



DRAFT PLAN OF SUBDIVISION

BROCK STREET
TOWNSHIP OF UXBRIDGE
REGIONAL MUNICIPALITY OF DURHAM

SCOPED ENVIRONMENTAL IMPACT STUDY

Prepared for: Mr. David Sud, Westland Development Group
Submitted by: Niblett Environmental Associates Inc.
File: PN 18-066

Date: August 2018





Niblett Environmental Associates Inc.
Biological Consultants

August 21th, 2018

PN 18-066

Mr. David Sud
Westland Development Group
2 Farr Avenue
Sharon, Ontario
L0G 1V0

**SUBJECT: DRAFT PLAN OF SUBDIVISION
BROCK STREET
TOWNSHIP OF UXBRIDGE
REGIONAL MUNICIPALITY OF DURHAM

SCOPED ENVIRONMENTAL IMPACT STUDY**

Dear Mr. Sud,

Please find enclosed the scoped Environmental Impact Study (EIS) for the proposed development on two adjoining parcels on the south side of Brock Street in the Township of Uxbridge, Regional Municipality of Durham.

We have completed the necessary biological inventories and assessments. We have made recommendations to mitigate the impacts from the development.

Please contact our office if you have any questions or require further project support.

Sincerely,

A handwritten signature in blue ink, appearing to read "C. Ellingwood", is written over a light blue horizontal line.

Chris Ellingwood
President and Sr. Terrestrial and Wetland Biologist

ACKNOWLEDGEMENTS

The following NEA staff contributed to this project:

Project Co-ordinator:

Chris Ellingwood, Senior Terrestrial and Wetland Biologist

Authors:

Kari Van Allen, Terrestrial and Wetland Biologist

Amanda Smith, Senior Fisheries and Aquatic Biologist

Stacey Zwiers, Aquatic Biologist

Chris Ellingwood, Senior Terrestrial and Wetland Biologist

Field Crew:

Katherine Ryan, Terrestrial and Wetland Biologist

Kari Van Allen, Terrestrial and Wetland Biologist

Ernie Silhanek, former Terrestrial and Wetland Biologist

Chris Ellingwood, Senior terrestrial and Wetland Biologist

Graphics:

Will Pridham, GIS and Graphics Specialist

TABLE OF CONTENTS

1.0	Introduction	1
1.1	Background	1
1.2	Location and Study Area	1
1.3	Study Rationale	3
1.3.1	Federal Legislation	3
1.3.1.1	Fisheries Act	3
1.3.1.2 Species at Risk Act (2002) Schedule 1 (Subsections 2(1), 42(2) and 68(2)): List of Wildlife species at risk, Parts 1-4.	3
1.3.1.3	Migratory Birds Convention Act, 1994 (S.C. 1994, c.22)	3
1.3.2	Provincial Legislation	4
1.3.2.1	Endangered Species Act, 2007	4
1.3.2.2	Provincial Policy Statement, 2014	4
1.3.2.3	Greenbelt Plan, 2017	5
1.3.2.4	Growth Plan for the Greater Golden Horseshoe, 2017	6
1.3.3	Local and Other Regulatory Bodies	7
1.3.3.1	Durham Region Official Plan (2017)	7
1.3.3.2	Township of Uxbridge Official Plan (2014)	7
1.3.3.3	Lake Simcoe Region Conservation Authority (LSRCA) and Ontario Regulation 179/06	7
1.4	Other Resources Referenced	7
1.4.1	Data Sources	8
1.4.2	Literature and Resources	8
1.5	Scope of Report	8
2.0	Study Methods	9
2.1	General Approach	9
2.2	Site Study Methodology	9
2.2.1	Physical Site Characteristics	9
2.2.2	Biophysical Inventory	10
2.2.2.1	Vegetation	10
2.2.2.2	Birds	10
2.2.2.3	Other Wildlife	11
2.2.2.4	Fish and Aquatic Habitat	12
2.2.2.5	Significant Wildlife Habitat (SWH)	12
3.0	Survey Results	13
3.1	Physical Site Characteristics	13
3.1.1	Soils	13
3.1.2	General Site Characteristics	13
3.2	Biological Inventories	13
3.2.1	Vegetation	13
3.2.1.1	Introduction and Level of Effort	13

3.2.1.2 ELC Code Descriptions	14
3.2.1.3 Targeted SAR Survey	20
3.2.2 Birds	21
3.2.2.1 Introduction and Level of Effort	21
3.2.2.2 Breeding Bird Surveys	21
3.2.2.3 Targeted SAR Survey- Bobolink and Eastern Meadowlark	21
3.2.3 Other Incidental Wildlife Observations	21
3.2.4 Fish and Aquatic Habitat	22
3.2.4.1 Introduction and Level of Effort	22
3.2.4.2 Uxbridge Brook Subwatershed	22
3.2.4.3 Aquatic Habitat	22
3.2.4.4 Fish Community	24
3.2.5 Significant Wildlife Habitat	24
3.2.5.1 Introduction and Level of Effort	24
3.2.5.2 Significant Wildlife Habitat Site Assessment	24
4.0 Discussion and Analysis	25
4.1 Species and Communities	25
4.1.1 Vegetation	25
4.1.3 Other Wildlife.....	27
4.2 Natural Features	27
4.3 Fish and Aquatic Habitat	29
4.3.1 Aquatic Habitat	29
4.3.2 Fish Community	29
5.0 Description of Development	30
6.0 Impact Assessment and Recommendations	30
6.1 Uxbridge Bog Wetland Complex	33
6.2 Other Significant Natural Features	33
6.3 Aquatic Habitat	33
6.4 Fish Habitat	34
6.5 Species at Risk	35
6.5.1 Butternut	35
6.5.2 Barn Swallow	35
6.6 Regionally Rare Plants	36
7.0 Policies and Legislative Compliance	36
7.1.1 Federal Legislation	36
7.1.1.1 Fisheries Act	36
7.1.1.2 Species at Risk Act Schedule 1 (Subsections 2(1), 42(2) and 68(2)): List of Wildlife species at risk, Parts 1-4. (2018)	37
7.1.1.3 Migratory Birds Convention Act, 1994 (S.C. 1994, c.22)	38
7.1.2 Provincial Legislation	38
7.1.2.1 Endangered Species Act, 2007	38
7.1.2.2 Planning Act and Provincial Policy Statement, 2017	38

7.1.2.3 Greenbelt Plan, 2017	38
7.1.3 Local and Other Regulatory Bodies	38
7.1.3.1 Township of Uxbridge Official Plan, 2014	38
7.1.3.2 Lake Simcoe Region Conservation (LSRCA) and Ontario Regulation 179/06	39
8.0 Summary of Recommendations	40
8.1 General	40
8.2 Sediment and Erosion Control	40
8.3 Contaminant and Spill Management	41
8.4 Wetlands	42
8.5 Fish and Aquatic Habitat	42
8.5.1 General	42
8.5.2 Fish Salvage Plan	43
8.6 Species at Risk	43
8.7 Regionally or Locally Rare Species	43
9.0 Conclusion	44
10.0 References	45

LIST OF FIGURES

Figure 1. Natural Features, Vegetation Communities and Wildlife Survey Stations.....	2
Figure 2. Natural Heritage Features	28

LIST OF TABLES

Table 1. Vegetation Surveys – Level of Effort.....	13
Table 2. Bird Surveys – Level of Effort.....	21
Table 3. Watercourse Assessment – Level of Effort	22
Table 4. Impact Assessment and Recommendation Summary.....	31

LIST OF APPENDICES

Appendix I-A. Plant Species by Community
Appendix I-B. List of Significant Plants
Appendix II-A Bird Status Report
Appendix II-B. Breeding Bird Survey-Detailed Report
Appendix III. Fish Species List Historically Documented in the Unnamed Tributary to Uxbridge Brook
Appendix IV. Preliminary Development Plan, GHD (July 2018)

