

City of Barrie Harvie Road, Essa Road and Bryne Drive Class EA (Phases 3 and 4) H353437

**Environmental Study Report** 

# Appendix B Natural Environment Reports



FINAL Natural Heritage Impact Assessment Report

## City of Barrie Schedule C Municipal Class Environmental Assessment Phase 3 and 4

## Natural Heritage Impact Assessment Report Essa Road

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## 1. Introduction

The City of Barrie (City) retained Hatch Corporation (Hatch) to carry out a Class Environmental Assessment (EA) for the Transportation Improvements to Essa Road, which extend from Mapleview Drive West north to Coughlin Road. This Class EA was completed in accordance with the requirements for a Schedule 'C' Project as described in the Municipal Engineers Association's (MEA) "Municipal Class Environmental Assessment" (Municipal Class EA) document (October 2000, as amended in 2007, 2011 and 2015). An Environmental Study Report (ESR) has been prepared to document Phases 3 and 4 of the Class EA process. Phases 1 and 2 were previously completed as part of a Multi-Modal Active Transportation Master Plan (MMATMP), further discussed below.

As part of the Class EA, Hatch undertook a Natural Heritage Impact Assessment (NHIA) to characterize the terrestrial and aquatic environmental features to support the Class EA, as documented within this Report. To carry out the NHIA, a 25 metre buffer has been applied to Essa Road (hereafter referred to as the Project Study Area). Figure 1 shows both the Project Study Area and the Study Limits for this Project.

## 1.1 Background

In 2014, a series of six (6) Master Plans were prepared for the City in accordance with the Municipal Class EA process. As noted, a MMATMP was prepared to address Phases 1 and 2 of the Class EA process.

The MMATMP, completed in 2014, identified various projects to address growth in the City, including the required transportation networks to meet the existing and future population demands of the City to the year 2031 and beyond. The MMATMP reviewed other planned transportation projects that will influence the City's transportation network including improvements to Highway 400; improvements to Simcoe County's road network and the provision of increased service for GO Transit.

Within the MMATMP, the recommendations for Essa Road included the following as it pertains to the Project Study Area:

- Widen to two (2) lanes, including a two-way left turning lane (TWLTL) or continuous median;
- Provide sidewalks: and
- Provide a 24 metre right-of-way (ROW).

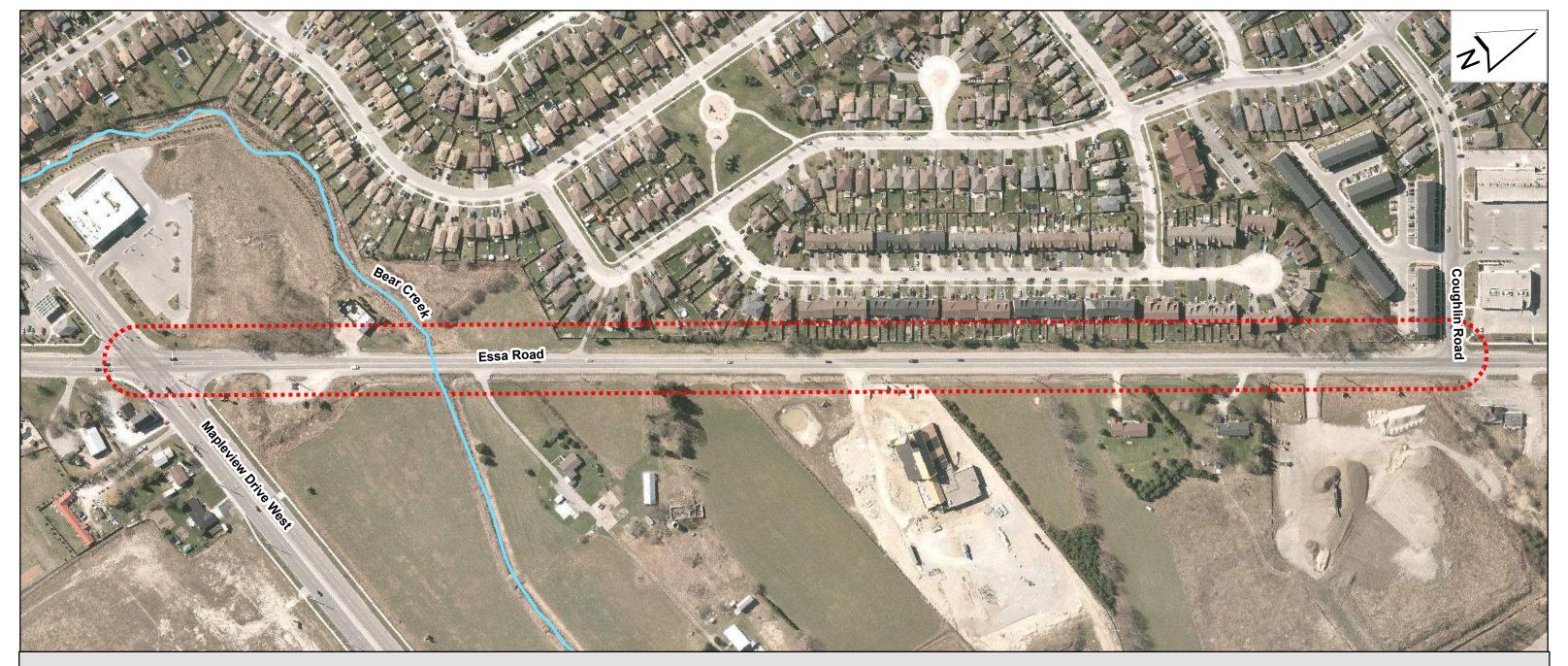


Figure 1 Essa Road Transportation Improvements Class Environmental Assessment: Project Study Area and Study Limits

----- Essa Road Study Area

Watercourse

Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korêa, Esri (Thailand), MapmyIndia, NGCC, ©

\*The information displayed is derived from sources with varying accuracies and all boundaries should therefore be considered approximate

Coordinate System: NAD 1983 UTM Zone 17N Aerial Date: 2012, 2016





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## 1.2 Project Location, Study Limits and Scope of Work

The Project is located within the City, a single-tier municipality situated within the County of Simcoe. As shown in Figure 1, the proposed Essa Road widening is to occur between Mapleview Drive West north to Coughlin Road, covering a distance of approximately 925 metres. As part of this NHIA, the following scope of work was undertaken:

- Conduct a literature review of background information;
- Consult with the Ontario Ministry of Natural Resources and Forestry (MNRF) and the Nottawasaga Valley Conservation Authority (NVCA) to collect baseline information;
- Conduct field investigations to collect data on natural features which included but were not limited to the following:
  - Terrestrial inventory in accordance with the Ecological Land Classification (ELC) system, including targeted surveys for vegetative species-at-risk (SAR) such as Butternut (*Juglans cinerea*);
  - Three (3) breeding bird surveys based on the Ontario Breeding Bird Atlas (OBBA) Protocol (2001) to incorporate breeding birds and targeted SAR bird species;
  - Fish and Fish habitat site reconnaissance to document water features and any fish observations;
  - Two (2) amphibian surveys according to the Marsh Monitoring Program (MMP) Protocol (2008); and
  - Incidental observations of other wildlife, including reptiles and mammals.
- Prepare a report which outlines the above noted information to be included as part of the ESR which documents:
  - Any consultation and the results of the consultation;
  - Background information collected during the literature review (as required);
  - Existing conditions based on the 2017 field investigations;
  - Assessment of the impacts associated with the alternative design concepts; and
  - Recommendations of best management practices (BMPs) and other impact avoidance or mitigation measures that can be used to prevent or minimize the predicted negative effect(s) of the proposed Transportation Improvements.

It is noted that all field investigations were completed from within the existing Essa Road ROW, and included assessing the area extending approximately 25 metres from the ROW. As such, natural features adjacent to the existing ROW were observed from the nearest vantage point and have been supplemented where required using background desktop information as noted within this Report.



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## 2. Regulatory and Policy Context

This section of the Report summarizes the various federal, provincial and municipal planning policies and regulations related to natural heritage that apply to the proposed Transportation Improvements. Thus, they provide the policy context for this NHIA.

## 2.1 Federal Legislative Requirements

#### 2.1.1 Federal Fisheries Act

The Federal *Fisheries Act* was established in 1985 with amendments that came into effect on November 25, 2013. This Act provides protection to fish and fish habitat such that:

"No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational, or Aboriginal fishery, or to fish that support such a fishery" (Section 35 (1)).

Fish habitat is defined by the Act as "spawning grounds, and any other areas, including nursery, rearing food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes".

The *Fisheries Act* requires that any development project avoid causing serious harm to fish unless authorized by Fisheries and Oceans Canada (DFO). This applies to any works being undertaken in or near waterbodies that support fish that are part of, or that support a commercial, recreational, or Aboriginal fishery. If mitigation measures cannot be applied, and residual effects will cause serious harm to fish then a request for review by DFO must be submitted. If DFO identifies that authorization (i.e., approval) for the Project is needed, offsetting measures may be required.

#### Applicability to the Project

Any waterbody or watercourse that contains fish or contributes to a commercial, recreational or Aboriginal fishery as described in the *Fisheries Act*, is provided protection under the Act. The watercourse within the Project Study Area – Bear Creek, is known to contain fish, as such the Project must comply with the *Fisheries Act* and consultation with DFO may be required as the project progresses into detailed design. A self-assessment according to DFO will be required during detailed design to determine whether the proposed Transportation Improvements will involve serious harm to fish. If it determined that serious harm will occur, or uncertainty exists, a Request for Review will need to be submitted to DFO in addition to further consultation. After which, DFO will determine whether authorization (i.e., approval) pursuant to the *Fisheries Act* is required.

#### 2.1.2 Migratory Birds Convention Act

The *Migratory Birds Convention Act* (MBCA) was passed in 1917 and updated in 1994. The MBCA protects migratory bird populations by regulating potentially harmful anthropogenic activities. The MBCA (1994), and the *Migratory Bird Regulations* (MBR) are federal legislative



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requirements that are binding on members of the public and all levels of government, including federal and provincial governments.

Bird species¹ protected are listed under Article I of the MBCA, and are native or naturally occurring in Canada, and are species that are known to occur regularly in Canada. The legislation protects certain species, controls the harvest of others, and prohibits commercial sale of all species. As described in Section 6 of the associated MBR:

"Subject to subsection 5(9), no person shall:

- Disturb, destroy or take a nest, egg, nest shelter, Eider Duck shelter or duck box of a migratory bird, or
- Have in his possession a live migratory bird, or a carcass, skin, nest or egg of a migratory bird except under authority of a permit therefor."

The "incidental take" of migratory birds and the disturbance, destruction or taking of the nest of a migratory bird is prohibited. "Incidental take" is the killing or harming of migratory birds due to actions, such as economic development, which are not primarily focused on taking migratory birds. No permit can be issued for the incidental take of migratory birds or their nest or eggs as a result of economic activities. These prohibitions apply throughout the year.

Environment and Climate Change Canada (ECCC) and the Canadian Wildlife Service have compiled nesting calendars that show the variation in nesting intensity, by habitat type and nesting zone, within broad geographical areas distributed across Canada. While this does not mean nesting birds will not nest outside of these periods, the calendars can be used to greatly reduce the risk of encountering a nest. It is noted that ECCC advises that avoidance is the best approach.

#### Applicability to the Project

The MBCA applies to all of Canada. As such, the MBCA is applicable to the entire Project Study Area. Therefore, if a species or their nest, that are listed under the MBCA are encountered during Project works, they must comply with the Act. As vegetation removal is part of future Project works, it is recommended that it occur outside of the core breeding time-period identified by the MBCA which takes place from April 1 to August 31 in any given year. It is important to note, despite the core breeding time, those species and their nests are still protected by the MBCA 365 days a year.

<sup>&</sup>lt;sup>1</sup> Bird species not regulated under the Act include: Rock Dove, American Crow, Brown-headed Cowbird, Common Grackle, House Sparrow, Red-winged Blackbird, and European Starling. In addition, raptors are not regulated under the MBCA, 1994. However, they are protected under provincial legislation which restricts and regulates the taking or possession of eggs and nests. Furthermore, if the species identified is protected under Ontario's *Endangered Species Act*, 2007 or the federal *Species at Risk Act*, additional restrictions may apply.



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## 2.2 Provincial Legislative Requirements

## 2.2.1 Provincial Policy Statement

The Provincial Policy Statement (PPS) is the complimentary policy document to the *Planning Act*. The PPS was issued under section 3 of the *Planning Act* and came into effect April 30, 2014, replacing the PPS issued March 1, 2005. The PPS provides direction on matters of provincial interest related to land use planning and development, and promotes the provincial "policy-led" planning system that recognizes and addresses the complex interrelationship among environmental, economic and social factors in land use planning (MMAH, 2014).

The PPS provides for enhanced protection of the environment by identifying the significance of the natural heritage system and water resources, including natural hazards and water quality, air quality and energy use. It also supports the provincial goal to enhance the quality of life for all Ontarians.

The policies of the PPS may be complemented by provincial plans or by locally-generated policies regarding matters of municipal interest. Provincial plans and municipal official plans provide a framework for comprehensive, integrated, place-based and long-term planning that supports and integrates the principles of strong communities, a clean and healthy environment and economic growth for the long term.

The PPS (2014) identifies the natural heritage features and areas which are to be afforded protection within the Province of Ontario. The proposed road work must recognize these features/areas, and the City must carry out the necessary investigations so as to adhere to these regulatory requirements. For the purpose of this NHIA, it is that the term 'development' is defined within the PPS (2014) as the creation of a new lot, a change in land use, or the construction of buildings and structures requiring approval under the *Planning Act*, but does not include "activities that create or maintain infrastructure authorized under an EA process" (MMAH, 2014).

The PPS (2014) defines seven (7) natural heritage features and provides planning policies for each under Natural Heritage Policy 2.1. The Natural Heritage Reference Manual (MNRF, 2010) is a technical document used to help assess the natural heritage features listed below, in addition to the Province's Significant Wildlife Habitat Ecoregion Criteria Schedules for each respective Ecoregion (i.e., 5E, 6E and 7E) (MNRF, 2015). Those natural heritage features identified within the PPS (2014) include:

- Significant wetlands;
- Significant habitat of endangered and threatened species;
- Fish habitat;
- Significant woodlands;
- Significant valleylands;
- Significant areas of natural and scientific interest (ANSIs); and



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Significant wildlife habitat.

Each of these features is afforded varying levels of protection subject to guidelines, and in some cases, regulations. Significant woodlands and valleylands and even wetlands can be designated by municipalities and/or the MNRF (e.g., under the Ontario Wetland Evaluation System). Fish habitat information can be identified by Conservation Authorities, the MNRF and DFO, however the management of fish habitat is governed by DFO. Significant wildlife habitat, habitat of endangered and threatened species, and ANSIs are designated by MNRF.

