogwoods are truly opposite in arrangement of twigs; only alternate leaved (pagoda) dogwood has alternate branching.

dog-strangling vine
(Cynanchum rossicum & C. nigrum)



Plant type: Herb, twining vine

Arrangement: Opposite

Leaf: Lance shaped, smooth margin (edge)

Bark: n/a

Seed/Flowers: Bean shaped seed pod with seeds attached to downy 'umbrellas'. Flowers - pink (C. rossicum) or purple (C. nigrum) with five petals.

Buds/Twigs: n/a

Habitat: Dry to moist soils; more dominant in meadows and woodland edges.

Similar native species: Swamp milkweed (Asclepias incarnata spp.), is an upright plant, typically found in wetland habitats.

garlic mustard
(Alliaria petiolata)



Plant type: Herb

Arrangement: Alternate

Leaf: Saw tooth like edge, elongated heart shape. Garlic/onion smell when crushed. Leaves are kidney shaped with prominent veins.

Bark: n/a

Seed/Flowers: Cluster of small white flowers with four petals. Small black < 1 mm rounded seed found in elongated 'tube-like' seed pods (similar to a bean pod).

Buds/Twigs: n/a

Habitat: Various – dry to moist soils, in all habitat types, less often in meadows.

Similar native species: n/a

japanese knotweed
(Polygonum cuspidatum)

Plant type: Herb, 2 - 4 m in height.

Arrangement: Alternate

Leaf: Tear drop shaped, sharp pointed, dark green, flattened at base.

Bark: n/a

Seed/Flowers: Flowering stalk of many small greenish-white flowers.

Buds/Twigs: Large plant with a 'bamboo-like' stem. Stem light green maturing to tan colour.

Habitat: Moist to wet soils found in wetlands, water-courses and roadside ditches.

Similar native species: None.

common reed
(Phragmites australis)

Plant type: Grass

Arrangement: Alternate

Leaf: Broad leaf > 1 cm wide.

Bark: n/a

Seed/Flowers: Dense cascading 'broom-like' flower head. 'Cottony' in appearance when mature.

Buds/Twigs: Stems rough and ridged, ligule a densely hairy band. Mature plants > 3 m tall.

Habitat: Moist to wet soils. Found in wetlands, water- courses and road side ditches.

Similar native species: Species of mannagrass (Glyceria sp) including tall northern, eastern and rattlesnake grass. A native common reed exists but has a smooth stem and the ligule is not hairy. It is also quite rare.

giant hogweed
(Heracleum mantegazzianum)

Plant type: Herb. Mature plants can be over 3m tall.

Arrangement: Alternate

Leaf: Lobed leaf 1-2 m wide, lobes sharp-pointed.

Bark: n/a

Seed/Flowers: Small, white flowers in a large umbrella-shaped cluster, .75 m wide.

Buds/Twigs: Hairy stem with purple spots.

Habitat: Fresh to wet soils in forests, swamps, meadows, marshes.

Similar native species: Cow parsnip *(Heracleum maximum)* – has smaller flowers, no purple spots on stems.Angelica (Angelica atropurpurea) has a rounded-topped flower cluster and leaves divided into many leaflets.

Do not touch this plant because it is poisonous. If you do, wash your skin immediately in cool soapy water and do not expose the area to sunlight.

Seek professional advice before removing.

Identification of Invasive Plants found in Ontario Photos by:

Credit Valley Conservation, Greg Bales, Ken Towle, Patrick Hodge,

Ontario Federation of Anglers and Hunters, Francine Macdonald, Matt Smith

Ontario
Invasive Plant Council