**DRAFT PLAN OF SUBDIVISION
BROCK STREET
TOWNSHIP OF UXBRIDGE
REGIONAL MUNICIPALITY OF DURHAM

SCOPED ENVIRONMENTAL IMPACT STUDY**

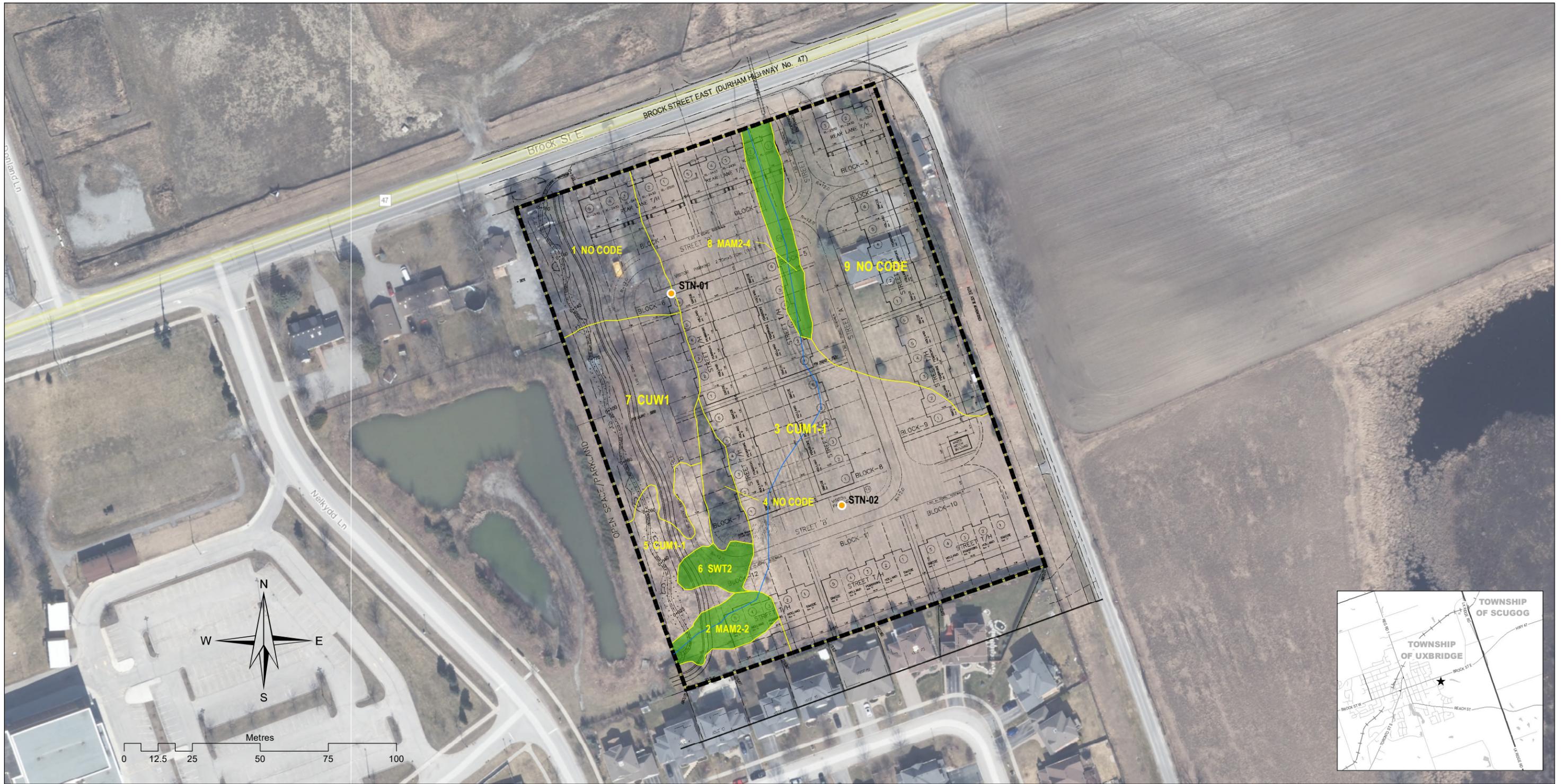
1.0 Introduction

1.1 Background

Niblett Environmental Associates Inc. (NEA) was retained by the developer to conduct an Environmental Impact Study (EIS) for the construction of a plan of subdivision on two adjoining parcels in the Township of Uxbridge. This EIS was prepared to fulfil the requirements of the Township of Uxbridge Official Plan. The properties are both currently occupied residential lots. The intent is to demolish the two existing single detached dwellings on the properties and replace them with a draft plan of subdivision.

1.2 Location and Study Area

The adjoining properties form the west half of Lot 30, Concession 7, in the geographic Township of Uxbridge, Regional Municipality of Durham. The properties are currently zoned 'Brock Street Mixed Use Area' and 'Residential' (Schedule "A") in the Township of Uxbridge Official Plan (Office Consolidation, 2014). The properties are rectangular in shape and are bounded to the north by Brock Street E (King's Highway No. 47), to the east by an unnamed road and agricultural fields, and the south by residential homes that front onto Brownscombe Crescent. Please refer to Figure 1 for additional information.



LEGEND

- BREEDING BIRD/EAME-BOBO STATION
- WATERCOURSE
- STUDY PROPERTY
- VEGETATION COMMUNITY
- WETLAND COMMUNITY

ELC TYPES (1ST APPROXIMATION)

CODE	TYPE DESCRIPTION
CUWI-1	DRY-MOIST OLD FIELD MEADOW
CUWI	MINERAL CULTURAL WOODLAND
MAM2-2	REED-CANARY GRASS MINERAL MEADOW MARSH
MAM2-4	FOWL MANNA GRASS MINERAL MEADOW MARSK
SWT2	MINERAL THICKET SWAMP

FIGURE 1: NATURAL FEATURES, VEGETATION COMMUNITIES & SURVEYS

PT LOT 30, CON 7, TOWNSHIP OF UXBRIDGE
REGIONAL MUNICIPALITY OF DURHAM
AURORA DISTRICT

UTM Zone 17
WKID: 26917 Authority: EPSG
Transverse Mercator
GCS North American 1983, ESRI ArcGIS 10.1

REVISIONS

NO	BY	DATE	DESCRIPTION
1	W.P.	10/08/2018	INITIAL MAP CREATION.
2	W.P.	13/08/2018	ADDED WATERCOURSE.
3	W.P.	16/08/2018	REMOVED OHN WATERCOURSE AND DIGITIZED NEW ONE. INCREASED WETLAND.
4	W.P.	22/08/2018	ADDED NEW SITE PLAN.

CONTACT: Will Fridham, GIS SPECIALIST & CARTOGRAPHER *WF*
PROJECT NO.: FN18-066
REVISION NO.: RV-04
PHONE/FAX: T: 1 (705)-878-9399
 F: 1 (705)-878-9390
PROJECT: BROCK ST DEV-UXBRIDGE
EMAIL: Will Fridham: WFRIDHAM@NIBLETT.CA
 GENERAL INQUIRIES: MAIL@NIBLETT.CA
CLIENT: WESTLAND DEVELOPMENT GROUP

SCALE:
1:1,400
 CENTIMETERS
 © Niblett Environmental Associates Inc. 2016.



1.3 Study Rationale

This section identifies federal, provincial and other regulatory legislation, policies, official plans (OP) and OP amendments that are applicable and relevant to the study area and the immediate vicinity. This includes policies that triggered the study. These documents may identify natural features, Species at Risk and other habitat as well as other features relevant to this study.

1.3.1 Federal Legislation

1.3.1.1 *Fisheries Act*

The purpose of the Fisheries Act is to maintain the sustainability and productivity of the commercial, recreational and Aboriginal fisheries in Canada. The *Fisheries Act* is focused on avoiding “serious harm to fish”, which is defined as “the death of fish or any permanent alteration to, or destruction of, fish habitat,” where “fish” include any fish that are part of a (CRA) fishery, or fish that support such a fishery, Section 34 (1), Section 35 (1 & 2) and *Section 36 (3)*. No work is permitted that causes serious harm to fish without a Fisheries Act authorization (Government of Canada, 1985).

1.3.1.2 *Species at Risk Act (2002) Schedule 1 (Subsections 2(1), 42(2) and 68(2)): List of Wildlife species at risk, Parts 1-4.*

The purposes of the Species at Risk Act (SARA) are to prevent wildlife species in Canada from disappearing, to provide for the recovery of wildlife species that are extirpated (no longer exist in the wild in Canada), endangered or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming endangered or threatened (Government of Canada, 2016).

1.3.1.3 *Migratory Birds Convention Act, 1994 (S.C. 1994, c.22)*

The purpose of the Migratory Birds Convention Act (MBCA 1994) is to implement the Convention by protecting and conserving migratory birds, as populations and individual birds, and their nests.

No work is permitted to proceed that would result in the destruction of active nests (i.e., nests with eggs or young birds), or the wounding or killing of bird species protected under the MBCA and/or Regulations under that Act (Government of Canada, 1994).

1.3.2 Provincial Legislation

1.3.2.1 *Endangered Species Act, 2007*

The purposes of the Ontario Endangered Species Act (ESA 2007) are:

1. To identify species at risk based on the best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge.
2. To protect species that are at risk and their habitats, and to promote the recovery of species that are at risk.
3. To promote stewardship activities to assist in the protection and recovery of species that are at risk. 2007, c. 6, s. 1. (Government of Ontario, 2018)

The ESA clearly defines the five classifications of species status as *extinct*, *extirpated*, *endangered*, *threatened*, or *special concern*, and provides guidelines on the process of species status determination.

General habitat protection is afforded to all species listed as *endangered* or *threatened*. General habitat descriptions are technical, science-based documents that have been developed for some of the species that are most likely to be affected by human activity. Further information including a *Recovery Strategy* or *Management Plan* is required for each listed species, on a timeline dictated by the species status.

1.3.2.2 *Provincial Policy Statement, 2014*

The Provincial Policy Statement, 2014 (PPS) is the statement of the Ontario government's policies on land use planning. It applies province-wide (in the province of Ontario) and provides provincial policy direction on land use planning. Municipalities use the PPS to develop their official plans and to guide and inform decisions on other planning matters. The PPS is issued under Section 3 of the Planning Act and all decisions affecting land use planning matters 'shall be consistent with' the Provincial Policy Statement (Government of Ontario, 2014).

Sections 2.1.4-2.1.8 of the Provincial Policy Statement (PPS 2014) apply to this project.

2.1.4 *Development and site alteration shall not be permitted in:*

- a) *significant wetlands in Ecoregions 5E, 6E and 7E¹; and*
- b) *significant coastal wetlands.*

2.1.5 Development and site alteration shall not be permitted n:

- a) *significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E¹;*
- b) *significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)¹;*
- c) *significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)¹;*
- d) *significant wildlife habitat;*
- e) *significant areas of natural and scientific interest; and*
- f) *coastal wetlands in Ecoregions 5E, 6E and 7E¹ that are not subject to policy 2.1.4(b) unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.*

2.1.6 Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

2.1.7 Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.