#### Applicability to the Project

Municipalities use the PPS to develop their Official Plans. Based on a review of available information within the PPS, the Project Study Area is situated within Ecoregion 6E, the Lake Simcoe-Rideau Region (termed Site Region 6E as per the ELC for Southern Ontario: First Approximation and Its Application Manual (Lee et al., 1998)). Based on a review of available mapping from the MNRF Make a Natural Heritage Mapping Tool (2017) and NVCA, there are no Provincially Significant Wetlands (PSWs), unevaluated wetlands, woodlands, significant valleylands or ANSIs within the Project Study Area. Fish habitat is present within Bear Creek as confirmed by NVCA.

## 2.2.2 Ontario Endangered Species Act

The Ontario *Endangered Species Act, 2007* (ESA) was passed into law in 2007 and came into effect on June 30, 2008. Under the ESA, there are more than 200 species in Ontario that are identified as extirpated, endangered, threatened, or of special concern. Section 9 of the ESA generally prohibits the killing or harming of a threatened or endangered species, as well as the destruction of its habitat. Section 10 of the ESA prohibits the damage or destruction of the habitat of all endangered and threatened species. Habitat is broadly characterized within the ESA as the area prescribed by a regulation as the habitat of the species or an area on which the species depends directly or indirectly, to carry on its life processes, including reproduction, rearing of young, hibernation, migration or feeding.

#### Applicability to the Project

The MNRF Midhurst District Office provided a list of SAR that are known to inhabit the Project Study Area. Based upon consultation and review of habitat criteria, a series of targeted surveys were required for the Project Study Area. A record of correspondence with the MNRF, and the SAR listing is provided in Appendix A of this Report. If threatened and/or endangered species are encountered during the 2017 field investigations, the Project may be subject to a permit under the *Endangered Species Act*, 2007 (ESA) and/or its regulatory exemptions under the Act.

## 2.3 Municipal Policies

The Study Limits for this Project are located within the City, which is a single-tier municipality that is administratively separate from the County of Simcoe. As such, the City is responsible



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for regulating land use and establishing policies for physical, economic and social development within its respective jurisdiction. However, this responsibility is conducted within a provincial framework.

## 2.3.1 City of Barrie

The City adopted a new Official Plan (2010) on June 22, 2009, bringing it into conformity with the Growth Plan for the Greater Golden Horseshoe (Ministry of Public Infrastructure Renewal (MPIR), 2006), and addressing new challenges in the City's future growth. The City's Official Plan was approved by the MMAH on April 23, 2010. Several amendments were approved since 2010, and the Plan was consolidated in February 2014, and again in January 2017.

The policies that pertain to natural heritage features are contained mainly in Section 3.5 (Natural Heritage, Natural Hazards and Resources) and Section 4.7 of the Official Plan (Environmental Protection Areas (EPA)). As noted in Section 4.7, Environmental Protection Areas are defined as:

- Aquifer recharges and headwaters;
- Wetlands:
- · Rare species including unique plants;
- Important ecological functions;
- Significant habitat of threatened and endangered species;
- ANSIs including both life science and earth science;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Surface water features, valley and stream corridors; and
- Fish habitat.

It is noted that no buildings or structures are permitted in the EPAs other than those necessary for flood and erosion control or for conservation purposes as approved by the City with approval from applicable agencies. Additional policies and permissions as they relate to certain features (e.g., wetlands, habitat of threatened and endangered species) are identified within their respective sections of the City's Official Plan (2017).

#### Applicability to the Project

Within Schedule D (Roads Plan) of the Official Plan, Essa Road is classified as an "Arterial" roadway within the Study Limits. Review of Schedule B (Planning Areas) of the City's Official Plan (2017) indicates that Essa Road serves as the boundary between the Highway 400 West Industrial Planning Area and the Holly Residential Planning Area.



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According to Schedules F (Conservation Authority Regulation Limits and Watercourses) and H (Natural Heritage Resources) of the City's Official Plan (2017) the following has been identified for the Project Study Area:

- Watercourses: Bear Creek; 30 metre setback limit applied to watercourses and tributaries. Note, correspondence with the NVCA on March 14, 2017 revealed that the section of Bear Creek that transverses through the Project Study Area was previously re-aligned when the Shoppers Drug Mart was constructed (refer to Appendix A).
- Floodplain areas associated with Bear Creek are regulated by the NVCA; and
- A Level 1 resource area is mapped immediately to the west of the Project Study Area
  (as per Schedule H of the City's Official Plan 2017) along the western section of
  Bear Creek. As per Section 3.5.2.4 of the City's Official Plan (2017) Level 1
  resources<sup>2</sup> represent critical components of the City's Natural Heritage Resource
  network, and include the following as per Schedule H of the Official Plan (2017):
  - o PSWs:
  - Non-provincially Significant wetlands greater than 0.5 hectares;
  - Significant Woodlands greater than 10 hectares;
  - Significant habitat of endangered and threatened species;
  - Watercourses with minimum vegetation protection zones and connectivity linkages; and
  - o Lands identified as EPAs.

The features noted above are shown in Figure 2.

The City's Urban Forestry Department maps regulated woodlands which are subject to the City's Tree Preservation By-law 2014-1150. As defined in the Tree Preservation By-law 2014-1150, private property tree removals, when the tree is part of a woodlot (i.e., woodlands) are regulated to provide for protection in terms of injury or destruction of trees where the woodlot (i.e., woodland) is of ½ acre in size or larger. Based on review of the City's – Discover Barrie Mapping Tool there are no regulated woodlands within the Project Study Area.

Trees within or adjacent to Municipal Road ROW's are provided protection either through the Public Tree By-law (2014-116) or the ROW Activity By-law (2005-256). According to the By-law, trees requiring removal on public property as part of a City project, are exempt from the permitting process.

<sup>&</sup>lt;sup>2</sup> As noted within 3.5.2.4 of the City's Official Plan (2017), no development shall be permitted within these areas. An EIS (Environmental Impact Study) is required for any development or site alteration within 120 metres of an area identified as Level 1 on Schedule H.

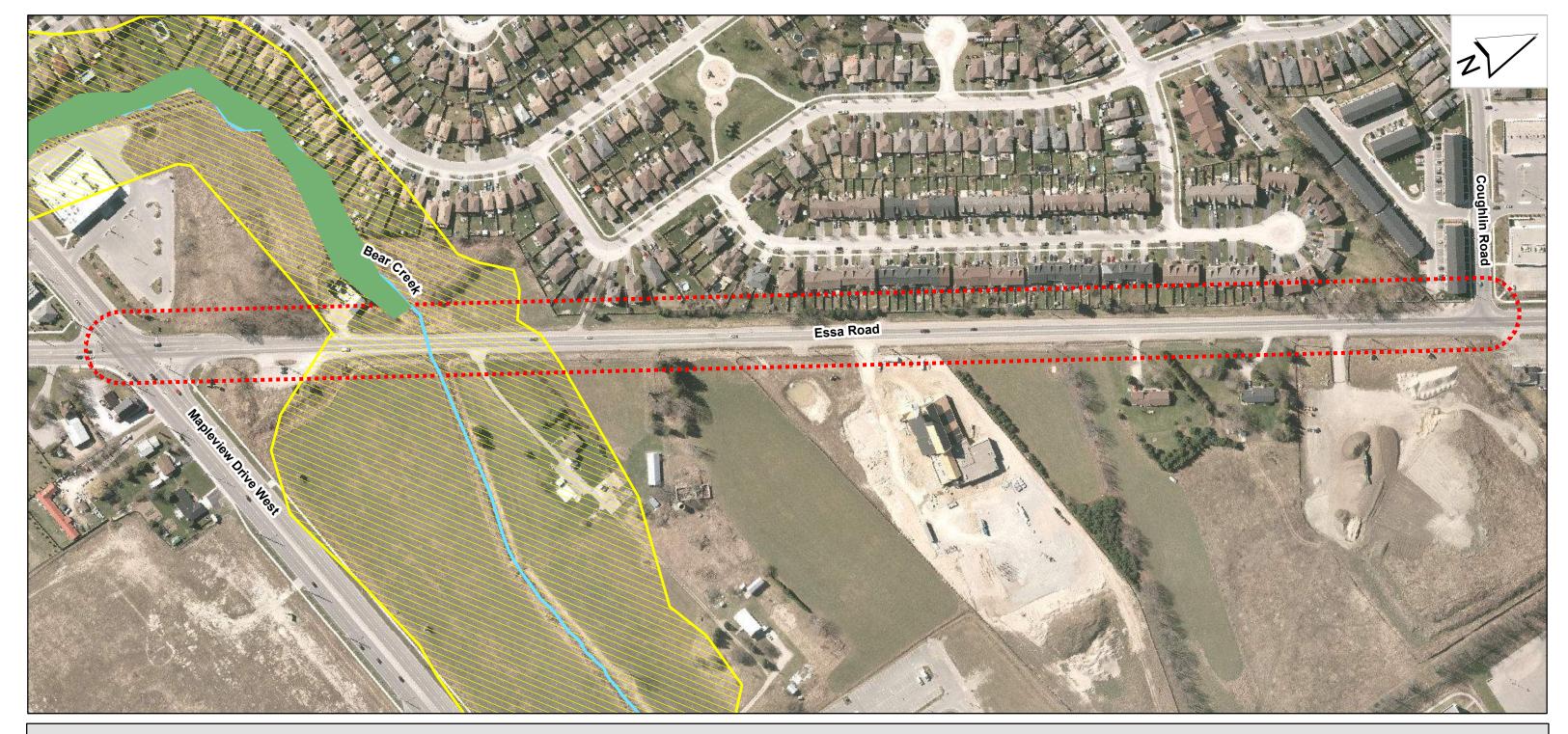


Figure 2 Essa Road Transportation Improvements Class Environmental Assessment: Natural Areas

----- Essa Road Study Area



NVCA Regulation Limit

Watercourse

\*The information displayed is derived from sources with varying accuracies and all boundaries should therefore be considered approximate

Coordinate System: NAD 1983 UTM Zone 17N Aerial Date: 2012, 2016





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## 2.4 Nottawasaga Valley Conservation Authority

The NVCA regulates watercourses, wetlands, and hazard lands (valleylands, shorelines, floodplains) through application of Ontario Regulation 172/06, under Section 28 of the *Conservation Authorities Act*. Ontario Regulation 172/06 applies to hazardous lands that are defined in Section 28(25) of the *Conservation Authorities Act* as lands that could be unsafe for development because of naturally occurring processes associated with flooding, erosion, dynamic beaches or unstable soil or bedrock. The regulation limit for Ontario Regulation 172/06 is the applicable hazard limits for a property.

The main purpose of Ontario Regulation 172/06 is to ensure public health and safety, and protection of life and property in relation to natural hazards. This regulation establishes guidelines for development, interference with wetlands and alterations to shorelines and watercourses.

#### Applicability to the Project

Based on review of the NVCA's Interactive Mapping tool (accessed August 1, 2017), an approximately 160 metre section associated with the Bear Creek water crossing is mapped within the Authority's regulated area. As such, a permit under Ontario Regulation 172/06 will be required prior to commencement of Project works.

## 3. Methodology

The methodology used for this NHIA was guided by information provided by the NVCA, the MNRF, as well as by regulatory requirements described in Section 2 above.

#### 3.1 Literature Review

The following is a list of information and documentation reviewed as part of this NHIA:

- Middle Nottawasaga River 2013 Subwatershed Health Check (NVCA);
- Information supplied by the NVCA regarding fisheries and regulation mapping, March 14, 2017 – email correspondence;
- City of Barrie Official Plan (2017);
- Simcoe County Official Plan (2016);
- Simcoe County Interactive Mapping Tool (2017);
- City of Barrie MMATMP (2014);
- City of Barrie Urban Forestry Discover Barrie Mapping Tool (2017);
- MNRF (Midhurst District Office) endangered species (ESA) screening information request, April 17, 2017 – email correspondence;
- Provincial Policy Statement (2014);



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- Endangered Species Act, 2007 (as amended);
- Fisheries Act, 1985 (as amended);
- Migratory Birds Convention Act, 1994 (as amended);
- Conservation Ontario DFO Species at Risk Mapping (2017);
- MNRF Fish On-Line Tool (2017);
- Aerial photos (2016);
- Topographic maps (2017);
- Soil Map of Simcoe County (1962);
- Make a Map: Natural Heritage Areas and Natural Heritage Information Centre (NHIC)
  Data A geographic query of the MNRF natural heritage areas and NHIC data was
  completed for the 10 kilometre X 10 kilometre square areas (17PK00 and 17PK01)
  within and immediately surrounding the Project Study Area. The web application
  provides information on Provincial Parks, conservation reserves, ANSIs, wetlands,
  woodlands, designated natural heritage systems (e.g., Niagara Escarpment, Oak
  Ridges Moraine, and Greenbelt Plans) and NHIC data (i.e., rare species and SAR,
  plant communities, wildlife concentration areas, and natural areas);
- Ontario Breeding Bird Atlas (OBBA, 2001) a review of breeding birds documented within the 10 kilometre OBBA squares that overlap the Project Study Area (17PK00 and 17PK01) was completed to determine the presence of bird species (including SAR) that have the potential to occur;
- Atlas of Ontario Mammals (1994) a review of range maps to determine which mammals have the potential to occur within the Project Study Area, specifically SAR;
- Ontario Reptile and Amphibian Atlas (2017) a review of historic and recent sightings
  of reptiles and amphibians found within the 10 kilometre squares that overlap the
  Project Study Area (17PK00 and 17PK01); and
- Land Information Ontario (LIO) database.

## 3.2 Agency Consultation

An information request was sent to the NVCA on March 3, 2017. A response and preliminary data was received from the NVCA on March 14, 2017. In addition, follow-up data was received from the NVCA on April 3, 2017.

An ESA screening information request was sent to the MNRF Midhurst District Office on March 3, 2017 to request information on SAR and additional natural heritage features. Information was provided by the MNRF Midhurst District on April 13, 2017.

All agency correspondence is documented in Appendix A of this Report.



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## 3.3 Field Investigations

A series of field investigations were completed in the Spring and Summer 2017 to collect baseline data. All field investigations were carried out by qualified professionals specializing in terrestrial and aquatic biology, and during the appropriate season and respective timing windows in accordance with applicable protocols as discussed within Section 3 of this Report. A summary of the investigations carried out is provided in Table 3-1. The specific studies completed included: amphibian breeding, breeding birds, targeted SAR surveys and mapping of ELC vegetation communities. Incidental wildlife observations as well as any potential wildlife habitat such as snake hibernacula, or animal burrows were documented (if observed) during the field investigations.