2.1.8 Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

1.3.2.3 Greenbelt Plan, 2017

The Greater Golden Horseshoe (GGH) is one of the most fast-growing in North America; it is currently home to over two-thirds of Ontario's population (OMMAH, 2017). The GGH is located in the heart of the Great Lakes region and contains many of Canada's most ecologically and hydrologically significant natural environments and scenic landscapes. Including the Oak Ridges Moraine and Niagara Escarpment (OMMAH, 2017). The Greenbelt Plan was introduced in 2005 to help shape the future growth in this region (i.e., the GGH).

The Greenbelt is a broad band of permanently protected land which:

-
- Protects against the loss and fragmentation of the agricultural land base and supports agriculture as the predominant land use;
 - Gives permanent protection to the natural heritage and water resource systems that sustain ecological and human health and that form the environmental framework around which major urbanization in south-central Ontario will be organized;
 - Provides for a diverse range of economic and social activities associated with rural communities, agriculture, tourism, recreation and resource uses; and
 - Builds resilience to mitigate climate change (OMMAH, 2017).

The property is within the Towns/Villages designation in the Protected Countryside. It is outside of the Natural Heritage System and linkage areas. As such most policies of the Greenbelt Plan do not apply (OMMAH, 2017).

1.3.2.4 Growth Plan for the Greater Golden Horseshoe, 2017

The Growth Plan for the Greater Golden Horseshoe, 2017 came into effect on July 1, 2017, replacing the Growth Plan for the Greater Golden Horseshoe, 2006 (OMMAH, 2017b).

The 2017 Growth Plan for the Greater Golden Horseshoe is a long-term plan that works with the Greenbelt Plan, the Oak Ridges Moraine Conservation Plan and the Niagara Escarpment Plan to provide a framework for growth management in the region (OMMAH, 2017b). The key growth management goals for the 2017 Growth Plan for the Greater Golden Horseshoe include:

- Managing growth by encouraging the development of communities in cities and towns that provide affordable housing options and easy access to the businesses and public services residents of all ages use every day.
- Improve and increase transportation options while reducing congestion.
- Focus investments in regional public service facilities in downtown areas.
- Build communities that maximize infrastructure investments, while balancing local needs for the agricultural industry and natural areas.
- Increase and promote economic growth (OMMAH, 2017b).

The subject properties does not fall within the new 2017 GGH plan area and as such is not subject to its policies.

1.3.3 Local and Other Regulatory Bodies

1.3.3.1 *Durham Region Official Plan (2017)*

Schedule A – Map A2 of the Durham Region Official Plan indicates that the subject properties fall within the ‘Living Area’ associated with the Town of Uxbridge. Schedule A also identifies the regional Greenlands System, including major open space areas outside of the town. The subject properties are not in the Greenlands System. The ‘Living Area’ designation permits local centres of development (i.e. consisting of urban centres, community centres and neighbourhood centres) to be designated in area municipal official plans, provided such Living Areas are designated accordance with the provisions of the regional Plan (e.g., sub-section 8B).

1.3.3.2 *Township of Uxbridge Official Plan (2014)*

Schedule A of the Official Plan of the Township of Uxbridge indicates that the subject properties are currently zoned ‘Brock Street Mixed Use Area’ and ‘Residential’ (Township of Uxbridge Official Plan - Office Consolidation, 2014). A watercourse is mapped on Schedule A, travelling diagonally across the properties from the southwest to the northeast. Additionally, Schedule A indicates that the eastern portion of the study area occurs less than 120m away from an environmental constraint area, that being the Uxbridge Bog Provincially Significant Wetland (PSW). As a result, policies associated with the protection of key natural heritage features and hydrologically sensitive features of the Uxbridge Official Plan apply to this site.

1.3.3.3 *Lake Simcoe Region Conservation Authority (LSRCA) and Ontario Regulation 179/06*

The study area is located within an area of interference with wetlands identified both southeast of the subject property (i.e., the Uxbridge Bog PSW) and across the property (i.e., the tributary to Uxbridge Brook (watercourse) identified in the Town of Uxbridge Official Plan). Both features are regulated by Lake Simcoe Region Conservation and subject to Ontario Regulation 179/06 for the Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (Government of Ontario 2013).

1.4 **Other Resources Referenced**

Prior to field surveys, background information for the study area and surrounding lands from a variety of sources were reviewed to provide context for the setting and sensitivity of the site. Background information sources include:

1.4.1 Data Sources

- Aerial imagery
- MNRF Land Information Ontario (LIO) database mapping and Natural Heritage Information Centre (NHIC) Make a Map tool
- Ontario Breeding Bird Atlas data (Bird Studies Canada (BSC) 2001-2005 field data)
- Ontario Reptile and Amphibian Atlas (Ontario Nature)
- Aquatic Resource Area - fish species list (OMNR, 2012)
- DFO Aquatic Species at Risk Mapping (Department of Fisheries and Oceans)

1.4.2 Literature and Resources

- Natural Heritage Reference Manual (MNRF, 2010)
- Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. Peterborough, 38pp. (OMNRF, 2015)
- Uxbridge Brook Watershed Management Plan (LSRCA 1997)

1.5 **Scope of Report**

The main goals of this EIS report are: to confirm the boundaries of key natural features (e.g. the wetland features) and watercourses on the property; to confirm and identify the ecological function of any features and/or watercourses found; to determine whether any Species at Risk and/or their habitats occur on the subject property; and, to develop appropriate buffers and mitigation measures to prevent impacts of the development on these features and their functions.

2.0 Study Methods

2.1 General Approach

Our approach to preparing this EIS consisted of three distinct phases. In the first phase, available background information on the site was compiled and reviewed.

The second phase consisted of site visits by our terrestrial and wetland biologists to collect new site-specific information and confirm the information obtained through the literature review. Surveys included:

- Botanical inventory and vegetation community mapping (according to the Ecological Land Classification for Southern Ontario);
- Two breeding bird surveys;
- General surveys for wildlife (including amphibians, reptiles and mammals);
- Habitat assessments for wildlife including wildlife linkages;
- Assessments of the ecological function of natural features on site;
- Screening for presence of significant species or their habitat (including Species at Risk).

The third phase consisted of preparing an EIS report based upon both the literature review and any field surveys completed according to applicable legislation and policies (as outlined in Section 1.3). The EIS report is designed to identify natural heritage features, assess their functions, and provide recommendations to mitigate any potential impacts from the proposed development.

This report will only deal with the suitability of the site from a biological perspective and the constraints due to the presence of the key natural heritage features and NHS policies. Any other approvals or constraints due to zoning, flood and fill regulations, Minimum Distance Separation (MDS), health regulations or other approvals for the municipality and other agencies are the responsibility of the owner.

2.2 Site Study Methodology

2.2.1 Physical Site Characteristics

Site characteristics were assessed during our field visits. These may include general documentation of existing disturbances, current usage, age of vegetation cover, access lanes,

general topography and soils. The descriptions from other study team members and geotechnical reports are used where available to assist in describing physical features.

2.2.2 Biophysical Inventory

2.2.2.1 *Vegetation*

Ecological Land Classification (ELC) Survey Method

All vegetation encountered in the study area was inventoried during the site visits. Delineation and classification of the vegetation community types was based on the Ecological Land Classification for Southern Ontario, First Approximation (Lee et al., 1998). General notes on disturbance, topography, soil types, soil moisture and state of each community were also compiled. Wetland boundaries were confirmed in the field following the methodologies in the Ontario Wetland Evaluation System Southern Manual, Third Edition version 3.2 and updates (OMNRF, 2013).

Targeted Species at Risk (SAR) Surveys- Butternut (*Juglans cinerea*)

While ELC surveys were being conducted, experienced biologists searched for rare, significant and/or unusual species. Whenever these species were found, their occurrence information was documented. In the case of butternut, a detailed evaluation was conducted by an OMNRF certified Butternut Health Assessor (BHA #527).

2.2.2.2 *Birds*

Breeding Bird Survey (BBS)

Bird surveys were conducted following the protocols of the Ontario Breeding Bird Atlas (OBBA) point count. Two surveys were conducted in peak breeding season (May 24 -July 10th) approximately 10-15 days apart. All birds seen or heard within the five-minute station period were documented and breeding evidence codes recorded. Surveys were conducted in the early morning (i.e., between dawn and 9am). Survey stations were established along the eastern edge of the woodland and within the open field in order to adequately survey birds using all habitats in the study area (Figure 1).

Targeted Species at Risk (SAR) Surveys – Bobolink and Eastern Meadowlark

Surveys were conducted according to the protocol developed by the OMNRF for bobolink, which was also adopted for the eastern meadowlark. Transects and point counts were established in appropriate habitat for these species (i.e., old field habitats with tall grasses). GPS locations were recorded for each point count.

Surveys began at dawn and continued until no later than 9am. Each point contained a ten-minute observation period specifically focusing on detection of the target species (either bobolink or eastern meadowlark). The information recorded included variables such as species observed (by site or sound), species location, direction, distance and interactions with other bird species.

Three point-count surveys were conducted between the last week of May and the first week of July, with each survey separated by a week or more from previous surveys. Surveys were conducted on days with no precipitation, no or low wind speed and good visibility.

Habitat was documented including general field conditions in any locations that bobolinks/eastern meadowlarks were observed. Habitat descriptors such as, fence lines, field hedgerows, height of vegetation and dominant vegetation species was recorded. Photographs of the site were taken. Searches for nest sites were not completed.

Incidental Observations

Incidental observations of birds encountered while on site were recorded along with the general location in which they were observed when conducting other field work on the site.