Table 3-1: Summary of field investigations 2017

Date (2017)	Field Investigation Type	Time	Weather Conditions
May 10	Baseline - site reconnaissance including fish and fish habitat documentation	7:00 am – 2:00 pm	14°C; Sunny; low winds
May 17	Amphibian Survey	9:00 pm – 11:30 pm	28°C; Clear skies; low winds
June 8	Breeding Birds & Vegetation	6:00 am – 2:30 pm	25°C; Sunny; low winds
June 14	Amphibian Survey	9:30 pm – 12:00 am	23°C; Clear skies; low winds
June 28	Breeding Birds & Vegetation	6:30 am – 3:00 pm	25°C; Sunny; low winds
July 6	Breeding Birds & Vegetation	7:00 am – 2:00 pm	30°C; Sunny; low winds

#### 3.3.1 Terrestrial and Vegetative Species-at-Risk

Terrestrial investigations were completed on June 8, 28, and July 6, 2017. Vegetation communities were identified and delineated with the use of aerial photographs and during the field investigation by applying the ELC for Southern Ontario: First Approximation and Its Application (Lee et al., 1998). This information was collectively used to classify and describe vegetation communities within the Project Study Area. Observations on natural and anthropogenic disturbances were also made including documenting observations of vegetative SAR species.

#### 3.3.2 Fisheries and Fish Habitat

Field investigations to document fish habitat were carried out on May 10, 2017. Bear Creek is the only noted natural watercourse within the Project Study Area and was documented in its



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entirety through field notes and photographic records (i.e., no fish trapping and/or collection was performed). Stream form as well as in-water habitat and general fish habitat were documented. Any visual observations (incidental sightings) of fish within the Project Study Area was also recorded.

A literature search and agency consultation was performed to identify any current or historical fish community information within the Project Study Area and/or the watershed.

## 3.3.3 Amphibians and Reptiles

Surveys were completed in order to identify amphibians present within the Project Study Area according to the MMP Protocol for surveying amphibians (2008). Two (2) separate surveys were completed in the evening on May 17 and June 14, 2017 when night-time air temperature was greater than 10°C during the first survey and 17°C for the second survey. It should be noted that due to Project timing<sup>3</sup>, it was not possible to conduct the survey during the April time-period (April 15 to April 30) as per the above Protocol, and it was thus missed.

In accordance with the MMP Protocol, amphibians were surveyed from pre - determined survey locations near the stream and riparian area(s) within the Project Study Area (refer to Figure 3 for survey locations). An unlimited distance, 180° arc sampling area was surveyed two (2) times for three (3) minutes at a total of three (3) survey locations.

At each survey location, one observer recorded the call level heard from all frog and/or toad species to assess the abundance and intensity of the calls. Call levels for each species heard were categorized into 1 of 5 levels, as follows:

- Level 1 No calls heard;
- Level 2 Frog(s) or toad(s) seen or heard
- Level 3 Frog(s) or toad(s) can be counted, calls do not overlap;
- Level 4 Frog(s) or toads can be counted, while others are overlapping; or
- Level 5 Full chorus, continuous and overlapping, cannot distinguish frogs or toads.

Reptile observations (e.g., snakes and turtles) were collected via incidental sightings of either species or observed habitat.

## 3.3.4 Breeding Birds

Surveys were completed in order to identify birds present along the road corridor based on the OBBA Protocol (2001). Surveys were conducted during the core breeding season for birds on June 8, 28, and July 6, 2017 at a minimum 30 minutes after sunrise. During these

<sup>&</sup>lt;sup>3</sup> Based on a preliminary review of background material for the Project Study Area, habitat for amphibians was deemed absent. Following the initial site reconnaissance completed on May 10, 2017, it was determined suitable habitat existed and therefore surveys should be completed.



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surveys, additional efforts to denote presence or absence of SAR birds was also completed. Figure 4 illustrates the bird survey locations.

#### 3.3.5 Incidental Wildlife Observations

Similar to reptiles, incidental wildlife observations were noted based on observations made during the field investigations.

## 3.4 Methodology Limitations

As noted, all field investigations were completed from within the existing Essa Road ROW. Natural features adjacent to the existing ROW were observed from the nearest vantage point and have been supplemented where required using background desktop information as noted within the body of this Report.

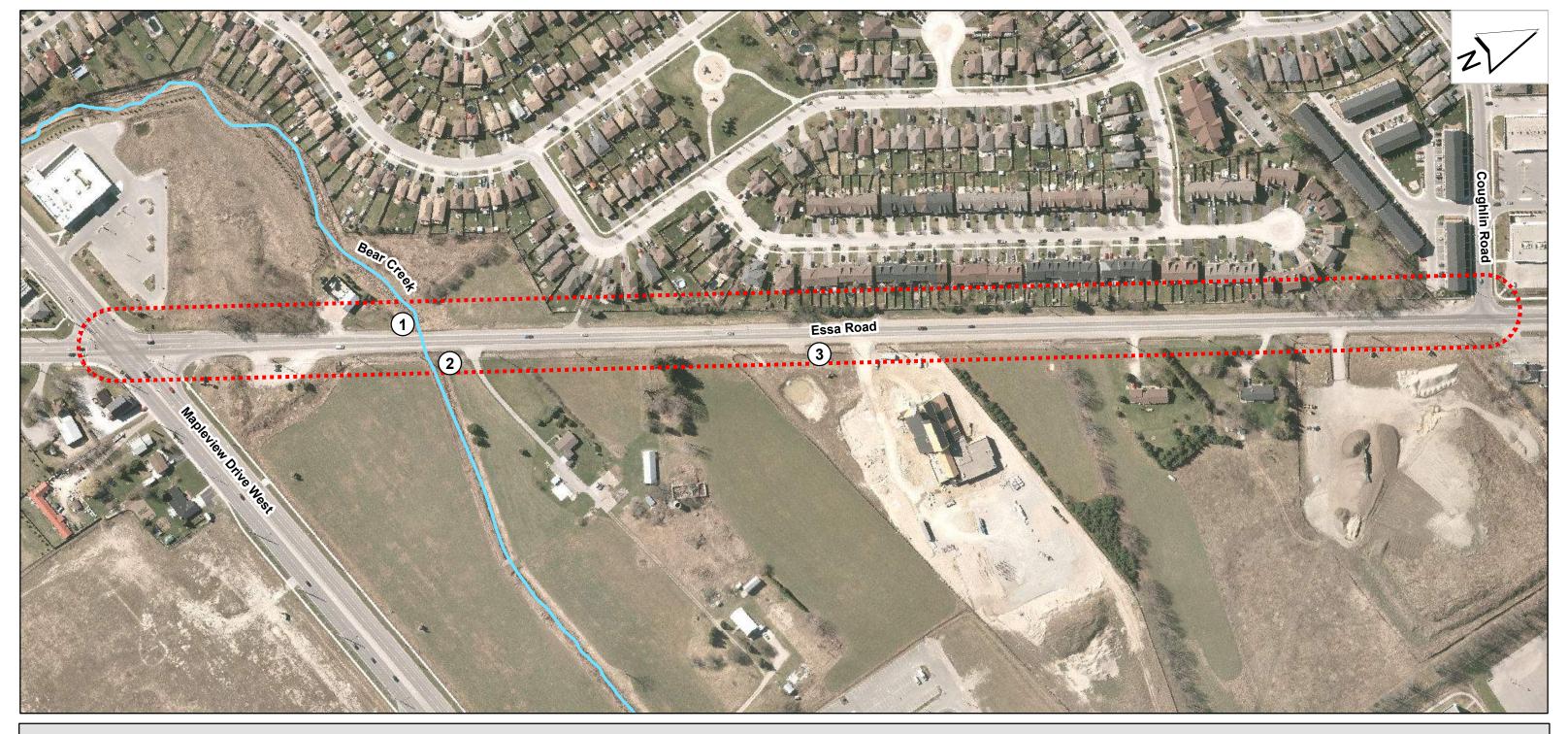


Figure 3 Essa Road Transportation Improvements Class Environmental Assessment: Amphibian Survey Locations

Essa Road Study Area

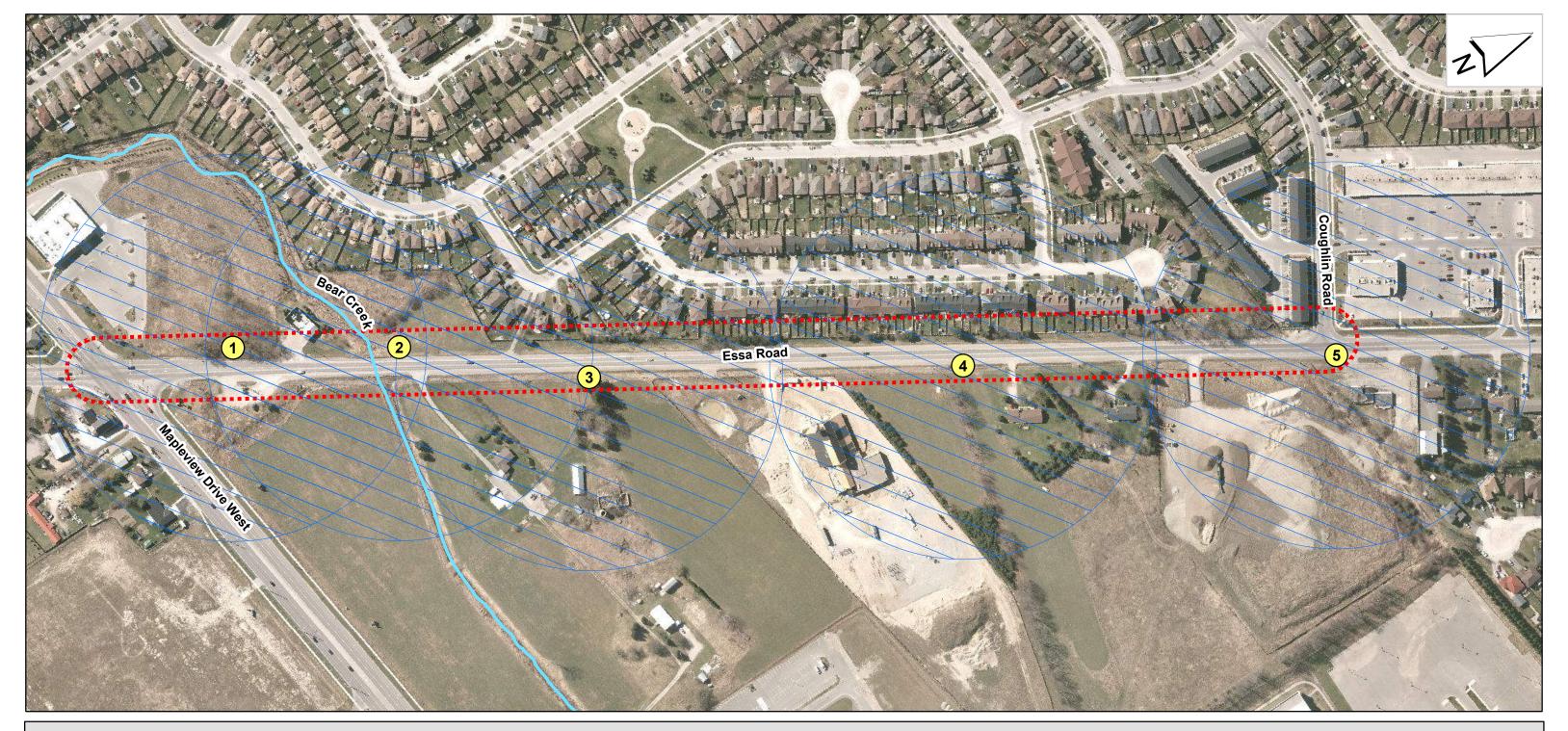
Amphibian Survey Locations

Watercourse

\*The information displayed is derived from sources with varying accuracies and all boundaries should therefore be considered approximate

Coordinate System: NAD 1983 UTM Zone 17N Aerial Date: 2012, 2016





## Figure 4 Essa Road Transportation Improvements Class Environmental Assessment: Breeding Bird Survey Locations

Essa Road Study Area

Breeding Bird Survey Locations

Breeding Bird Survey Locations 150m Buffer

Watercourse

\*The information displayed is derived from sources with varying accuracies and all boundaries should therefore be considered approximate

Coordinate System: NAD 1983 UTM Zone 17N Aerial Date: 2012, 2016





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## 4. Existing Conditions

## 4.1 Topography and Soils

The topography associated with the Project Study Area is mainly flat along the west side of Essa Road. Along the east side, there are low lying areas along the ROW which serve as ditches.

According to the Canadian Land Inventory (CLI)<sup>4</sup> Soil Capability for Agriculture Interactive Mapping Tool (2017) available on the Simcoe County website, there are three (3) soil classes mapped within the Project Study Area which include: Class 1, 2 or 3 soils. These soils are mapped on the east side of the roadway, and correlate with the existing farm lands located within the northeast quadrant of Essa Road and Mapleview Drive West. The west side of the corridor is comprised primarily of residential land uses, and the lands are mapped as "Built Up Area" which is consistent with a rapidly growing urban centre such as the City.

The Soil Map of Simcoe County (Hoffman et al., 1962) identifies the Project Study Area as consisting predominantly of sandy and gravelly sandy loam (Bs and Stsl) with good soil drainage. Soils are also described as being stone-free, a pale brown calcareous outwash gravel and outwash sand underlain by grey calcareous loam or sandy loam till depths of three (3) feet or less (Stsl and Ds) (Hoffman et al., 1962). They are of the Brown Forest Group and Grey-Brown Podzolic Great Soil Group (Hoffman et al., 1962). Acidity in these areas can be neutral, alkaline and slightly acidic (Hoffman et al., 1962).

#### 4.2 Bedrock, Physiography and Geology

Bedrock geology within the Project Study Area can be classified as a mixture of limestone, dolostone, shale, arkose, and sandstone formation as a part of the Lower Ordovician period (Ontario Geological Survey, 2011).

The Project Study Area is also part of the Peterborough Drumlin Field Physiographic Region and the Till Plains (Drumlinized) Physiographic Landform (Ontario Geological Survey, 2010). The Surficial Geology consists of ice-contact stratified deposits with sand and gravel, minor silt, clay and till. Till with stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain is also documented (Chapman and Putnam, 2007).

#### 4.3 Terrestrial

The organizational framework contained within the ELC protocol (Lee et al., 1998) describes communities according to six (6) nested levels: Site Region, System, Community Class, Community Series, Ecosite, and Vegetation Type. Note the ELC protocol is dated and refers to the Ecoregions as defined by the Significant Wildlife Habitat Ecoregion Criteria Schedules

<sup>&</sup>lt;sup>4</sup> The CLI categorizes soils into seven classes which reflect the soil's capability to produce field and forage crops (Department of the Environment, 1972). Lands classified as Class 1 are considered to have the highest capability or potential, while those classified as Class 7 are considered to have the lowest potential. The classification system reflects limitations such as slope, topography, soil depth, climate, drainage and stoniness, among others.