2.2.2.3 Other Wildlife

Incidental Observations

Incidental observations of any other wildlife (e.g., amphibians, reptiles and mammals) encountered while surveyors were on site were recorded. Documentation included notes about the species, location and type of observation (e.g., direct sightings and indirect evidence such as calls, tracks, scat, burrows, dens and browse). No Marsh Monitoring Program surveys were conducted.

2.2.2.4 *Fish and Aquatic Habitat*

Fish Habitat Assessment

General visual aquatic habitat assessment was conducted to verify the presence of watercourses and/or headwater draining feature within the subject lands. Standardized provincial aquatic protocols (OSAP, MTO) were not completed. Biologist on site observed local substrate composition, vegetation, flow influence and condition, cover, groundwater indicators, riparian habitat, barrier presence, land use and landscape influences, human modifications and unique features.

Fish Community

Fish community surveys were not completed by NEA due to the availability of fish species list obtained from the Ministry of Natural Resources and Forestry (OMNR, 2012).

2.2.2.5 *Significant Wildlife Habitat (SWH)*

Significant wildlife habitat often occurs within other natural heritage features and areas covered by Policy 2.1 of the Provincial Policy statement (e.g., significant wetlands). Therefore, it has been suggested that identification and evaluation of significant wildlife habitat is best undertaken after other natural heritage features have been identified (Natural Heritage Reference Manual, 2010).

Determining what constitutes significant wildlife habitat varies across Ontario because of the differences in ecological landscapes, as well as in the distribution, quality and amount of remaining habitat. To assist in the determination of significant wildlife habitat, OMNRF produced schedules for each Ecoregion. These schedules were produced using science and expert knowledge (Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E, 2015).

NEA biologists analyzed the information collected from the ecological communities on the subject property using the criteria for Significant Wildlife Habitat in Ecoregion 6E (2015).

3.0 Survey Results

3.1 Physical Site Characteristics

3.1.1 Soils

The study area is found in an area with predominantly Pontypool sandy loam and Schomberg silt loam soils (Chapman and Putnam, 1984). Additionally, muck soils have been identified to the east of the subject property (Chapman and Putnam, 1984). Although soils on the subject property have been influenced by past farming practices, they are also influenced by adjacent residential land uses and associated infrastructure (e.g., storm water management ponds, paved roadways).

3.1.2 General Site Characteristics

The site was primarily composed of two distinct properties. The western site with a small dwelling, with an unmaintained yard and former landscape nursery. The eastern property consisted of a large house, manicured yard and hayfield. In the south portion of the western lot, a small wetland community was found. There was also a seasonal watercourse feature (i.e., swale) that drained from the southwest of the property (stormwater pond outfall) towards the northeast. The topography was relatively flat. The properties have frontage on Brock Street East (Kings Highway 47).

3.2 Biological Inventories

3.2.1 Vegetation

3.2.1.1 *Introduction and Level of Effort*

The vegetation communities were delineated within the study by NEA biologists according to the methodologies outlined in Section 2. Surveys were conducted on June 12th and 28th, 2018. A summary of the level of effort and environmental conditions have been provided in Table 1. The vegetation community survey results have been discussed in Table 1.

Table 1. Vegetation Surveys – Level of Effort

Survey Date	Survey Type	Weather	Effort (person hrs)
June 12, 2018	Partial ELC	17°C, cloud cover 0/10, wind scale 0, no precipitation	0.5
June 28, 2018	ELC, butternut assessment	18°C, cloud cover 10/10, wind scale 0, no precipitation, very humid	2

3.2.1.2 ELC Code Descriptions

Nine (9) vegetation communities were identified within the study area. Each community is described below and illustrated on Figure 1. A total of 96 plant species were identified during field surveys. The dominant species in each community are described below and a complete plant list is found in Appendix I-A.

Community 1 Old Nursery, Shed & Manicured Open Space (No applicable ELC)

Community 1 was found on the northwestern portion of the subject property. This human-influenced community was bounded to the north by Brock Street East, to the east by Community 3 (an old field), to the south by Community 7 (a cultural savanna) and to the west by the neighbouring residential property (Figure 1). A number of middle-age specimen trees were documented in this vegetation community including planted specimen trees such as black walnut (*Juglans nigra*), maidenhair tree (*Ginkgo biloba*) and horse chestnut (*Aesculus hippocastanum*). Shrub species included lilac (*Syringa vulgaris*), European buckthorn (*Rhamnus cathartica*) and wild red raspberry (*Rubus ideaus*). The ground layer contained a mixture of herbaceous species typical of residential lawns including Kentucky blue grass (*Poa pratensis*), common dandelion (*Taraxacum officinale*), white clover (*Trifolium repens*) and broad-leaved plantain (*Plantago major*).



Photo 1: Community 1 (June 28, 2018)

Community 2 Reed Canary Grass Mineral Meadow Marsh Type (ELC: MAM2-2)

Community 2 was found on the southwestern portion of the subject property. It was bounded to the north by an old field (Community 5) and a mineral thicket swamp (Community 6), to the east by an old field (Community 3), to the south by the backyards of residential properties and to the west by a storm water management pond (Figure 1). This meadow marsh community was dominated by reed canary grass (*Phalaris arundinacea*), though other species characteristic of wetland environments were also present, including wild blue flag (*Iris versicolor*), purple-stemmed aster (*Symphotrichum puniceum*) and spotted joe-pyeweed (*Eupatorium maculatum*).



Photo 2: Community 2 – MAM2-2 (June 28, 2018)

Community 3 Dry-Moist Old Field Meadow Type (ELC: CUM1-1)

Community 3 was the largest vegetation community in the study area. It was bounded to the north by Brock St. E and to the south by the rear yards of residential properties (Figure 1). There were no tree or shrub species observed in this vegetation community. Instead, the dominant species were grasses such as: awnless brome (*Bromus inermis*), orchard grass (*Dactylis glomerata*), timothy (*Phleum pratense*) and fowl manna grass (*Glyceria striata*).



Photo 3: Community 3 – CUM1-1 (June 12, 2018)

Community 4 Fencerow (No applicable ELC code)

Community 4 was a relatively narrow strip of trees that separated two old-field meadow type communities (i.e., Communities 3 and 5) (Figure 1). Canopy tree species included eastern white cedar (*Thuja occidentalis*), white birch (*Betula papyrifera*), Kentucky coffee tree (*Gymnocladus dioicus*) and trembling aspen (*Populus tremuloides*). Few shrub species were present, and these were choke cherry (*Prunus virginiana*), staghorn sumac (*Rhus typhina*) and European buckthorn. Groundcover species included bitter nightshade (*Solanum dulcamara*), dwarf enchanter's nightshade (*Circaea alpina*), western poison ivy (*Rhus rydbergii*) and number of species observed in adjacent vegetation communities.



Photo 4: Community 4 - Fencerow (June 28, 2018)

Community 5 Dry-Moist Old Field Meadow Type (ELC: CUM1-1)

Community 5 was found along the western edge of the property. It was bounded by Community 2 (MAM2-2) to the south, by Community 6 (SWT2) to the east, by Community 7 (CUS1) to the north, and by a storm water management pond to the west (Figure 1). There were two seedling tree species and no shrub species in this vegetation community. The dominant groundcover species in this vegetation community was tall goldenrod (*Solidago altissima*), though other species characteristic of early successional environments were also present (e.g., awnless brome grass, timothy, cow vetch (*Vicia cracca*) and white clover).



Photo 5: Community 5 – CUM1-1 (June 12, 2018)

Community 6 Mineral Thicket Swamp Ecosite (ELC: SWT2)

Community 6 was found in the southwest of the property, adjacent to the large old-field meadow Community (3) (Figure 1). It was bounded by wetland communities to the south and west (Communities 2 and 5) and by a fencerow to the north. Canopy species included trembling aspen (*Populus tremuloides*) and eastern white cedar. Shrub species included crack willow (*Salix fragilis*), slender willow (*Salix petiolaris*) and red-osier dogwood (*Cornus stolonifera*). A variety of wetland indicator species could be found in the ground layer including reed canary grass, common cattail (*Typha latifolia*) and America stinging nettle (*Urtica dioica* ssp. *Gracilis*).



Photo 6: Community 6 – SWT2 (June 28, 2018)

Community 7 Mineral Cultural Woodland Ecosite (ELC: CUW1)

Community 7 was found along the western portion of the property and was bounded to the east by old field (Community 3) and the western lot line to the west (Figure 1). Canopy tree species included sugar maple (*Acer saccharum*), Manitoba maple (*Acer negundo*), Kentucky coffee tree (*Gymnocladus dioica*), butternut (*Juglans cinerea*) and trembling aspen. Shrub species included lilac and apple (*Malus domestica*). The groundcover was composed of a number of species typically found in early successional environments including Canada goldenrod (*Solidago canadensis*), Kentucky blue grass, Queen-Anne's lace (*Daucus carota*) and bird's foot trefoil (*Lotus corniculatus*).



Photo 7: Community 7 – CUW1 (June 12, 2018)

Community 8 Fowl Manna Grass Mineral Meadow Marsh Type (ELC: MAM2-4)

Community 8 was a narrow strip of vegetation bounded by vegetation Community 3 (CUM1-1) to the west and a residential lawn to the east (Community 9) (Figure 1). This is indicative of a seasonal swale where moisture creates conditions favourable for these species. This meadow marsh contained no tree or shrub species. Instead, it was dominated by a few grass and sedge species including fowl manna grass (*Glyceria striata*), awl-fruited sedge (*Carex stipata*) and needle spike-rush (*Eleocharis acicularis*).