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and PPS as Site Regions. For ease of understanding, the Site Region reference in the ELC manual will be termed Ecoregion throughout the Report. These nested levels vary in spatial scale, with the Ecoregion classifying communities at the largest spatial scale, and Vegetation Type describing communities at the finest spatial scale (Lee et al., 1998).

There are two (2) Ecoregions in Southern Ontario: 6E and 7E (Lee et al., 1998). The Project Study Area is situated within Ecoregion 6E, the Lake Simcoe-Rideau Ecoregion, which occupies the northern portion of Southern Ontario. The updated ELC codes 2008 were also applied for communities that were not categorized by the 1998 field manual.

An ELC map was prepared for the Project Study Area (refer to Figures 5a and 5b and Appendix B for selected Project Study Area photographs). Due to lack of access to areas/lands outside the Essa Road ROW, classification of vegetation communities within the Project Study Area were made from the road ROW only.

## 4.3.1 Vegetation Communities

Characterization of the vegetation observed was undertaken by compiling a generalized botanical inventory then using that information to classify and characterize the vegetation communities according to the ELC protocol (Lee et al., 1998). It is important to note that vegetation communities often have variations within their boundaries. These variations have not been mapped except where necessary to depict a significant vegetation community or feature.

Plant species were identified based on the investigations completed in the Spring and early Summer 2017. A list of dominant vegetative species is provided below in Table 4-1.

There were three (3) different vegetation community classes identified within the Project Study Area which include cultural, forest, and marsh. Residential landscapes and commercial and institutional landscapes were also observed.

The dominant vegetation communities were cultural which is to be expected along the road corridor due to the high level of disturbance in this area. As shown in Figure 5a and 5b, the vegetation communities present with the Project Study Area include:

- CUM1-1 Dry- Moist Old Field Meadow;
- MAMM2-1 Cattail Graminoid Mineral Meadow Marsh Type;
- FODM4-12 Dry-Fresh Black Locust Deciduous Forest Type;
- CUW Cultural Woodland;
- CVC Commercial and Institutional;
- CVR-2 High Density Residential; and
- CVR-4 Rural Property.



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Table 4-1: Summary of dominant vegetative species – 2017 field investigation observations

Scientific Name	Common Name	Global G-Rank and Ontario S-	Venetation Commit		Communities	
		Rank	CUM1-1	MAMM2-1	FODM4-12	CUW
		Trees			<u> </u>	
Pinus nigra	Austrian Pine	GNR/SNA	Х			Х
Populus balsamifera	Balsam Poplar	G5/S5		Х		
Robinia pseudococia	Black Locust	G5/SNA			Х	
Picea pungens	Blue Spruce	G5/SNA	Х			Х
Thuja occidentalis	Eastern White Cedar	G5/S5	Х			
Acer negundo	Manitoba Maple	G5/S5	Х	Х	Х	Х
Acer platanoides	Norway Maple	GNR/SNA	Χ		Х	Х
Piecea abies	Norway Spruce	G5/SNA	Χ			Х
Ulmus rubra	Slippery Elm	G5/S5			Х	
Fraxinus americana	White Ash	G5/S4?	Х			Х
Populus alba	White Poplar	G5/SNA			Х	
Picea glauca	White Spruce	G5/S5	Χ			Х
Salix alba	White Willow	G5/SNA	Χ			
	,	Shrubs			,	
Rhamnus cathartica	Common Buckthorn	GNR/SNA	Χ		Х	Х
Malnus sp.	Crab Apple	G5/S4			Х	
Cornus racemosa	Grey Dogwood	G5/S5	Х		Х	
Lonicera canadensis	Fly Honeysuckle	G5/S5			Х	
Lonicera maackii	Amur Honeysuckle	GNR/SNA				
Cornus stolonifera	Red-osier Dogwood	G5/S5		Х		



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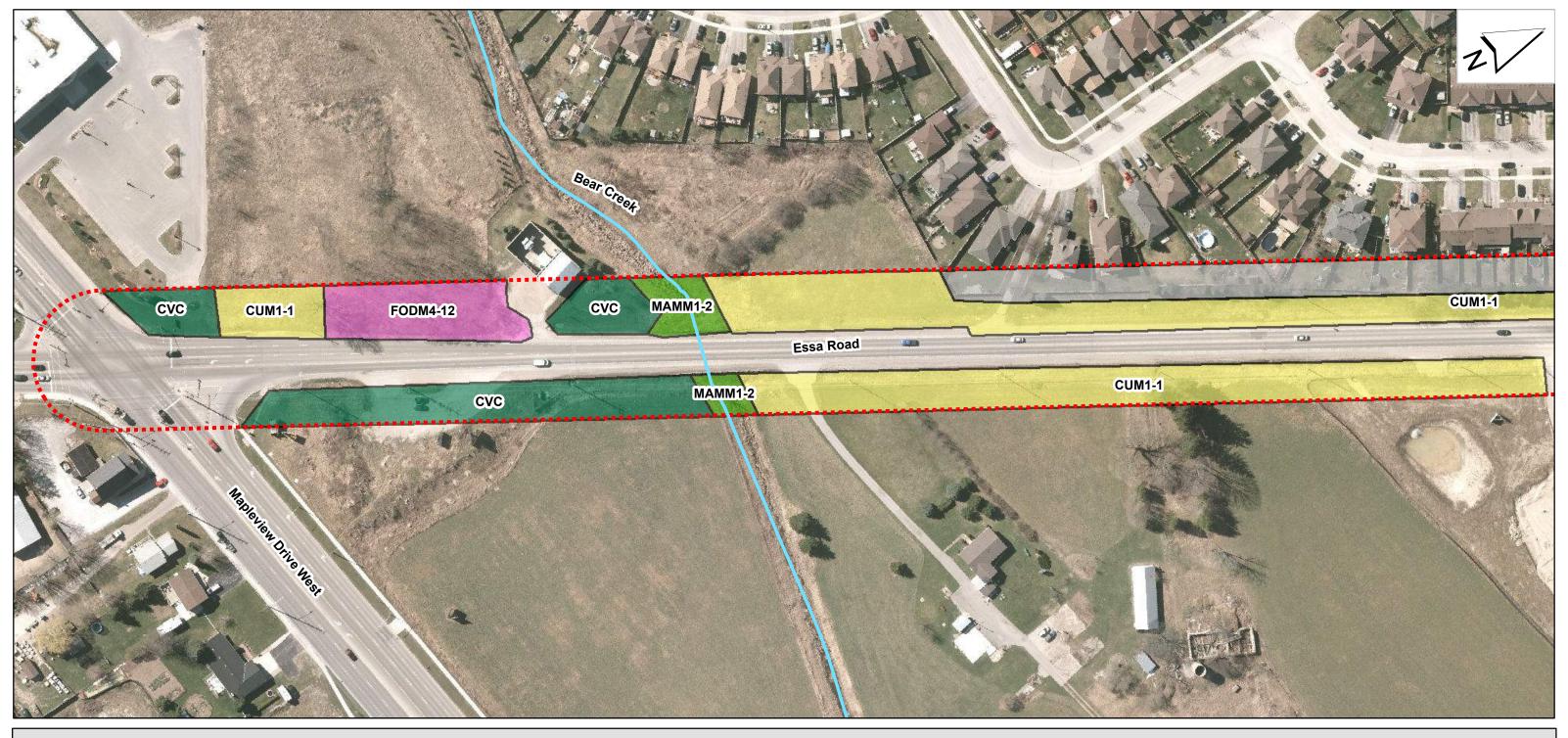
Scientific Name	Common Name	Global G-Rank and Ontario S-	Vegetation Communities			
		Rank	CUM1-1	MAMM2-1	FODM4-12	CUW
Rhus typhina	Staghorn Sumac	G5/S5			Х	Х
Rubus idaeus spp. Strigosus	Wild-Red Raspberry	G5T5/S5			X	
	He	erbaceous Plants				
Lotus corniculata	Bird's-foot Trefoil	GNR/SNA	Х			
Silene vulgaris	Bladder Campion	GNR/SNA	Х			
Typha latifolia	Broad-leaved Cattail	G5/S5		Х		
Linaria vulgaris	Butter-and-eggs	GNR/SNA	Х			
Calamagrosstis canadadensis var. canadensis	Canada Bluejoint	G5T5/S5	Х	Х		
Solidago Canadensis	Canada Goldenrod	G5/S5	Х	Х	Х	Χ
Sinapis arvensis	Charlock	GNR/SNA	Х		X	
Cichorium intybus	Chicory	GNR/SNA	Х			
Arctium minus	Common Burdock	GNR/SNA	Х		Х	
Taraxacum officinale	Common Dandelion	G5/SNA	Х		X	
Asclepias syriaca	Common Milkweed	G5/S5	Х			
Ambrosia artemisiifolia	Common Ragweed	G5/S5	Х		Х	
Phramites australis	Common Reed	G5/S4?		Х		
Dipsacus fullonum	Common Teasel	GNR/SNA	Х			
Anemone virginiana	Common Thimbleweed	G5/S5	Х			
Vicia cracca	Cow Vetch	GNR/SNA	Х			
Agrostis stolonifera	Creeping Bentgrass	G5/S5	Х			
Cirsium arvense	Creeping Thistle	G5/SNA	Х		Х	

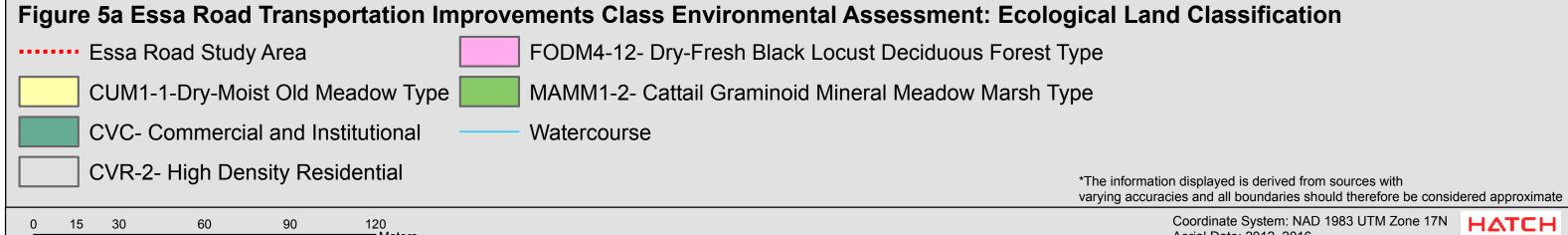


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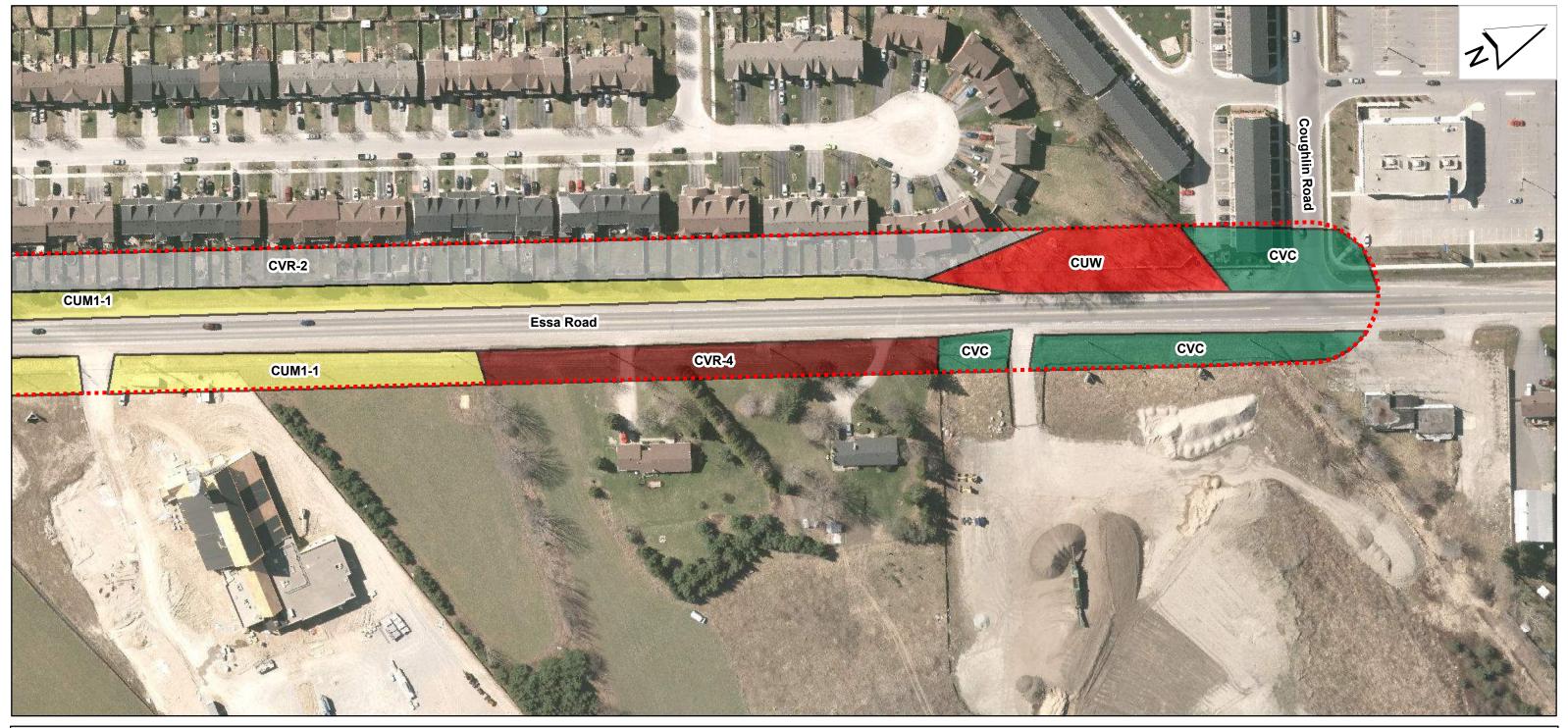
Scientific Name	Common Name	Global G-Rank and Ontario S-	Vegetation Communities			
		Rank	CUM1-1 MAMM2-1 FC		FODM4-12	CUW
Rumex crispus	Curly Dock	GNR/SNA	Х			
Bromus tectorum	Downy Chess	GNR/SNA	Х	Х	Х	Х
Poa palustris	Fowl Bluegrass	G5/S5	Х	Х	Х	
Alliaria petiolata	Garlic Mustard	GNR/SNA	Х		Х	
Aster ericoides	Heath Aster	G5/S5	Х		Х	
Aster novae-angliae	New-England Aster	G5/S5	Х		Х	
Leucanthemum vulgare	Ox-eye Daisey	GNR/SNA	Х			
Daucus carota	Queen Ann's Lace	GNR/SNA	Х		Х	
Trifolium pratense	Red Clover	GNR/SNA	Х			
Phalaris canariensis	Reed Canary Grass	GNR/S5	Х	Х		
Vitis riparia	Riverbank Grape	G5/S5	Х		Х	
Bromus inermis	Smooth Brome Grass	G5/SNA	Х	Х	Х	
Phleum pratense	Timothy	GNR/SNA	Х	Х		
Echium vilgare	Viper's Bugloss	GNR/SNA	Х			
Melilotus albus	White Sweet Clover	GNR/SNA	Х			
Vitis spp.	Wild Grape	G5/S5	Х	Х	X	

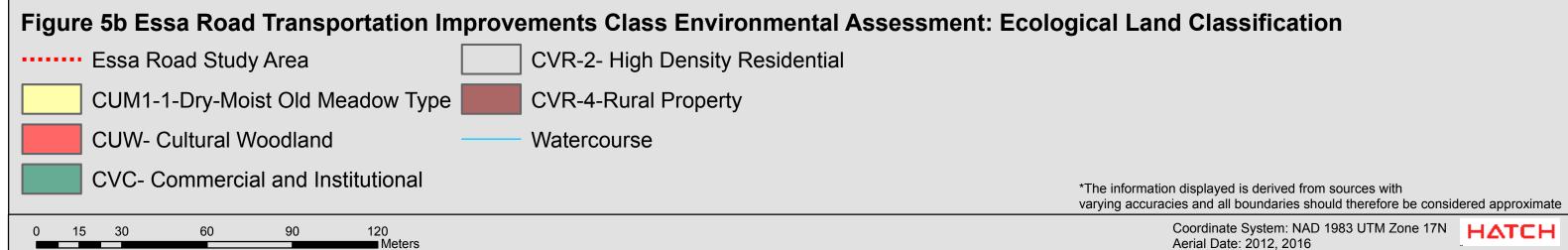
Global Rank: G5: Very common; demonstrably secure under present conditions; G#T#: The rank of intraspecific taxa (subspecies or varieties); GNR: Not ranked; S5: Very Common; demonstrably secure under present conditions; S4: Common; usually more than 100 occurrences, usually not susceptible to immediate threats; S#?: Inexact or uncertain rank; SNA: A conservation status rank is not applicable because the species is not a suitable target for conservation activities.