Photo 8: Community 8 – MAM2-4 (June 28, 2018)

Community 9 Manicured Open Space (No applicable ELC code)

Community 9 was found in the northeast of the study area. It included a few tree species obtained from a garden centre or nursery, including Norway spruce (*Picea alba*), white spruce (*Picea glauca*) and honey locust (*Gleditsia triacanthos*), but was predominantly species typically associated with a residential lawn, including Kentucky blue grass, common dandelion and broad-leaved plantain.



Photo 9: Community 9 – Manicured open space (June 28, 2018)

3.2.1.3 Targeted SAR Survey

Species at Risk - Butternut (*Juqans cinerea*)

Three butternut trees (three live stems) were found on the subject property. They were found at the south end of vegetation Community 7 (CUW1). As this property was a former landscape nursery, they were likely planted. Butternut is significant at both the national and provincial levels (COSEWIC, 2018; COSSARO, 2018). It is considered to be a federally and provincially endangered species. The trees were assessed per the requirements of the OMNRF by a certified Butternut Health Assessor (BHA #527), and were found to be of moderate health, with evidence of twig and branch dieback and both open and sooty wounds on each tree. Based on its health, one tree was determined as *Category 1*, or *un-retainable* while the other two were *Category 2*, or *retainable*.

3.2.2 Birds

3.2.2.1 Introduction and Level of Effort

Breeding birds were identified within the study by NEA biologists according to the methodologies outlined in Section 2.2.2.2. Surveys were conducted on June 12th and June 28th, 2018. A summary of the level of effort and environmental conditions at the time the surveys were conducted has been provided in Table 2.

Table 2. Bird Surveys – Level of Effort

Survey Date	Survey Type	Weather	Start Time	Effort (person hrs)
June 12, 2018	Breeding Bird Survey	17°C, cloud cover 0/10, wind scale 0, no precipitation	8:20am	0.25
June 28, 2018	Breeding Bird Survey	18°C, cloud cover 10/10, wind scale 0, no precipitation, very humid	8:15am	0.25

3.2.2.2 Breeding Bird Surveys

A total of 14 bird species were detected during breeding bird surveys on June 12th and June 28th, 2018 (Appendix II-A). Species typical of rural landscapes and edge habitats were detected from both survey stations. These included: American robin (*Turdus migratorius*), mourning dove (*Zenaida macroura*) and song sparrow (*Melospiza melodia*). From the first point count station (01BBS), species associated with wetland edges were observed. These included red-winged blackbirds (*Agelaius phoeniceus*) and yellow warblers (*Dendroica petechia*). Point count stations are identified in Figure 1. A detailed list of birds observed during surveys and associated observations found in Appendix II-B.

3.2.2.3 Targeted SAR Survey- Bobolink and Eastern Meadowlark

Although old field habitat was present on site, no eastern meadowlark or bobolink were detected either during the targeted bobolink/meadowlark transect surveys, or incidentally (i.e., while other fieldwork was being conducted).

3.2.3 Other Incidental Wildlife Observations

NEA biologists kept a record of any bird, mammal and/or herpetofauna species encountered during vegetation survey work on the subject property (i.e., on June 12th and June 28th, 2018.)

No additional bird species were identified within the study area that had not already been detected during breeding bird surveys. Two mammal species, the eastern chipmunk (*Tamias striatus*) and red squirrel (*Sciurus vulgaris*) were detected in Communities 1 (Manicured open space) and 5 (CUM1-1), respectively. No amphibian and reptile species were detected during NEA's site visits to the subject property.

3.2.4 Fish and Aquatic Habitat

3.2.4.1 *Introduction and Level of Effort*

The general watercourse assessments were completed within the study by NEA biologists according to the methodologies outlined in Section 2.2.2.4. Surveys were conducted on June 28th, 2018. A summary of the level of effort and environmental conditions have been provided in Table 3.

Table 3. Watercourse Assessment – Level of Effort

Survey Date	Survey Type	Weather	Effort (person hrs)
June 28, 2018	Visual watercourse assessment	18°C, cloud cover 10/10, wind scale 0, no precipitation, very humid	1.0

3.2.4.2 *Uxbridge Brook Subwatershed*

The unnamed tributary located in the study was a headwater drainage feature of the Uxbridge Brook (Figure 1). Uxbridge Brook is located within the Lake Simcoe Region Conservation Authority (LSRCA) jurisdiction and is part of the Uxbridge Brook Subwatershed.

The headwaters running through the town of Uxbridge were classified as cold water and support Brook Trout and other sensitive aquatic species. The tributaries located within the main branch were classified as cool to coldwater and tributaries within the downstream reaches were classified as warmwater (LSRCA, 1997).

3.2.4.3 *Aquatic Habitat*

The tributary located within the study area runs through the middle of the property and flows south to north (Figure 1). The tributary has been historically altered and the feature is hydrologically sourced by a stormwater pond outfall located in the southeast corner of the property. In addition, all flows are received by a temporary stormwater pond north of Brock Street E on an approved plan of subdivision block.

During assessments the tributary had no flowing water, poorly defined channels and little to no substrate sorting (Photo 10 and 11). Therefore, the tributary was classified as a drainage swale based on existing conditions at the time of assessments and following OSAP Modules 10 and 11. A swale is classified as a shallow depression that conveys flows during a large rain event or snow melt that has poorly defined channels. Flows typical of a swale are not sufficient enough to cause substrate sorting or vegetation growth within the feature (Stanfield, L, 2017). The feature was only assessed in the summer, however, the hydrological classification would be determined by the upstream stormwater pond design.



Photo 10. Unnamed tributary to Uxbridge Brook downstream of stormwater pond (June 28th, 2018).



Photo 11. Unnamed tributary to Uxbridge Brook CSP culvert crossing Brock Street E (June 28th, 2018).

3.2.4.4 *Fish Community*

Fish community surveys were not conducted by NEA biologists in the tributary due to the presence of existing fish community data for the study area obtained from MNR. A summary of the fish species historically present has been provided in Section 5.4.2 and Appendix III.

3.2.5 Significant Wildlife Habitat

3.2.5.1 *Introduction and Level of Effort*

As was mentioned in Section 2.2.4, information from the ecological communities inventoried during the site visits was analyzed using the criteria for significant wildlife in Ecoregion 6E.

3.2.5.2 *Significant Wildlife Habitat Site Assessment*

No seasonal concentration areas for animals, rare vegetation communities, specialized wildlife habitat, habitat for species of conservation concern or animal movement corridors were determined during our candidate review and no other SWH were documented to occur on the subject property during our field surveys.

4.0 Discussion and Analysis

4.1 Species and Communities

4.1.1 Vegetation

Four significant plant species were found during the field inventories based on COSEWIC, 2018; COSSARO, 2018; SARA, 2018 and Varga et al., 2000. Two Species at Risk (SAR) tree species, namely butternut and Kentucky-coffee tree, were detected on the subject property. Two additional species, the white oak and the hard-stemmed bulrush were identified as regionally rare (Varga, 2000). Further information on these occurrences can be found below.

Butternut

The three butternut trees found on site (Community 7) were assessed. One was assessed and determined to be *Category 1*, or *non-retainable* tree by a certified Butternut Health Assessor. The other two were determined to be *Category 2*, or *retainable*. It is likely these trees were planted on the property by the owner. The required documentation must be forwarded to the OMNRF 30 days before the proposed activity (clearing) occurs. As they were planted, no compensation is required under the ESA.

Kentucky Coffee-tree

The study property is not a documented location of 'natively-occurring' Kentucky coffee-trees in Canada (Figure 1 in Environment Canada, 2014). Kentucky coffee-tree is frequently planted as an ornamental tree, often from non-native stock originating from the United States (Environment Canada, 2014). Further, many planted trees across southern Ontario are of unknown genetic origin, making it difficult to ascertain whether these trees are: native, planted from native stock, planted cultivars from the United States or offspring of horticultural specimens that have spread into natural habitat (Environment Canada, 2014). As it is only naturally occurring Kentucky coffee-trees that are considered to be both nationally and provincially at risk (Threatened: COSEWIC, 2018 and COSSARO, 2018), the *Endangered Species Act*, 2007 does not apply for the Kentucky coffee-trees found on the subject property (Community 4 & 7). As this property was a former landscape nursery, it is likely it was planted.

Locally and Regionally Rare Species

Two additional species, which are considered to be regionally rare (Varga et al., 2000), were detected on the subject property. Hard-stemmed bulrush (*Gymnocladus dioicus*) was observed in Community 8 (MAM2-4) and white oak (*Quercus alba*) was documented as occurring in Community 1 (Manicured open space). Both are commonly found in this area

and are not considered to be regionally rare or requiring transplanting.

Vegetation Communities

None of the ecological community types identified on the property are considered provincially rare (NHIC, 2018).

4.1.2 Birds

Only one bird species detected during NEA's breeding bird surveys is considered to be significant at the federal (COSEWIC & SARA, 2018 – Threatened) and provincial level (COSSARO, 2018 - Threatened). Barn swallows (*Hirundo rustica*) nest in man-made structures, generally barns. This species was foraging above Vegetation Community 3 (CUM1-1) and was likely nesting at the barn located to the east or northeast of the subject property. No nests were encountered on-site.

Records obtained from the Ontario Natural Heritage Information Centre (2018), indicate one species at risk occurred within the 1km x 1 km square overlapping the property (17PK7513), the bobolink. This record of bobolink (*Dolichonyx oryzivorus*) dates back to 2004. Bobolinks prefer tall, grassy meadows and ditches, hayfields and some croplands. There was apparent suitable habitat for this species within the study area, and the species itself was not detected during targeted surveys conducted by NEA in June 2018. The field is harvested for hay and/or cut annually.