Aerial Date: 2012, 2016





Coordinate System: NAD 1983 UTM Zone 17N Aerial Date: 2012, 2016





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#### 4.4 Fisheries and Fish Habitat

The Project Study Area is mapped as being located within the Middle Nottawasaga River subwatershed. Essa Road transect Bear Creek approximately 200 metres north of Mapleview Drive West as shown on Figure 6.

The existing crossing is a box culvert with water extending the entire width (refer to Photograph 1 of Figure 6). Based on the 2017 field investigations, the existing box culvert is 1800 millimetres X 600 millimetres. Upstream of Essa Road, Bear Creek is a naturalized drainage channel, which was straightened and constructed with a uniform width (refer to Photograph 2 of Figure 6) dividing two (2) agricultural fields on the east side of Essa Road. No pronounced thalweg, riffles or pools are present within the Project Study Area. The entire channel possesses emergent vegetation dominated by Broad-leaved Cattails (*Typha latifolia*) with waters slowly flowing through. This branch of Bear Creek originates approximately 630 metres upstream at a stormwater management pond with an overflow structure creating a warmwater community. Downstream of Essa Road, Bear Creek was realigned in 2007 to accommodate the Shoppers Drug Mart according to feedback received from the NVCA (refer to Appendix A). Since the realignment, the entire channel has colonized with emergent species similar to the upstream conditions (refer to Photographs 3 and 4 of Figure 6). The NVCA also noted that though this portion of Bear Creek is considered a warmwater stream, it contributes to a coldwater fishery downstream and is managed accordingly.

During Hatch's 2017 field investigations, a single forage of fish was observed within the culvert, however as noted, no fish collection was completed, as NVCA identified the thermal regime associated with Bear Creek during consultation.

Although the NVCA did not have any fisheries records for this section of Bear Creek, the watercourse as noted above, is known to contribute to downstream coldwater habitat for species such as Brook Trout (*Salvelinus fontinalis*). Given the lack of pools within Bear Creek in close proximity to Essa Road, over wintering is thought to be a limiting factor for fish survival. Fish would be expected to inhabit the upstream stormwater management pond, with some downstream movement occurring over the control structure. This is likely where the fish observed during the 2017 investigations originated from. With fish expected to inhabit both the upstream and downstream reaches (as documented by the NVCA), the connecting waters of Bear Creek within the Project Study Area are considered fish habitat with coldwater timing restrictions as per the NVCA's coldwater management strategy.



Figure 6 Essa Road Transportation Improvements Class Environmental Assessment: Fisheries Map

Essa Road Study Area

Photograph No.

Watercourse

\*The information displayed is derived from sources with varying accuracies and all boundaries should therefore be considered approximate

Coordinate System: NAD 1983 UTM Zone 17N

Aerials 2012, 2016





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## 4.5 Amphibians and Reptiles

Over the course of Spring 2017, Hatch biologists performed targeted amphibian surveys in addition to searching for potential herpetofauna habitat (i.e., snake hibernacula).

A review of the Ontario Reptile and Amphibian Atlas identified 22 species that are known to occur within the 10 kilometre X 10 kilometre squares containing the Project Study Area. This included five (5) species that are listed under the ESA (2007). Four (4) of the five (5) are listed as special concern: Snapping Turtle (*Chelydria serpentina*), Northern Map Turtle (*Graptemys geographica*), Milksnake (*Lampropeltis triangulum*), and Common Five-lined Skink (Southern Shield Population) (*Plestiodon fasciatus*). The fifth species was identified as threatened: Blanding's Turtle (*Emydoisea blandingii*). The Blanding's Turtle observation was made in 2016 according to the atlas data in the 10 kilometre square 17PK01.

It is noted that habitat for the above species, with the exception of Milksnake was not identified within the Project Study Area. Additional information about SAR is provided in Section 4.8 of this Report.

## 4.5.1 Amphibian Breeding Survey Results

Amphibian breeding surveys were completed using the MMP Protocol (2008). However, it is noted that the first timing window for amphibian surveys (April 15 to April 30) was missed due to Project timing. Species were identified during the second (May 15 to May 30) and third (June 15 to June 30) timing windows, give or take a day or two. Surveys were completed on May 17 and June 14, 2017 beginning 30 minutes after sunset and completed before midnight. Three (3) minute survey counts were completed for both dates depicted in Figure 3. Table 4-2 below outlines the results for both surveys.

Date Weather		Survey Locations				
(2017)		1	2	3		
May 17	28°C; Clear skies; low winds	No calls - faint calls >150 m	No calls - faint calls >150 m	No calls		
June 14	23°C; Clear skies; low winds	No calls	No calls	No calls		

## 4.5.2 Expected Amphibian and Reptile Usage

Based on the survey results for amphibians, no life cycle dependant habitat is expected to occur within the Project Study Area, as no observations were observed during the two (2) surveys completed. Although the first survey window was missed, those species (e.g., spring peeper) would still be calling during the second survey based on previous experience with amphibian surveys in the Barrie Region.

As noted above, there is no habitat within the Project Study Area that would support turtles. Snakes tend to forage in all areas, including road corridors in search of food and cover,



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however, no snakes were observed during the field investigations. It is important to note, that the observations made during the field investigation do not indicate absence of habitat and species occurrence outside of the road ROW.

## 4.6 Breeding Birds

According to the OBBA for the 10 kilometre X 10 kilometre squares that cover the Project Study Area, there are approximately 125 bird species known to inhabit the area. A number of these species are considered waterfowl and/or area sensitive species that require large transects of woodland within a minimum of 100 metre interior woodland habitat. Of the 125 species, nine (9) are listed under the ESA (2007) with six (6) considered threatened: Bank Swallow (*Riparia riparia*), Barn Swallow (*Hirundo rustica*), Bobolink (*Dolichonyx oryzivorus*), Eastern Meadowlark (*Sturnella magna*), Chimney Swift (*Chaetura pelagica*), and Eastern Whip-poor Will (*Caprimulgus vociferus*). Six (6) are considered special concern: Grasshopper Sparrow (*Ammodramus savannarum*), Olive-sided Flycatcher (*Contopus cooperi*), Redheaded Woodpecker (*Melanerpes erythrocephalus*), Common Nighthawk (*Chordeiles minor*), Wood Thrush (*Hylocichla mustelina*) and Eastern Wood-pewee (*Contopus virens*). None of these species were observed within the Project Study Area during the 2017 field investigations. Additional information about SAR is provided in Section 4.8 of this Report.

Over the course of six (6) field investigations, which included targeted SAR bird surveys, bird observations were recorded within the Project Study Area. A total of five (5) locations were surveyed during the field investigations in 2017, with a total of 14 different species visually and/or vocally observed to be within the Project Study Area. It is important to note there was extensive noise associated with cars passing by within the entire Project Study Area during the survey. A 150 metre survey radius to each survey location was generally applied, and may vary at different survey locations depending on the terrain, noise, type of vegetative cover, and weather conditions. Please refer to Figure 4 for survey locations.

Table 4-3: Summary of breeding bird survey results 2017

Scientific Name	Common Name	Global G- Rank and Ontario S-Rank	Breeding Evidence
Corvus brachyrhynchos	American Crow	G5/S5B	X
Spinus tristis	American Goldfinch	G5/S5B	S
Turdus migratorius	American Robin	G5/S5B	S
Poecile atricapillus	Black-capped Chickadee	G5/S5	S
Molothrus ater	Brown-headed Cowbird	G5/S4B	Р
Geothlypis trichas	Common Yellowthroat	G5/S5B	S
Dumetella carolinensis	Gray Catbird	G5/S5B	S
Passer domesticus	House Sparrow	G5/SE	S



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Scientific Name	Common Name	Global G- Rank and Ontario S-Rank	Breeding Evidence
Charadrius vociferus	Killdeer	G5/S5	Р
Zenaida macroura	Mourning Dove	G5/S5B	Р
Cardinalis cardinalis	Northern Cardinal	G5/S5	S
Agelaius phoeniceus	Red-winged Blackbird	G5/S4	Р
Larus delawarensis	Ring-billed Gull	G5/S5B	X
Setophaga petechia	Yellow Warbler	G5/S5B	S

X: Observed: Species observed in its breeding season (no evidence of breeding). Presumed migrants should not be recorded; H: Possible Breeding: Species observed in its breeding season in suitable nesting habitat; S: Possible Breeding: Singing male present, or breeding calls heard, in its breeding season in suitable nesting habitat; P: Probably Breeding: Pair observed in their breeding season in suitable nesting habitat.

Global Rank: G5: Very common; demonstrably secure under present conditions; S5: Very Common; demonstrably secure under present conditions; S4: Common; usually more than 100 occurrences, usually not susceptible to immediate threats; S#B: Breeding status rank; S#N: Non-Breeding status rank; SE; Exotic, not believed to be a native component of Ontario's fauna.

Most of the birds observed were considered possible breeders within the Project Study Area. The number of birds is consistent with surveys conducted along road corridors due to the habitat normally associated with edges, disturbed areas, and road traffic which often deters birds from breeding near the road ROW due to sounds and the ability for males and females to communicate.

All birds documented based on this NHIA are common to Southern Ontario and are not considered rare. No SAR birds were observed both audibly and visually during the 2017 field investigations.

## 4.7 Incidental Wildlife Observations

Review of the Atlas of Mammals of Ontario (1994) identified 18 species that are known to occur in proximity to the Project Study Area. This list included two (2) endangered species: Little Brown Myotis (*Myotis lucifugus*) and Northern Myotis (*Myotis septentrionalis*). These species and their habitat are protected under the ESA (2007). Based on the field investigations completed in 2017, habitat for these two (2) species was deemed to be absent within the Project Study Area. Additional information about SAR is provided in Section 4.8 of this Report.

Incidental wildlife sightings made outside of the formal field surveys are presented in Table 4-

Table 4-4: Incidental wildlife observations 2017



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Scientific Name	Common Name	Observation(s)	Global G-Rank and Ontario S-Rank
Sciurus carolinensis	Grey Squirrel	2 – visual in 2017	G5/S5
Sciurus carolinensis	Black Squirrel	3 – visual in 2017	G5/S5

Global Rank: G5: Very common; demonstrably secure under present conditions; S5: Very Common; demonstrably secure under present conditions.

## 4.8 Species-at-Risk

An ESA screening information request was submitted to the MNRF Midhurst District Office on March 3, 2017. In response, the MNRF provided a list of 16 SAR that relate to the three (3) separate projects being carried out concurrently by the City – Harvie Road, Essa Road and Bryne Drive. With respect to the Essa Road Transportation Improvements, a total of seven (7) SAR were identified to potentially occur within the Project Study Area based on habitat requirements. A summary of these species is provided below in Table 4-5 which identifies the species, their preferred habitat, and presence of noted habitat within the Project Study Area. Lastly, Table 4-5 also notes if the species were observed during the 2017 field investigation. Due to the habitat along the ROW, SAR bat habitat was deemed absent. As such, dedicated surveys for SAR bats were not completed for the Essa Road Project Study Area.

## 4.8.1 Butternut Survey

An assessment of the Project Study Area to denote the presence of endangered Butternut was completed. The Project Study Area was searched. No Butternut's were observed during the 2017 field investigation to be within the Project Study Area.



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Table 4-5: Species-at-Risk records provided by the MNRF\*

Scientific Name	Common Name	SARO	Preferred Habitat	Habitat Present within the Project Study Area	Conclusions of Field Investigations 2017
Juglans cinerea	Butternut	END	Commonly associated with riparian habitat with rich moist, well-drained soils. They are intolerant to shade.	Yes – based on aerial imagery, habitat for this species is present within the Project Study Area.	No Butternut were observed within the Project Study Area.
Dolichonyx oryzivorus	Bobolink	THR	Commonly found in areas with medium to tall grass – meadows or tall grass prairies.	Yes – based on aerial imagery, habitat for this species is present within the Project Study Area.	No Bobolinks were observed within the Project Study Area during the breeding bird and targeted SAR surveys for the species.
Hirundo rustica	Barn Swallow	THR	Commonly associated with human structures such as buildings, open barns, bridges and culverts where their mud nest-cups can be built.	Yes – based on aerial imagery, habitat for this species is present within the Project Study Area.	No Barn Swallow's were observed within the Project Study Area during the breeding bird and targeted SAR surveys for the species.
Sturnella magna	Eastern Meadowlark	THR	Primarily in moderately tall grasslands, such as pastures and hayfields – can also be found in alfalfa fields, weedy borders of croplands, roadsides, orchards, overgrown fields and other open areas.	Yes – based on aerial imagery, habitat for this species is present within the Project Study Area.	No Eastern Meadowlark's were observed within the Project Study Area during the breeding bird and targeted SAR surveys for the species.
Ammodramus henslowii	Henslow's Sparrow	END	Associated with abandoned farm fields, pastures and wet meadows.	Yes – based on aerial imagery, habitat for this species is present within the Project Study Area.	No Henslow's Sparrows were observed within the Project Study Area during the breeding bird and targeted SAR surveys for the species.
Danaus plexippus	Monarch	SC	Caterpillars utilize milkweed plants found in meadows and open areas. Adult butterflies found in diverse areas where nectar from wildflowers is present.	Yes – based on aerial imagery, habitat for this species is present within the Project Study Area.	No Monarch's were observed during the incidental wildlife observations along the road corridor.