Ontario Breeding Bird Atlas (OBBA) records for the 10 km x 10 km square that overlaps the property (17PJ58) include 20 bird species that are considered provincially significant (BSC, 2007). These records are for: least bittern (Threatened), yellow rail (Special Concern – 1st OBBA only), short-eared owl (Special Concern), common nighthawk (Special Concern), whip-poor-will (Threatened), chimney swift (Threatened), red-headed woodpecker (Special Concern), olive-sided flycatcher (Special Concern – 1st OBBA only), eastern wood-pewee (Special Concern), loggerhead shrike (Endangered – 1st OBBA only), bank swallow (Threatened), barn swallow (Threatened), wood thrush (Special Concern), golden-winged warbler (Special Concern), cerulean warbler (Threatened), Louisiana waterthrush (Threatened), Canada warbler (Special Concern), grasshopper sparrow (Special Concern), bobolink (Special Concern) and eastern meadowlark (Threatened). Many of these records were associated with larger natural features outside of the immediate study area, including the provincially significant Uxbridge Bog PSW to the east of the subject property and the Beaverton River Wetlands Area of Natural and Scientific Interest to the northwest. There was no suitable habitat for any of these bird species with the exception of grasshopper sparrow (*Ammodramus savannarum*), bobolink (*Dolichonyx oryzivorus*) and eastern meadowlark (*Sturnella magna*).

4.1.3 Other Wildlife

The Ontario Reptile and Amphibian Atlas (Ontario Nature, 2018) records for the 10 km x 10 km square that overlaps the property (17PJ58) includes one species that is considered significant at either the provincial (COSSARO, 2018) or federal (COSEWIC 2018) level. This record was for snapping turtle (Special concern). As was the case with records from the OBBA, some of these observations would be associated with larger natural features outside of the immediate study area.

The snapping turtle (*Chelydra serpentina*) is listed both federally and provincially as Special Concern (COSSARO, 2018; COSEWIC 2018). Snapping turtles spend most of their lives in shallow waters with only their noses exposed to the surface to breathe. During the nesting season, females travel overland in search of suitable nesting sites, usually gravelly or sandy areas along streams or along railway lines and shoulders of roadways. No nests or turtles were observed during NEA field surveys. Although the unnamed gravel road to the east of the subject property might provide potential nesting habitat for a snapping turtle, it is outside of the development envelope. No shallow water communities occur on the subject property. The stormwater pond may provide overwintering and foraging habitat for this species.

4.2 Natural Features

Portions of one evaluated wetland complex are found within 120m of the subject property (Figure 2). This wetland complex (the Uxbridge Bog) has been evaluated by OMNRF under the Ontario Wetland Evaluation System. It is classified as provincially significant by the OMNR and is incorporated into the natural heritage system of the Township of Uxbridge's Official Plan (Township of Uxbridge, 2014).

Three small wetlands (Communities 2, 6 and 8) are located on the southwestern portion of the subject property. These small wetlands (0.044ha, 0.039ha and 0.027ha; total of 0.1 ha) have not been evaluated by OMNRF. They were not previously mapped and were identified by NEA during field surveys (Figure 1).



Figure 2. Natural Heritage Features

Green shading represents Uxbridge Brook PSW.

Red outline encircles study area.

4.3 Fish and Aquatic Habitat

4.3.1 Aquatic Habitat

The tributary to Uxbridge Brook has been assessed as a headwater draining feature. However, it has been significantly altered and now functions as an overland flow corridor between two stormwater ponds. The MNRF fish community data suggest the feature historically provided direct habitat for cool/cold water fish community (Appendix III). However, this function has likely been removed due to the surrounding landscape stormwater management decisions.

A headwater drainage feature assessment of the tributary was conducted by Geo Morphix Ltd. in 2018. The assessment classified the feature as a swale with no defined channel banks or riffle-pool formation. The swale was a shallow trough-like depression that conveyed water during snow melt or storms and substrates were dominated by clay and silt (GEO Morphix Ltd., 2018). The assessment findings aligned with NEA's site observations.

Geo Morphix Ltd. reported *no management required* for the tributary following the Evaluation, Classification, and Management of Headwater Drainage Features Guidelines (CVC and TRCA, 2014). The management recommendation was based on the limited hydrology of the tributary (GEO Morphix Ltd., 2018).

Given the surrounding landscape stormwater development, limited hydrology, the feature is disconnection from downstream fish populations and likely only provides indirect fish habitat. It should be noted NEA was unable to find updated fish community sampling data to verify the fish habitat function.

No critical habitat for Aquatic Species at Risk (DFO, 2017) or sensitive spawning habitat was reported within the study area (OMNR, 2012).

4.3.2 Fish Community

The MNRF historical fish community data for the tributary reflects a less altered state. At one time, the tributary supported fish species that preferred warm, cool to cold water thermal regimes and are common to the Uxbridge Brook subwatershed.

Cumulatively, 21 fish species have been documented in the tributary and they represented the following families; *Catostomidae*, *Centrarchidae*, *Cottidae*, *Cyprinidae*, *Gasterosteidae*, *Ictaluridae*, *Percidae*, *Umbridae* and *Salmonidae* (OMNR, 2012). The fish species found in the

tributary are widely distributed throughout southern Ontario. The fish species list has been provided in Appendix III.

The literature review found no provincially and/or nationally rare species documented within the subject lands (COSEWIC, 2018; COSSARO, 2018; SARA, 2018; OMNR, 2012; OMNRF, 2014).

5.0 Description of Development

The proposed West Land Developments include: construction of a condominium of subdivision, removal of two existing single detached dwellings, relocation of the tributary to Uxbridge Brook, 7.3m wide asphalt paved laneway, sidewalks, landscaped areas, 33 visitor parking spaces, snow storage area, and installation of sanitary sewer/ watermain and facilities (Appendix IV).

The tributary is proposed to be realigned to the western property line. Geo Morphix Ltd. have prepared a conceptual technical design brief for the proposed bioswale. The bioswale will have a defined channel that will tie into the upstream existing stormwater pond outlet and downstream existing roadside ditch along Brock Street. Details of the realigned swale will be determined during the detail design phase.

6.0 Impact Assessment and Recommendations

The following section provides a description of the predicted impacts that may result from the proposed development (Table 4). It also highlights key mitigation measures to be implemented to avoid and/or minimize adverse effects to the natural environment features within or near the project. A full list of mitigation measures has been provided in Section 8.0.

Table 4. Impact Assessment and Recommendation Summary.

Feature or Function	Impact to Feature or Function	Mitigation	Residual Effect
Uxbridge Bog Wetland Complex (PSW)	No impact anticipated: Proposed development is 120 metres from the wetland edge.	Creation of a silt fence on all sides of the construction envelope to isolate the work area from this wetland feature.	No change
Other Natural Features: Unevaluated Wetlands	Potential loss of wetland pockets	Wetland compensation	
Aquatic Habitat	Realignment of tributary (swale)	Sediment and erosion control plan to avoid sedimentation off site. Recreation of existing swale, open channel and native woody and non-woody vegetation tolerate of variable conditions.	No change in the swale function. Swale form to be enhanced with defined channel and greater diversity of native plants through riparian plantings.
Fish Habitat	No impact anticipated	No fish expected, however, if encountered fish salvage will be required by a professional biologist. No in-water during MNRF cool/cold water timing window restriction between October 1 st and May 31 st to protect cool water fish species life history processes.	Temporary disturbance of indirect fish habitat during construction.
SAR - Butternut	Possible harm removal	Recommend discussions with OMNRF to determine whether replacement or retention of Butternut is required.	

Regionally Rare Plants	Possible harm or removal	Recommend discussions with LSRCA to determine appropriate options for rare species (e.g., transplant locations for Hard-stemmed bulrush; replanting of White Oak)	
------------------------	--------------------------	---	--

6.1 Uxbridge Bog Wetland Complex

Given the Uxbridge Bog provincially significant wetland complex is found greater than 120m from the proposed development area (Figure 2), no net impacts to either the feature or its functions are anticipated, provided the following mitigation measures are put in place.

- The development envelope should be staked prior to any site grading, clearing or other site preparation activities on site.
- Heavy-duty wire backed silt fencing (page wire, t-bars and filter cloth) should be installed to prevent sediment from entering wetland adjacent to the subject property.

6.2 Other Significant Natural Features

Unevaluated Wetlands

Three small wetlands (Communities 2, 6 and 8) are located on the southwestern portion of the subject property. These small wetlands (0.044ha, 0.039ha and 0.027ha; total of 0.1 ha) have not been evaluated by OMNRF. They were not previously mapped and were identified by NEA during field surveys (Figure 1).

The ecological function of these wetlands is limited in part due to the size, short hydroperiod, and lack of connectivity. Wetlands are normally afforded a 30 m buffer, however under the current development plan, no buffer is proposed. Due to their location in an urbanizing area and being within the Towns/Villages designation under the Greenbelt Plan, they are not recommended for retention. The implementation of a buffer and preservation is not feasible as it would leave these small wetlands isolated and surrounded by urban development. The options available regarding loss of these wetland will be discussed with LSRCA in terms of the area being removed, no net -loss policies and permitting and wetland compensation. The proposed development would remove these features in their entirety. If compensation is required and a bioswale is to be constructed, wetland features along the bioswale could be considered part of the compensation.

6.3 Aquatic Habitat

Relocation of the swale feature to the western property line has been assessed by Geo Morphix as having *no management required*, following the TRCA & VCV headwater drainage feature assessment (GEO Morphix Ltd., 2018). GeoMorphix has been retained by the owner to assess and design the swale feature. NEA recommends the following items be incorporated into the final bioswale design.