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Scientific Name	Common Name	SARO	Preferred Habitat	Habitat Present within the Project Study Area	Conclusions of Field Investigations 2017
Asio flammeus	Short-eared Owl	SC	Tends to be found in large grasslands and marshes and tundra habitats.	Yes – based on aerial imagery, habitat for this species is present within the Project Study Area.	No Short-eared Owls were observed within the Project Study Area during the breeding bird and targeted SAR surveys for the species.

<sup>\*</sup>This table only reflects those species that had habitat within the Project Study Area. For the full list of SAR from the ESA screening refer to Appendix A.

END: Endangered; THR: Threatened; SC: Special Concern

SARO: Species-at-Risk in Ontario List is the official list of endangered, threatened, special concern and extirpated animals and plants in Ontario.

Those species listed as endangered, threatened, or extirpated are protected under the ESA (2007) as amended.

Source: MNRF ESA screening results April 13, 2017 (refer to Appendix A); Government of Ontario: https://www.ontario.ca/page/species-risk



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# 5. Key Natural Heritage Features

Key natural heritage features are defined as those that contain wetlands, fish habitat, woodlands, valleylands, habitat for endangered and threatened species, wildlife habitat, and ANSIs. All of these features are important for their environmental and social values as defined within the *Planning Act* and explained within the PPS (MMAH, 2014).

# 5.1 Significant Wetlands and Fish Habitat

Wetlands are defined as areas that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface (Lee et al., 1998). A significant wetland is an area identified as a PSW by the MNRF using evaluation procedures established by the Province, as amended from time to time (Lee et al., 1998).

Fish habitats are identified as spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly and or indirectly in order to carry out their life processes (Lee et al., 1998). Fish habitats commonly occur in many natural heritage areas such as wetlands, valleylands, woodlands and ANSIs.

Both the NVCA and MNRF did not note any mapped wetlands within the Project Study Area. During the 2017 field investigations, a wetland community MAMM2-1 Cattail Graminoid Mineral Meadow Marsh Type was noted along the section of Bear Creek that transverses through the Project Study Area, as shown in Figure 5a.

In relation to fish habitat, during Hatch's 2017 field investigations, a single forage of fish was observed within the Bear Creek culvert. Though the NVCA does not have any fisheries records for this section of Bear Creek, the Authority considers this section of the watercourse to support warmwater thermal conditions, however, this section is also known to contribute to downstream coldwater habitat which includes Brook Trout, and is managed by the NVCA as such.

### 5.2 Woodlands

Woodlands are treed areas that provide environmental or economic benefits such as erosion prevention, water retention, recreation and the sustainable harvest of woodland products. Woodlands include treed areas, woodlots or forested areas, and vary in their level of significance (MMAH, 2014). Woodland significance is typically determined by evaluating key criteria which relate to woodland size, ecological function, uncommon woodland species, and economic and social value. It is noted that larger woodlands are more likely to contain a greater diversity of plant and animal species and communities than smaller woodlands, and are better buffered against edge effects or agricultural and urban activities.

There are no woodlands mapped by the MNRF, NVCA, Simcoe County and/or the City within the Project Study Area. During the 2017 field investigations, two (2) woodland communities were observed within the Project Study Area and included FODM4-12 and CUW as illustrated in Figures 5a and 5b. Each of these communities was comprised of common and invasive



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(non-native) species. Tree species found within each of the woodlands varied in size and health. However, due to the size and species composition, neither of these two (2) woodlands are considered significant.

# 5.3 Valleylands

The PPS (MMAH, 2014) identifies significant valleylands as a "natural area that occurs in a valley or landform depression that has water" for some period of the year. Based on the observations during the 2017 field investigations, there are no valleylands within the Project Study Area.

# 5.4 Areas of Natural and Scientific Interest

The PPS (2014) defines ANSIs as areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education. The ANSI program designates natural features in two (2) broad biophysical categories, Earth Science (geological) or Life Science (biological) depending on the features present. Specifically, a life science ANSI can contain specific types of forests, valleys, prairies and/or wetlands of ecological importance (MNRF, 2010). That is, they represent examples that are relatively undisturbed in terms of vegetation community and/or landforms associated with that vegetation (MNRF, 2010). Those listed as provincially significant life science ANSIs are the best examples of that particular natural heritage feature in the Province (MNRF, 2010). In contrast, earth science ANSIs are representative examples of geological processes in Ontario (i.e., exposed bedrock on road cuts, fossils and landforms) (MNRF, 2010).

Based on review of the MNRF Make a Map: Natural Heritage Areas and Natural Heritage Information Centre (NHIC) Data, there are no ANSIs mapped within the Project Study Area.

# 5.5 Wildlife Habitat

Wildlife habitat is defined as areas where plants, animals and other organisms live and are able to find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitat of concern may include areas where species concentrate at a point in their annual life cycle, and those areas which are important to migratory and non-migratory species.

A wildlife habitat is considered "significant" if it is deemed ecologically important in terms of feature, function, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System (MMAH, 2014). According to the Significant Wildlife Habitat Ecoregion Criteria Schedules for Ecoregion 6E (MNRF, 2015), significant wildlife habitat may consist of:

- Seasonal concentration areas for animals;
- Rare vegetation communities;



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- Specialized habitat for wildlife; and
- Habitat for species of conservation concern.

**Seasonal Concentration Areas** may consist of Waterfowl Stopover and Staging Areas, Bat Hibernacula, and Reptile Hibernacula. Due to the high level of disturbance (i.e., noise due to proximity to the road ROW), there were no seasonal concentration areas observed within the Project Study Area during the 2017 field investigations.

**Rare Vegetation Communities** are those that contain provincially rare vegetation communities, or those which are rare to the area. Based on a review of the vegetation communities observed during the 2017 field investigations, none were considered rare.

**Specialized Habitats for Wildlife** consist of areas that support wildlife with highly specific habitat requirements (e.g., nesting habitat, vernal pools), those areas that contain high number species and community diversity, and those which provide habitat that can greatly enhance species survival (MNRF, 2000). Due to the high level of disturbance (i.e., noise due to proximity to the road ROW), there were no specialized habitat for wildlife confirmed within the Project Study Area during the 2017 field investigations.

Habitats for Species of Conservation Concern are those that contain species that are rare or substantially declining, or have high percentage of their global population in Ontario considered rare or uncommon in the planning area. These habitats are often associated with special concern species as identified under the ESA or the SARO List.

The MNRF provided an ESA screening for this Project and identified two (2) species of conservation concern that have the potential to occur within the Project Study Area, specifically, the Monarch Butterfly (*Danaus plexippus*) and the Short-eared Owl (*Asio flammeus*). It is noted that during completion of the breeding bird surveys and incidental wildlife sightings during the 2017 field investigations, neither of these two (2) species were confirmed within the Project Study Area.

### 5.5.1 Wildlife Movement Corridors

Wildlife movement corridors are habitats that link two (2) or more other wildlife habitats that are critical to the maintenance of a population of a particular species or group of species. The key ecological function of wildlife movement corridors is to enable wildlife to move between areas of significant habitat or core natural areas with minimum mortality. Wildlife movement corridors can provide critical links between shelter, feeding, watering, growing and nesting locations (Lee et al., 1998).

Wildlife and/or habitat corridors can help increase genetic diversity and aid in the reestablishment of populations after random events such as fires or disease outbreaks. These corridors can help to increase biodiversity and population stabilization (Lee et al., 1998).



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According to the Significant Wildlife Habitat Ecoregion Criteria Schedules for Ecoregion 6E (MNRF, 2015), wildlife movement corridors to be considered include amphibian and deer movement corridors.

Based on the aforementioned Criteria Schedule, amphibian movement corridors are determined based on identifying significant breeding habitat. Based on the absence of observations during the two (2) surveys for amphibians completed in 2017, the Project Study Area is not deemed to be significant breeding habitat. Therefore, amphibian movement corridors are deemed absent for the Project Study Area.

According to feedback received from the MNRF, there are no deer wintering habitats mapped for the Project Study Area. Thus, there are no deer movement corridors deemed present within the Project Study Area.

## 6. Identification and Assessment of Alternatives

An updated traffic analysis which incorporated new developments proposed within the Project Study Area since the completion of the MMATMP in 2014 was carried out as part of the Class EA Study. As a result, it was recommended that Essa Road be widened to four (4) lanes to accommodate future growth and development within and in proximity to the Project Study Area. Therefore, the Preferred Solution includes widening to four (4) lanes, plus a TWLTL, or continuous median, as well as a 1.5 metre sidewalk on the east side and a three (3) metre multi-use trail on the west side, all within a 30 metre ROW.

As part of the Class EA, the following four (4) design concepts will be assessed:

- Alternative 1 do nothing;
- Alternative 2 widening to the west;
- Alternative 3 symmetrical widening along the centre-line; and
- Alternative 4 widening to the east.

With the exception of Alternative 1 (do nothing), the three (3) remaining design concepts will have similar cross-sections and will be implemented using similar construction methods. An assessment of the generalized impacts associated with the proposed works, combined with the prescribed mitigation measures to avoid or minimize the anticipated impacts on the natural heritage environment is summarized in Table 6-1.



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Table 6-1: Generalized impacts and proposed mitigation and monitoring

Activity	Feature	Potential Impacts	Mitigation	Monitoring
Pre-Construction - land clearing, site preparation	Topography and Soils	Changes to soil moisture.     Increased erosion and soil compaction.     Changes to drainage and surface runoff.	<ul> <li>Minimize footprint disturbance to the extent possible.</li> <li>Maintain existing stormwater strategies (as required).</li> <li>Prepare an erosion and sediment control (ESC) plan in accordance with the Greater Golden Horseshoe Area Conservation Authorities Erosion and Sediment Control Guidelines for Urban Construction (2006).</li> <li>Minimize soil exposure - restore or stabilize areas using erosion matting as work progresses.</li> <li>Schedule work to avoid peak runoff volumes (i.e., during spring freshet).</li> <li>All ESC measures to remain in place until all areas associated with construction activities have been stabilized.</li> </ul>	<ul> <li>Inspect ESC measures after installation and before construction to ensure they were installed in accordance with specifications.</li> <li>Monitor construction areas and ESC measures daily and prior to and immediately after precipitation events to ensure they are functioning according to design details and are maintained throughout construction.</li> </ul>
	Vegetation	Changes to overall tree cover and vegetation composition.     Introduction of invasive (nonnative) species.	<ul> <li>Minimize footprint disturbance to the extent possible.</li> <li>Advise contractor in advance of key invasive areas (e.g., MAM2-a) and promote awareness.</li> <li>Minimize soil exposure - restore or stabilize areas using erosion matting as work progresses.</li> <li>Provide restoration using native, non-invasive seed mix, trees and shrubs (as required). All work zones to be clearly identified on design drawings.</li> <li>Provide detailed clearing, ESC and restoration plans.</li> <li>Clearly identify stockpile and laydown/staging areas on detailed drawings.</li> <li>All trees shall be protected in accordance with the City's Tree Protection Manual (2010), Public Tree By-law (2014-116) and the Tree Preservation By-law (2014-115).</li> </ul>	Pre-construction clearing will be monitored to ensure clearing activities are completed in accordance with approved and specified work zones.     Inspect tree protection and ESC measures after installation and before construction to ensure they were installed in accordance with specifications.



Activity	Feature	Potential Impacts	Mitigation	Monitoring
			<ul> <li>Tree protection to be installed prior to construction works.</li> <li>Those areas designated as tree protection zones (TPZs) are to be considered "no-go" zones, whereby no stockpiles, storage materials or grade changes shall occur within its' boundary.</li> </ul>	
	Fish and Fish Habitat and Watercourses	Impacts to fisheries and fish habitat within Bear Creek.     Increase in sediment loading into Bear Creek and roadside ditches.	<ul> <li>Develop and implement an ESC Plan.         Designate areas for equipment storage a minimum of 30 metres away from Bear Creek or roadside ditches that outlet to Bear Creek.</li> <li>Establish a spill prevention plan.</li> <li>Prepare a fish rescue plan.</li> <li>Ensure pumps have proper intake screens to prevent fish from entrainment or impingement.</li> </ul>	<ul> <li>Inspect ESC measures after installation and before construction to ensure they were installed in accordance with specifications.</li> <li>Monitor construction areas and ESC measures daily and prior to and immediately after precipitation events ensure they are functioning according to design details and are maintained throughout construction.</li> <li>Inspect pumps prior to construction to ensure equipment is ready to begin Project works.</li> </ul>
	Wildlife	<ul> <li>Changes to wildlife dynamics (i.e., attract different species).</li> <li>Impacts to nesting birds protected under the MBCA.</li> </ul>	<ul> <li>Minimize footprint disturbance to the extent possible.</li> <li>Restore area to existing or better condition with native, non-invasive plant materials.</li> <li>Avoid clearing during the breeding bird window - April 1 to August 31. If not possible, a bird nest survey by a qualified avian biologist should be conducted to determine presence and locations of active nests prior to construction. Bird nest surveys should be completed immediately prior</li> </ul>	<ul> <li>Monitor pre-construction clearing activities to ensure wildlife are not impacted.</li> <li>Monitor nests as needed (e.g., daily) until inactive.</li> </ul>



Activity	Feature	Potential Impacts	Mitigation	Monitoring
			to clearing events. If a nesting migratory bird is identified within or adjacent to the construction site, the contractor must stop work within the immediate area and contact the contract administrator for next steps.	
	Species-at- Risk (SAR)	No SAR were documented within the Project Study Area.	If SAR are encountered, works within the immediate area must cease and MNRF Midhurst District office must be notified immediately.	No monitoring should be required as no SAR were identified. If SAR are encountered, monitoring will follow proper protocols as identified by MNRF and in accordance with the Endangered Species Act, (ESA), 2007 and associated Regulations.
Construction	Topography and Soils	<ul> <li>Changes to drainage and surface runoff.</li> <li>Grading and soil disturbance during construction can lead to erosion and sedimentation.</li> <li>Stockpiled materials, equipment or construction activities may encroach on natural areas beyond the proposed impact areas which may cause greater soil compaction.</li> </ul>	<ul> <li>Develop and implement an ESC plan.</li> <li>Minimize footprint disturbance to the extent possible.</li> <li>Maintain existing stormwater strategies (as required).</li> <li>Minimize soil exposure - restore or stabilize areas using erosion matting as work progresses.</li> <li>Schedule work to avoid peak runoff volumes (i.e., during spring freshet).</li> <li>All ESC measures to remain in place until all areas associated with construction activities have been stabilized.</li> </ul>	Monitor construction areas and ESC measures daily and prior to and immediately after precipitation events to ensure they are functioning according to design details and are maintained throughout construction.
	Vegetation	Stockpiled materials, equipment or construction activities may encroach on natural areas beyond the proposed impact areas which may cause greater vegetative loss.	<ul> <li>Minimize footprint disturbance to the extent possible.</li> <li>Advise contractor in advance of key invasive areas (e.g., MAM2-a) and promote awareness.</li> <li>Minimize soil exposure - restore or stabilize areas using erosion matting as work progresses.</li> </ul>	Monitor construction areas, tree protection and ESC measures daily and prior to and immediately after precipitation events to ensure they are functioning according to



Activity	Feature	Potential Impacts	Mitigation	Monitoring
		<ul> <li>Disturbed areas as a result of site clearing activities may allow for invasive species to be introduced and spread throughout natural areas, which may prevent natural species from re-establishing.</li> <li>Dust from work activities has the potential to settle on adjacent vegetation.</li> </ul>	<ul> <li>Provide restoration using native, non-invasive seed mix, trees and shrubs (as required). All work zones to be clearly identified on design drawings.</li> <li>Ensure stockpile and staging/laydown areas are in designated areas.</li> <li>All trees shall be protected in accordance with the City's Tree Protection Manual (2010), Public Tree By-law (2014-116) and the Tree Preservation By-law (2014-115).</li> <li>Those areas designated as tree protection zones (TPZs) are to be considered "no-go" zones, whereby no stockpiles, storage materials or grade changes shall occur within its' boundary.</li> <li>Use dust suppressants during construction (e.g., water trucks).</li> </ul>	design details and are maintained throughout construction.
	Fish and Fish Habitat and Watercourses	<ul> <li>Contamination of surface waters due to the unplanned release or discharge of deleterious substances to the environment, including fuels (diesel and propane), lubricants (engine oil, transmission oil, etc.), and coolants (ethylene glycol).</li> <li>Increased erosion and sedimentation due to adjacent construction works.</li> <li>Culvert replacement at Bear Creek may have the potential to harm fish and fish habitat due to near/in-water work.</li> <li>Dust from work activities has the potential to settle in Bear Creek.</li> </ul>	<ul> <li>Develop and implement an ESC Plan.         Designate areas for equipment storage a minimum of 30 metres away from Bear Creek or roadside ditches that outlet to Bear Creek.</li> <li>Vehicle handling, fueling and fuel storage are to be conducted in accordance with the <i>Technical Standards and Safety Act</i> (Ontario Regulation 217/01) which is administered by the Ontario Technical Standard and Safety Authority (TSSA).</li> <li>Establish a spill prevention plan.</li> <li>All deleterious substances and stockpiled materials should be stored and used in a manner which prevents substances from entering ditches and Bear Creek.</li> <li>All equipment refueling and maintenance should be completed in a designated area.</li> <li>Complete in-water works as per respective timing window between July 16 to September 30 in any given year.</li> </ul>	<ul> <li>Monitor construction areas during dewatering activities as required.</li> <li>Monitor during construction activities and relocate fish as necessary in accordance with the Wildlife Scientific Collectors Permit (to be obtained during detailed design).</li> <li>Monitor construction areas and ESC measures daily and prior to and immediately after precipitation events ensure they are functioning according to design details and are</li> </ul>



Activity	Feature	Potential Impacts	Mitigation	Monitoring
			<ul> <li>Complete all culvert works within Bear Creek in the dry using temporary water management systems to isolate the work area from active flows.</li> <li>Prepare a fish rescue plan.</li> <li>Ensure pumps have proper intake screens to prevent fish from entrainment or impingement.</li> <li>Install open bottom culvert.</li> <li>Use dust suppressants during construction (e.g., water trucks).</li> </ul>	maintained throughout construction.  All spills to be reported immediately to the Ontario Spills Action Centre in accordance with reporting requirements to 1-800-268-6060.  Monitor spill kits to ensure supplies are available and replenished as necessary.  Monitor dust.
	Wildlife	<ul> <li>Interaction with wildlife.</li> <li>Dust from work activities has the potential to settle on adjacent vegetation and may disrupt wildlife and their habitat.</li> <li>Noise from construction may disrupt wildlife and their life cycle processes (e.g., predator calls).</li> </ul>	<ul> <li>Develop and implement an ESC Plan, including wildlife exclusion measures.</li> <li>Provide wildlife crossing passage in culvert.</li> <li>Use dust suppressants during construction (e.g., water trucks).</li> <li>Follow noise prevention measures as identified during detailed design and respective City's Noise By-law 2017-017 (as required).</li> </ul>	Monitor during construction activities and relocate wildlife as necessary in accordance with the Wildlife Scientific Collectors Permit (to be obtained during detailed design).      Monitor dust and noise levels and mitigate accordingly.
	Species-at- Risk (SAR)	No SAR were documented within the Project Study Area.	If SAR are encountered, works within the immediate area must cease and MNRF Midhurst District office must be notified immediately.	No monitoring should be required as no SAR were identified. If SAR are encountered, monitoring will follow proper protocols as identified by MNRF and in accordance with the Endangered Species Act, (ESA), 2007 and associated Regulations.
Operation and Maintenance	Topography and Soils	If upgrades or future repair (e.g., re-paving, culvert repair) are required may require in-water	Upgrades and/or future repair to be completed in accordance with applicable mitigation measures	Monitoring will be completed subject to the



Activity	Feature	Potential Impacts	Mitigation	Monitoring
		works and/or excavation activities similar to those experienced during construction.	<ul> <li>as identified during the construction activity phase.</li> <li>All required permitting and/or approvals to be obtained as required.</li> </ul>	scale of maintenance work.
	Vegetation	Trees adjacent to the ROW may need to be pruned or removed.	Tree pruning to be kept to a minimum and shall be completed by a qualified tree care professional.	Monitoring will be completed subject to the scale of maintenance work.
	Fish and Fish Habitat and Watercourses	<ul> <li>Fuel spills or other hazardous substances during operation and/or maintenance could affect water quality and associated fish and fish habitat.</li> <li>Increased road salt due to increase in surface area may cause increased chloride loading into Bear Creek.</li> </ul>	<ul> <li>Spills into watercourses (i.e., Bear Creek) shall be contained and cleaned up immediately in accordance with Provincial standards.</li> <li>Salt application shall be on an as needed bases, and or alternative de-icing methods should be explored (e.g., sand).</li> </ul>	<ul> <li>City officials and/or maintenance contractors are responsible for reporting spills to ensure they are cleaned in a timely manner.</li> <li>City officials and/or maintenance contractors are responsible for implementing de-icing strategies as required.</li> </ul>
	Wildlife	<ul> <li>Increased traffic volumes may increase wildlife and vehicle collision numbers.</li> <li>Increased traffic volumes may increase noise and vehicle pollution which may interfere with wildlife activities.</li> </ul>	Traffic volumes will be assessed and discussed within the Environmental Study Report (ESR). Recommendations within the ESR shall assist with mitigating impacts associated with increased traffic etc.	No monitoring required.
	Species-at- Risk (SAR)	No SAR were documented within the Project Study Area.	If SAR are encountered, works within the immediate area must cease and MNRF Midhurst District office must be notified immediately.	No monitoring should be required as no SAR were identified. If SAR are encountered, monitoring will follow proper protocols as identified by MNRF and in accordance with the Endangered Species Act, (ESA), 2007 and associated Regulations.



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### 6.1 Recommended Alternative

With the exception of the "do nothing" concept, which will result in no impacts, the remaining three (3) design concepts will result in similar impacts to the natural heritage features. In terms of impacts to Bear Creek – all widening impacts will result in some in-water works and replacement of the existing Bear Creek culvert. All three (3) design concepts will have impacts on the two (2) woodland communities along the west side. However, it is important to note that neither of the woodland communities are significant and/or comprised of any significant species.

Widening to the west will have a greater impact the small cultural meadow adjacent to Bear Creek, and will result in removal of the existing trees within the ROW along the west side. Widening to the east and along the centre-line will result in some removal to the cultural meadow adjacent to Bear Creek on the west side, but will be minimal.

Widening along the centre-line and widening to the east are pretty similar from a natural heritage perspective, as the east side is dominated by cultural vegetative communities and/or commercial, institutional and rural residential land uses. Widening along the centre-line will however, remove the trees within the ROW along the west side.

Overall, all three (3) options are fairly similar, however, widening to the east is likely the most favourable from a natural heritage perspective simply due to the characteristics of the communities along the east compared to those along the west and that which might be removed widening along the centre-line (i.e., ROW trees). If mitigation measures are applied, the impacts to natural heritage features as a result of the proposed improvements is expected to be limited given the existing conditions.

# 7. Summary of Mitigation Measures

As the Project progresses to detailed design, site-specific mitigation measures should be developed in order to protect both terrestrial and aquatic environments and their respective ecological function. Where possible, avoidance measures should be implemented before resorting to mitigation and lastly rehabilitation to minimize negative effects on natural heritage features. If the mitigation measures and/or BMPs are implemented, they will likely reduce the possible effects from the proposed road construction activities.

# 7.1 Construction Timing

Construction timing should take into consideration natural heritage features, more specifically the wildlife that inhabit the features within the Project Study Area. Vegetation removal should not take place during the local breeding bird season which is established from April 1 to August 31, to comply with the MBCA. Due to the uncertainty that lies with nest sweeps during construction, especially during leaf-on conditions, it is recommended that all tree clearing occur outside the above-noted breeding bird window.



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Due to the presence of Brook Trout spawning activities further downstream, the MNRF has recommended that no in-water works occur between October 1 and July 15 in any given year. As such, in-water works can only occur from July 16 to Sept 30, unless otherwise noted by the MNRF and/or DFO. Discussions with respect to the in-water timing window should be discussed with MNRF and/or DFO during the detailed design phase once the design components are better understood. This will also enable the City to confirm whether the proposed works will require a *Fisheries Act* Authorization from DFO.

### 7.2 Erosion and Sediment Control Measures

No development, construction or grading should occur outside of the construction envelope once it has been confirmed during the detailed design phase. An ESC Plan should be developed prior to construction, and applicable ESC measures implemented to avoid impacts to terrestrial and aquatic features.

Efforts should be made to reduce areas of exposed soils, and erosion and sediment transport during the construction phase. Erosion and sediment controls should be installed prior to construction activities, and remain in place until all disturbed areas are fully stabilized so as to retain sediment on-site and prevent its entry into Bear Creek and adjacent ditches. In addition, all ESC measures should be monitored/inspected during construction to confirm they are functioning properly and are maintained and/or upgraded as required. If not functioning properly, no further work should occur until the erosion and/or sediment problem is addressed. All ESC measures (e.g., sediment control logs) should be reflected on all construction drawings with notes on requirements.

# 7.3 Tree Clearing Protection and Replacement

No development, construction or grading should occur outside of the construction envelope once it has been confirmed during the detailed design phase.

Trees shall be protected in accordance with the City's Tree Protection Manual (2010). Trees within or adjacent to Municipal Road ROW's are provided protection either through the Public Tree By-law (2014-116) or the ROW Activity By-law (2005-256). The Manual prescribes minimum Tree Protection Zones that should be followed based on the trees measured diameter at breast height (DBH). Tree protection barriers shall follow the City's specifications and consist of 1.2 metre high orange plastic web snow fencing on a 2' X 4" frame or attached to 2" X 2" wooden stakes.

It is noted that trees situated on public property are protected under the City's Public Tree By-law 2014-116. Public trees are those which have 50 percent or more of its main stem situated on a public park, highway or lands owned by the City. According to the By-law, trees requiring removal on public property as part of a City project, are exempt from the permitting process. Additional discussions with the City are recommended during detailed design to fine-tune tree protection requirements along the road ROW.



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The City regulates private property tree removals when those trees are part of a woodlot as defined by the Tree Preservation By-law 2014-115. This applies to those forested areas that are 0.20 hectares (or 0.5 acres) in size or larger. Both woodlands within the Project Study Area do not meet this minimum size and have not been mapped by the City's Urban Forestry Department.

All disturbed areas should be restored with native, non-invasive seed mix. A mixture of native trees and shrubs should also be incorporated along the ROW and along the Bear Creek crossing as permitted.

### 7.4 Wildlife Protection Measures

Efforts should be made for the protection of wildlife during construction. The contractor should make reference to the MNRF Species at Risk Handling Manual (2011) to ensure wildlife encountered during construction are properly handled and/or reported as necessary.

If a migratory bird happens to nest within the work area, Project works within the immediate area should cease. Measures should be taken to ensure protection of the nest is established such that the fledglings can successfully hatch and the requirements under the MBCA are met. Additional guidance on the species observed should be sought from the Canadian Wildlife Service.

The installation of the new culvert within Bear Creek should follow guidelines as prescribed by DFO, MNRF, and NVCA and should be constructed in a manner that does not impede fish passage. It is recommended that all culverts where feasible be constructed using an open-bottom scenario such that proper substrate can be implemented to sustain and if not improve existing conditions. Information on culvert installation will be further fine-tuned during detailed design.

If dewatering activities are required during in-water works, a fish rescue plan should be prepared. All in-take pumps should be fitted with screens to prevent fish entrainment and impingement. Additional measures to avoid causing harm to fish and fish habitat should be discussed and confirmed with DFO during detailed design.

# 8. Permits and Approvals

Based on a preliminary assessment, it is anticipated that the following permits and approvals will be required for this Project:

- A Development, Interference with Wetlands and Alteration to Shorelines and Watercourses Regulation permit from the NVCA under Ontario Regulation 172/06 to facilitate works within the regulated area associated with Bear Creek (i.e., culvert works);
- Ministry of the Environment and Climate Change Permit-to-Take-Water (PTTW) or Registration. Approval is required if more than 50,000 litres of water per day will be taken during Project activities. For those transportation projects that will take more



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than 50,000 litres but less than or equal to 400,000 litres per day, may meet the requirements to register their Project using the new Ministry of the Environment and Climate Change (MOECC) Environmental Activity and Sector Registry (EASR) protocol. Those projects that require more than 400,000 litres per day, or do not meet the qualifications of an EASR will have to obtain a PTTW. Further assessment of requirements for water take will be identified during detailed design;

- A DFO Self-assessment will be required once the exact details of construction are
  understood during detailed design. If after the initial assessment, it is deemed that
  serious harm to fish may occur, a Request for Review will be required to be
  submitted to DFO, upon which, DFO will identify whether authorization (i.e., approval)
  under the Fisheries Act is required; and
- Wildlife Scientific Collectors Permit for potential defishing and/or wildlife relocation during construction.

Please note the above list is not exhaustive, and additional permits and approvals may be required and will be confirmed during the detailed design phase.