- Piped or open channel design,
- If open channel design, use native vegetation plantings. Plant species should be composed of woody and non-woody species that are tolerant to full sun and drought conditions. No submerged, emergent or flooding aquatic planting are recommended due to the limited surface flows present in the site.
- NEA wetland biologist to review the final swale design and planting plan.

The form and function of the swale are not anticipated to be permanently impacted from the channel relocation provided the above recommendations, mitigation measures (Section 9.0), and final construction drawings are implemented.

6.4 Fish Habitat

The proposed channel realignment will interfere with and permanently alter a headwater tributary to Uxbridge Brook. The presence or absence of direct fish habitat within the swale feature has not been recently investigated. However, the dry conditions and limited hydrology observed in the spring and summer of 2018 suggest fish presence is unlikely. Give fish presence/absence has not be verified, a precautionary approach will be taken to protect fish in the event they are present at the time of construction.

To minimize the potential impacts to potential fish, in-water work areas will be isolated and all in-water work will take place outside the MNRF and DFO spring spawning timing window restriction between October 1st and May 31st to protect cool/cold water fish species life history processes.

Given the 2018 habitat observation, fish are not expected within the swale, however, avoid the risk of fish mortality the contractor will be prepared to hire a profession fisheries biologist to conduct a fish salvage of the existing swale prior to any in-water works if water is present within the swale. A fish salvage plan has been provided in the Section 8.0 of this report. Fish and aquatic life will be salvaged from the isolated area prior to the commencement of any in-water work.

To further avoid impacts to the fish during construction, in-water works and realignment of the swale feature, the following is recommended:

- All in-water works to be completed in isolation of flowing water (e.g. coffer dam) to maintain natural flow downstream and minimize introducing sediment into the watercourse.

- The new swale feature will be constructed off-line prior to the infilling of the existing channel to maintain potential flows and hydrological contributions to the downstream fish community.
- An Erosion and Sediment Control (ESC) Plan will be developed and implemented for the site that minimizes risk of sedimentation into the waterbody during all phases of the project.
- Sediment control measures shall be installed prior to the commencement of work and shall be maintained throughout the project to prevent the entry/outward flow of sediment into the existing swale and/or realigned swale. Heavy duty silt fence to be installed on all sides of the development envelope with measures to prevent flow of sediment laden water in any roadside ditches, swales or wetland features.
- Additional mitigation measures related to construction sediment and erosion control, operation of machinery, contaminant and spill management, and fish protection have been provided in Section 8.0.

6.5 Species at Risk

6.5.1 Butternut

Generally, it is an offence under the Endangered Species Act, 2007 to kill, harm, or take a butternut tree. However, Ontario regulation 242/08 (under the ESA) provides exemptions for some activities pertaining to Butternut (Forest Gene Conservation Association, 2013). If ten or fewer naturally occurring retainable Butternut trees are on site and there is a plan to remove them (i.e., kill or transplant them), or that may be harmed by planned activities, a written planting plan must be submitted to the OMNRF describing how Butternut seedlings will be planted to replace any trees that are harmed and killed, following the applicable conditions in Ontario Regulation 242/08 (Forest Gene Conservation Association, 2013). As the trees were likely planted by the homeowner, NEA will submit the BHA form to MNR for their review and response.

6.5.2 Barn Swallow

NEA does not anticipate any impact on this species given it was observed foraging above Vegetation Community 3 (CUM1-1) and was likely nesting at the barn located to the east or northeast of the subject property. No nests were encountered on-site.

6.6 Regionally Rare Plants

NEA recommends discussions with LSRCA to determine appropriate options for regionally rare species (e.g., transplanting options/locations for Hard-stemmed bulrush; replanting of White Oak).

7.0 Policies and Legislative Compliance

The following section describes how the proposed development will be in conformance with the relevant federal, provincial and other regulatory legislation, policies, official plans and OP amendments that are applicable and relevant to the study area and the immediate vicinity.

7.1.1 Federal Legislation

7.1.1.1 *Fisheries Act*

To be in compliance with the Fisheries Act, all watercourse crossings and work below the high-water mark must *avoid causing serious harm to fish* unless authorized by the Minister of Fisheries and Oceans Canada. This applies to work being conducted in or near waterbodies that support fish that are part of or that support a commercial, recreational or Aboriginal fishery.

To avoid serious harm to fish the project must follow DFO's measures to avoid harm to comply with the *Act*. Measures to avoid causing harm to fish and fish habitat can be found online at Fisheries Act, <http://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures/measures-mesures-eng.html>. NEA has also provided many project recommendations, mitigation measures and best management practices to *avoid serious harm to fish*.

A DFO self-assessment should be conducted for the detail design to ensure the proposed works will be in compliance with the Fisheries Act.

Fisheries Act Duty to Notify

The persons responsible for the project have a duty to notify DFO when unauthorized serious harm to fish occurs or when there is a real and imminent danger of such an occurrence. The Fisheries Act also requires the responsible persons to take corrective measures and to provide written reports when there are occurrences that may result in *serious harm to fish*. Failure to notify, take corrective measures or report *serious harm to fish* can result in

penalties.

Duty to Notify measures can be found in Section 38 of the Fisheries Act and should be reviewed by all potential responsible persons prior to works in or near the water. The Fisheries Act, Fisheries Protection Policy Statements and supporting documents can be found online at <http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html>.

Serious Harm to Fish Definition

The following definition of *serious harm to fish* is from the Fisheries Act. All persons responsible for the project should be aware of the definition.

Section 35

“The Department interprets serious harm to fish as:

- *the death of fish;*
- *a permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes;*
- *the destruction of fish habitat of a spatial scale, duration, or intensity that fish can no longer rely upon such habitats for use as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes.”*

Section 20 and 21

Projects that have the potential to obstruct fish passage, modify flow or result in the entrainment of fish may also cause serious harm to fish.

7.1.1.2 Species at Risk Act Schedule 1 (Subsections 2(1), 42(2) and 68(2)): List of Wildlife species at risk, Parts 1-4. (2018)

As the property is not federal land, there is no constraint on development under the Species at Risk Act.

7.1.1.3 Migratory Birds Convention Act, 1994 (S.C. 1994, c.22)

The core breeding period in Ontario for migratory birds under the MBCA for Bird Conservation Region 13 (i.e., the one the subject property lies within) extends from April 15th to August 15th (Environment and Climate Change Canada, 2014). As such clearing of trees and other vegetation for the development cannot occur during this timing window.

7.1.2 Provincial Legislation

7.1.2.1 Endangered Species Act, 2007

Butternut

See Section 6.5.

7.1.2.2 Planning Act and Provincial Policy Statement, 2017

The subject property does not contain any provincially significant wetlands (PSWs), coastal wetlands, valleylands, significant wildlife habitat or ANSIs. As a result, Sections 2.1.4, 2.1.5 and 2.1.6 of the Provincial Policy Statement would not apply. Sections 5.1 (Uxbridge Bog Wetland Complex), Section 5.2 (Other Significant Features) and Section 5.5 (Species at Risk) of this report, contain recommendations that allow the proposed development to proceed in a manner consistent the remaining sections of the Provincial Policy Statement (PPS).

7.1.2.3 Greenbelt Plan, 2017

On Schedule 1 of the Greenbelt Plan, the study area is designated as Protected Countryside in the Towns/Villages section (Greenbelt Plan, 2017). As a result, sections of the Greenbelt Plan discussing key natural heritage features (i.e., section 3.2.5) do not apply to the subject property. Section 5 of this EIS report (Impact Assessment and Recommendations) provides guidance on how the proposed development can proceed in a manner consistent with the policies associated with the natural heritage system of the protected countryside (i.e., section 3.2.2 – Greenbelt Plan, 2017).

7.1.3 Local and Other Regulatory Bodies

7.1.3.1 Township of Uxbridge Official Plan, 2014

Recommendations in Section 5 (Impact Assessment and Recommendations) note the requirements and processes needed to be compliant with the Township of Uxbridge's Official plan. The removal of unevaluated wetlands on the property is being proposed. The features

and functions of those wetlands will be discussed with LSRCA to comply with their 'no net loss' policies so that the development will be compliant with the Township's Official Plan. The report follows the OP EIS objectives and requirements.

7.1.3.2 Lake Simcoe Region Conservation (LSRCA) and Ontario Regulation 179/06

Recommendations in Section 5 (Impact Assessment and Recommendations) identify methods through which the proposed development can be made compliant with Ontario Regulation 182/06. Discussions with LSRCA regarding their wetland policies and compensation policies will be conducted. Compensation for unevaluated wetlands is within the planning regulations of LSRCA and wetland policies.

Realignment of the tributary to Uxbridge Brook will require a O.Reg 147/06 permit from LSRCA. Work cannot occur on the tributary without a valid permit from LSRCA.

8.0 Summary of Recommendations

The following section is a comprehensive list of all project mitigation measures, recommendations, best management practices, and or compensation measures (if required). Many recommendations have been discussed or referenced in the body of the text and others may be newly presented standard best management practices. This list is intended to assist project reviews, contractors and clients to understand all environmental recommendations and to ensure all parties have fulsome understanding of the project. The final conclusions of this report are based on the implementation of the following.