# 9. Summary and Recommendations

A summary of environmental findings and recommendations are as follows:

- Most of the Project Study Area is composed of cultural vegetative communities normally associated with disturbance and typically comprised on non-native and invasive species;
- The Project Study Area is located within the Middle Nottawasaga River subwatershed and a small section of the Project Study Area associated with Bear Creek is regulated and provided protection under Ontario Regulation 172/06 governed by the NVCA;
- No significant natural heritage features were documented within the Project Study Area.
   Due to existing conditions and proximity to the road ROW, limited vegetative species and wildlife were observed during the 2017 field investigations;
- No SAR were observed during the 2017 field investigations;
- Vegetation removal should not take place during the local breeding bird season which is
  established from April 1 to August 31, to comply with the MBCA. Due to the uncertainty
  that lies with nest sweeps during construction, especially during leaf-on conditions, it is
  recommended that all tree clearing occur outside the above-noted breeding bird window;
- Due to the presence of Brook Trout spawning activities further downstream, it is recommended that no in-water works occur between October 1 and July 15 in any given year. As such, in-water works should only occur from July 16 to Sept 30, unless otherwise noted by the MNRF and/or DFO;
- A DFO Self-assessment or Request for Review will be required once the preferred design for the future culvert replacement are confirmed;



- Vegetation clearing and/or grubbing should be kept to a minimum and areas should be restored to equal or better condition with native, non-invasive species that are reflective of vegetation common to the Barrie Region;
- Treed areas to be preserved should be protected using protective hoarding according to the City's Tree Preservation By-law and Public By-law following future consultation with the City's Urban Forestry Department;
- Monitoring pre-construction and during construction is recommended with additional monitoring for restoration as directed that will be further refined during the detailed design phase;
- During detailed design an ESC, spill prevention, fish rescue and restoration plan should be developed and implemented in advance of construction to prevent potential impacts to Bear Creek and other natural heritage features within the Project Limits; and
- It is recommended that the above mitigation measures be further developed during the detailed design phase, based on further consultation with DFO, the MNRF, and the NVCA.



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# 10. References

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Appendix A

# **Appendix A**

**Agency Consultation** 



Appendix A

# **Agency Consultation:**

Nottawasaga Valley Conservation Authority

# Lajkosz, Alex

From:

Ian Ockenden <iockenden@nvca.on.ca>

Sent:

Tuesday, March 14, 2017 11:06 AM

To:

Torchia, Melissa; Dave Featherstone

Cc:

Alvaro Almuina; Kelly, Terry; Alexander, Melissa

Subject:

RE: City of Barrie - Harvie, Bryne and Essa Road - Phases 3 and 4 Class EA

Attachments:

**NVCA Regulations-Wetland Mapping.jpg** 

Hello Melissa, sorry for the delay.

NVCA regulations and wetland mapping is attached.

The NVCA does not have wetlands, woodlands or valleylands mapped in your study area. NVCA does not have any ELC data or studies from your study area. The watercourse in your study was realigned when the Shopper's Drug Mart was repurposed (around 2007). An EIS was never done because it was an existing commercial property. While no baseline work was done Gartner Lee did the report and they do cite the site as having a "warmwater fishery but contributing to a coldwater fishery downstream". Ultimately an enhanced buffer was put around the creek.

We do not have any fisheries records or fish habitat information that far up on the tributary of Bear Creek. However, that watercourse does contribute to downstream coldwater habitat (around County Road 27 and 25<sup>th</sup> Sideroad) and brook trout records from 2002.

Information on SAR and ANSI (if any) will need to be acquired from MNRF.

Regards,

Tan

# Ian Ockenden M.Sc. | Watershed Monitoring Specialist

Nottawasaga Valley Conservation Authority 8195 8<sup>th</sup> Line, Utopia, ON LOM 1T0 T 705-424-1479 ext. 234 | F 705-424-2115

iockenden@nvca.on.ca nvca.on.ca

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From: Torchia, Melissa [mailto:melissa.torchia@hatch.com]

Sent: March-03-17 3:59 PM

To: Ian Ockenden; Dave Featherstone

Cc: Alvaro Almuina; Kelly, Terry; Alexander, Melissa

Subject: RE: City of Barrie - Harvie, Bryne and Essa Road - Phases 3 and 4 Class EA

March 3, 2017

Hi lan,

Hope all is well.

Please see attached a map outlining the study area.

If you could provide any information you have but not limited to:

- Any natural heritage features mapping on file:
  - o Wetlands, Woodlands, ANSIs, Valleylands, Wildlife Habitat Fish Habitat cool and warm water thermal regime
- Ecological Land Classification Data
- Fisheries Data on the whole species type, habitat etc, sampling station.
- Floodplain/regulation mapping
- NVCA property lines
- Any additional reports or studies that may contain bird survey data, turtles, amphibians, vegetation woodland and wetlands

If you have any questions, please do not hesitate to contact me.

Kind regards, Melissa

Melissa Torchia, M.A.Sc. Environmental Planner / Infrastructure

Tel: +1 289 288 2740 Fax: +1 905.315.3569 5035 South Service Road, Sixth Floor, Burlington Ontario Canada L7L 6M9

# HATCH



Please think before you print.

From: Alexander, Melissa

Sent: Thursday, March 2, 2017 10:56 AM

To: Dave Featherstone < dfeatherstone@nvca.on.ca>; Ian Ockenden < iockenden@nvca.on.ca> 

Subject: RE: City of Barrie - Harvie, Bryne and Essa Road - Phases 3 and 4 Class EA

Thanks Dave.

Can you please keep Melissa T included on the distribution of material.

Melissa Alexander, B.Sc., MCIP, RPP Environmental Planner / Transportation & Logistics

Tel: +1 519 489 4109

Burlington

From: Dave Featherstone [mailto:dfeatherstone@nvca.on.ca]

Sent: Thursday, March 02, 2017 10:54 AM To: Alexander, Melissa; Ian Ockenden

Cc: Barbra Perreault

Subject: RE: City of Barrie - Harvie, Bryne and Essa Road - Phases 3 and 4 Class EA

Hi Melissa. I will be involved at a higher level with this project but Ian Ockenden will be doing much of the work from the natural heritage end of things. Ian...please provide Melissa with whatever information we may have at hand re: natural heritage/streams – thanks! Barb Perreault from our office is likely the key contact at this point from a regulations/permitting perspective.

Best regards,

David Featherstone, B.Sc.
Manager, Watershed Monitoring Program
Nottawasaga Valley Conservation Authority
8195 8<sup>th</sup> Line, Utopia, ON
LOM 1TO
(705) 424-1479 Ext. 242
dfeatherstone@nvca.on.ca

From: Alexander, Melissa [mailto:melissa.alexander@hatch.com]

**Sent:** March-02-17 9:56 AM **To:** Dave Featherstone

Cc: Torchia, Melissa; Alvaro Almuina; Kelly, Terry

Subject: City of Barrie - Harvie, Bryne and Essa Road - Phases 3 and 4 Class EA

HI Dave,

I received your contact information from the LSRCA. Hopefully you're the correct contact.

The City of Barrie has recently initiated the continuation to the roadway improvements to the following sections of road:

- Harvie Road (From Essa Road to just west of Hwy 400)
- Essa Road (from Mapleview Drive to Coughlin Road)
- Bryne Road (from Mapleview Drive to Essa Road)

The recommendation for these improvements were presented in the Multi-Modal Transportation Master Plan which was undertaken by the City of Barrie.

We are the process of gathering all existing Natural Heritage information for the Study Area (i.e., GIS). Can you please advise what you need from us in order to expedite this process? Based on our review of the study area, only the Essa Road improvements (between Mapleview and Couglin) falls under your jurisdiction, including Bear Creek.

In addition, we would like to set up a meeting with the NVCA, and LSRCA in the next few weeks once we receive the information to confirm expectations and project coordination.

Please let me know if you have any questions.

Thank you,

Melissa Alexander, B.Sc., MCIP, RPP Environmental Planner / Hatch Infrastructure

Tel: +1 519 489 4109 5035 South Service Road, Sixth Floor, Burlington Ontario Canada L7L 6M9



# **NVCA Regulation Limits and Wetland Classification**



Date: 06-Mar-2017

# Legend

River / Stream

NVCA Regulated Extent **MNRF** Wetlands

**MNR Classification** 

Evaluated-Provincial Evaluated-Other

Un-Evaluated

# Notes

# Conservation Authority Nottawasaga Valley

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Appendix A

# **Agency Consultation:**

Ministry of Natural Resources and Forestry

# Lajkosz, Alex

From:

Findlay, Graham (MNRF) < graham.findlay@ontario.ca>

Sent:

Thursday, April 13, 2017 3:46 PM

To:

Torchia, Melissa

Subject:

RE City of Barrie - Harvie, Bryne and Essa Road - Phase 3 and 4 Class EA - Project

Contact Inquiry and ESA Screen Request

### Original email ...

From: Torchia, Melissa [mailto:melissa.torchia@hatch.com]

Sent: March-03-17 4:50 PM

To: Mott, Ken (MNRF); Benner, Kim (MNRF)

Cc: Alvaro Almuina; Kelly, Terry; Alexander, Melissa

Subject: City of Barrie - Harvie, Bryne and Essa Road - Phase 3 and 4 Class EA - Project Contact Inquiry and ESA Screen

Request

March 3, 2017

Good afternoon Ken and Kim,

Hope all is well.

Previously we had been working with Maria Jawaid on projects in Barrie, but I understand now she has switched positions. As such, I have included you both on this email, in hopes to confirm a project contact at the MNRF.

To provide some context, the City of Barrie has recently initiated the continuation to the roadway improvements to the following sections of road:

- Harvie Road (From Essa Road to just west of Hwy 400)
- Essa Road (from Mapleview Drive to Coughlin Road)
- Bryne Road (from Mapleview Drive to Essa Road)

The recommendation for these improvements were presented in the Multi-Modal Transportation Master Plan which was undertaken by the City of Barrie. The City has retained Hatch to undertake these EA's and we were hoping to obtain an ESA screening request. For the previous project that we worked on with Maria (Hewitt's Secondary Plan), we sent our requests directly through her. If you would like us to contact a general esa mailbox or the management bio directly, that works for us, but if you can kindly identify the contact detail(s) that would be much appreciated.

I have attached some figures that show the three above noted project locations.

If you have any questions, or require additional details, please do not hesitate to contact me. We look forward to hearing from you.

Kindest regards, Melissa

Melissa just to confirm our approach to information requests – We in Midhurst have an expectation that consultants have a level of species at risk (SAR) knowledge and access to the Species at Risk in Ontario (SARO) List and to the Natural Heritage Information Centre (NHIC) database. As a result, given the volume of SAR information requests we receive, we typically require a requestor provide us a summary of their initial SAR screening and/or a summary of the SAR that it is reasonable to expect could be present based on the available

habitats in the subject study area(s). On review of your preliminary screening we can advise on additional species of interest based on available local data and knowledge of the area.

Further, you are likely aware the species at risk records found in the NHIC database are not exhaustive and are based on **known** occurrences only. As a result, <u>although there may be no record (or confirmation) of a SAR on site it does not mean that they are not present if appropriate habitat exists.</u> Due diligence is therefore still required and would include an appropriate consideration of what species could be present based on available habitat at the noted study areas. Your field work should inform you on what species on the SARO list could possibly be encountered based on available habitats in the areas of the study and the possible survey methodologies required during your site assessments.

Digital data for natural heritage features (e.g. wetland and ANSI mapping) and fish community data can be obtained through Land Information Ontario, and through the Make a Map: Natural Heritage Areas tool through LIO at ...

Land Information Ontario: https://www.ontario.ca/page/land-information-ontario

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\_Make A Map also has a function that provides access to data on SAR available in the NHIC. Make A Map does not provide fish community data.

Evaluating for other natural heritage values for example candidate significant wildlife habitats (SWH) will be informed by direction in the Natural Heritage Reference Manual, the Significant Wildlife Habitat Technical Guide and SWH Ecoregion 6E Criteria Schedule. Similarly to SAR occurrence reports, that natural heritage features might not have been mapped may not be indicative they are not on site, rather the assessments to identify them have not been done. Again, your field work will inform your review of the study areas for natural heritage features and functions.

Having said all that, regarding your request below is a preliminary review for features. The following features and/or species based on photo interpretation might be encountered within your three study areas (combined) might include (but may not be limited to) ...

- Natural Heritage features there are no evaluated wetlands, ANSIs, or deer wintering habitat in the immediate area of the three study zones.
- The headwater reaches of Whiskey Creek originate in the area of the Harvie Road and Bryne Drive study areas. However we do not have fish community data for the upper reaches of Whiskey Creek. A headwater tributary to Bear Creek crosses the Essa Road study area, again we do not have fish community data for that headwater reach.
- Barn swallow (Threatened)
- Henslow's sparrow (Endangered)
- Golden-winged warbler (Special Concern)
- Eastern wood-peewee (SC)
- Short-eared owl (SC)
- Whip-poor-will (T)
- Common nighthawk (SC)
- Eastern meadowlark (T)
- Bobolink (T)

- Red-headed woodpecker (SC)
- Monarch butterfly (SC)
- Endangered species of bats
- Butternut (E)

Do call with any further questions.

Regards,

Graham Findlay
Management Biologist
Huronia Resources Management Team,
Midhurst, MNRF
705-725-7530
705-725-7584 (fax)
graham.findlay@ontario.ca



Appendix B

# **Appendix B**

Selected Project Study Area Photographs

# HATCH



Photograph No.1: Essa Road approximately 100m north of Mapleview Drive W; facing west



Photograph No.2: Essa Road approximately 200m north of Mapleview Drive W; facing north



Photograph No.3: Bear Creek approximately 10m west of Essa Road, north of Mapleview Drive W; facing south



Photograph No.4: Essa Road approximately 500m north of Mapleview Drive W; facing south



Photograph No.5: Essa Road approximately 500m north of Mapleview Drive W; facing north



Photograph No.6: Essa Road at Coughlin Road; facing west

# HATCH



Photograph No.7: Essa Road at Coughlin Road; facing south



Photograph No.8: Essa Road at Mapleview Drive W; facing east



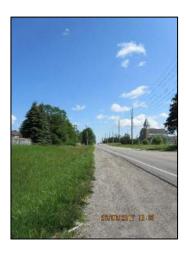
Photograph No.9: Bear Creek approximately 10m west of Essa Road, north of Mapleview Drive W; facing west



Photograph No.10: Essa Road approximately 400m north of Mapleview Drive W; facing east



Photograph No.11: Bear Creek approximately 10m west of Essa Road, north of Mapleview Drive W; facing west



Photograph No.12: Essa Road approximately 450m north of Mapleview Drive W; facing north





Photograph No.13: Bear Creek approximately 10m east of Essa Road, north of Mapleview Drive W; facing east