8.1 General

- The construction envelope be clearly defined and delineated and a line be staked and clearly marked in the field prior to any activities on the site.
- Prior to any site preparation activities (grading, placement of fill) erosion and sediment control measures should be installed along the four sides of construction envelope to ensure sediment laden runoff does not enter interfere with adjacent vegetation or natural features. The silt fence should be inspected and maintained throughout the construction phase and remain in place until the soils are stabilized and re-vegetated.
- Obtain relevant permits from the Municipality and LSRCA.
- Develop a landscape plan to increase the diversity of the vegetation in the area.
- Any tree clearing required for construction access prior to construction will be completed outside the Breeding Bird timing window of April 15th to August 15th.

8.2 Sediment and Erosion Control

- An Erosion and Sediment Control (ESC) Plan will be developed and implement for the site that minimizes risk of sedimentation to the downstream tributary to Uxbridge Brook during all phases of the project.
- Erosion and sediment control measures will be maintained until all disturbed ground has been permanently stabilized, suspended sediment has resettled to the bed of the waterbody or settling basin and runoff water is clear.

- All sediment and erosion control products will be selected for the site based on the manufacturer's product specifications. Product installation and maintenance will follow the manufacturer's guidelines.
- At a minimum, all sediment and erosion control measures shall be installed, maintained and removed in accordance with the Ontario Provincial Standard Specification (OPSS) standards for Temporary Erosion and Sediment Control Measures (OPSS 577).
- Sediment control measures shall be installed prior to the commencement of work and shall be maintained throughout the project to prevent the entry/outward flow of sediment into the existing swale and/or realigned swale. Heavy duty silt fence to be installed on all sides of the development envelope with measures to prevent flow of sediment laden water in any roadside ditches, swales or wetland features.
- All sediment and erosion control measures shall be inspected daily during the construction phase and periodically thereafter to ensure they are functioning properly, maintained, and upgraded as required. Sediment fence to be checked regularly to ensure they are maintained and working properly. Accumulated silt and debris will be removed from the fence and site after every precipitation event.
- Construction will be undertaken during normal weather conditions, to the extent possible, and will avoid large precipitation events to minimize the risk of sedimentation off-site.
- In the event that sediment and erosion control measures are not functioning, the construction supervisor shall order the work to be stopped. No further work shall be carried out until the construction methods and/or the sediment control plan is adjusted to address the sediment/erosion problem(s). Such occurrences should be documented by the site inspector and provided to a qualified biologist.

8.3 Contaminant and Spill Management

- A spill management plan will be developed during detail design. The plan will provide direction for implementation actions immediately in the event of a sediment release or spill of a deleterious substance.
- An emergency spill kit shall be kept on site, and employed immediately should a spill occur. In the case of a spill, the Ontario Spill Action Center shall be notified

immediately at 1-800-268-6060; all provincial and federal regulations shall be adhered to.

- Vehicle and equipment refueling shall be conducted on impermeable pads/pans within a defined staging area.
- Refueling and maintenance of equipment shall be conducted off slopes and away from water bodies on impermeable pads to allow full containment of spills at a recommended distance of a minimum of 30 meters from the watercourse.
- Materials classified as potential contaminants (e.g. paint, primers, gas, oil, degreasers, grout, or other chemicals) will be used a minimum of 30 m from watercourse(s).

8.4 Wetlands

- Potential removal of unevaluated wetlands in the study area must be discussed with LSRCA. A condition of approval be that an agreement be reached with regards to the amount of wetland being removed and compensation in order to comply with natural heritage feature & function policies.

8.5 Fish and Aquatic Habitat

8.5.1 General

- No in-water works during the MNRF Peterborough District coolwater timing window restriction between October 1st and May 31st to protect downstream cool/cold water fish species life history processes.
- All in-water works to be completed in isolation of flowing water (e.g. coffer dam) to maintain natural flow downstream and minimize introducing sediment into the downstream watercourse.
- The new swale feature will be constructed off-line prior to the infilling of the existing channel to maintain potential flows and hydrological contributions downstream.
- Switch upstream channel connections over during dry or low flow conditions.

8.5.2 Fish Salvage Plan

- A professional fisheries biologist will be required to complete all fish salvage works within the isolated work area.
- A MNRF license to collect fish will be required prior to installation of the berm. The project biological consultant will be responsible for obtaining the appropriate fish collection permits.
- The biologist will be contacted by the contractor prior to any in-water works within the fish salvage location. The biologist will confirm when all fish and wildlife have been removed from the watercourse and construction is safe to begin.
- Fish collection methods will be chosen on site by the biologist to best suit the environmental conditions, watercourse dimensions, estimated fish abundance and size in the isolated area. Both passive and active live fish collection techniques will be available on-site.
- At a minimum, the selected gear type will be fished three times or until the catch is equal to zero to ensure all fish have been captured from the site.
- Fish will be live released into Lake Wilcox. The release site within the lake will be chosen on site by the biologist and will be of equal or greater habitat quality. Release site selection will be chosen based on, but not limited to, habitat type and availability, water temperatures, probability of depredation and available cover.

8.6 **Species at Risk**

- Condition of approval include discussions with MNRF to their satisfaction regarding compliance with the Endangered Species Act.

8.7 **Regionally or Locally Rare Species**

- Condition of approval include discussions with LSRCA to their satisfaction regarding compliance with their regulations and need for a plant salvage plan.

9.0 Conclusion

Niblett Environmental Associates has prepared this Environmental Impact Study to address potential environmental issues associated with an application to develop the subject property.

Based on our analysis, there will be no net loss of provincially significant natural heritage features (e.g., wetlands) and no negative impacts on the functions of these features as a result of construction provided the client follows recommendations contained in Sections 6, 7 and 8. Our recommendations were made to prevent the loss of natural heritage features (e.g. wetlands) and/or their functions on the property. Recommendations were also made as to minimize potential impacts on these features during the site preparation, construction and post-construction period. Additional dialogue with the OMNRF, Township of Uxbridge and LSRCA will need to occur so that appropriate permitting and compensation processes occur (e.g., for wetlands, tributary to Uxbridge Brook, species at risk identified on site and SAR habitat).

10.0 References

- Bird Studies Canada. 2007. Atlas of the Breeding Birds of Ontario square summary information sheets. Accessed on the World Wide Web at: <https://www.birdsontario.org/atlas/squareinfo.jsp>. Accessed June 8, 2018.
- Chapman, L.J. and D.F. Putnam. 1984. The Physiography of Southern Ontario, Third Edition. Ontario Geological Survey Special Volume 2. Ontario Ministry of Natural Resources.
- COSEWIC. 2018. Canadian Species at Risk, April 2018. Committee on the Status of Endangered Wildlife in Canada. Accessed on the World Wide Web at: <https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html>. Accessed August 8, 2018.
- COSSARO. 2018. Species At Risk in Ontario. Ontario Ministry of Natural Resources Committee on the Status of Species At Risk in Ontario.
- CVC and TRCA. (2014). *Evaluation, Classification and Management of Headwater Drainage Features Guidelines*. CVC and TRCA.
- DFO. (2017, July). *Aquatic Species at Risk Maps-Ontario South West Map 5*. Retrieved from Fisheries and Oceans Canada: <http://www.dfo-mpo.gc.ca/species-especes/fpp-ppp/onsw-soon-5-eng.htm>
- Eakins, R. J. (2017, May 15). *Ontario Freshwater Fishes Life History Database*. Retrieved from <http://ontariofishes.ca/home.htm>
- Environment Canada. 2014. Recovery Strategy for the Kentucky Coffee-tree (*Gymnocladus dioica*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. Vi + 36pp.
- Environment and Climate Change Canada. 2014. Bird Conservation Strategy for Bird Conservation Region 13 in Ontario Region: Lower Great lakes/St. Lawrence Plain – Abridged Version. Ottawa, 34pp.
- GEO Morphix Ltd. (2018). *Conceptual Technical Design Brief: Tributary of Uxbridge Creek, Town of Uxbridge, Ontario*. Milton, Ontario: GEO Morphix Ltd.
- Forest Gene Conservation Association. 2013. Butternut and the Endangered Species Act Information for Landowners. Accessed on the World Wide Web at: http://fgca.net/wp-content/uploads/2013/05/Butternut_info_landowners_ESA2013.pdf. Accessed

August 10, 2018

Government of Canada. 2018. SARA (Species at Risk Act) Schedule 1 (Subsections 2(1), 42(2) and 68(2)): List of Wildlife species at risk, Parts 1-4. Accessed on the World Wide Web at: http://www.registrelep-sararegistry.gc.ca/sar/index/default_e.cfm. Accessed June 8, 2018.

Government of Canada. 2017. General Nesting Periods of Migratory Birds. Accessed on the World Wide Web at: <https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods.html>. Accessed July 30, 2018.

Government of Canada. 2016. About the Species at Risk Act. Accessed on the World Wide Web at: <https://www.canada.ca/en/environment-climate-change/services/environmental-enforcement/acts-regulations/about-species-at-risk-act.html>. Accessed August 1, 2018.

Government of Canada. 2002. Species at Risk Act (S.C. 2002, c. 29). Accessed on the World Wide Web at: <http://laws-lois.justice.gc.ca/eng/acts/s-15.3/>. Accessed on August 1, 2018.

Government of Canada. 1994. Migratory Birds Convention Act, 1994 (S.C. 1994, c. 22). Accessed on the World Wide Web at: <http://laws-lois.justice.gc.ca/eng/acts/m-7.01/>. Accessed August 1, 2018.

Government of Ontario. 2018. Endangered Species Act, 2007, S.O. 2007, c.6. Accessed on the World Wide Web at: <https://www.ontario.ca/laws/statute/07e06#BK2>. Accessed August 1, 2018.

Government of Ontario. 2017. Ontario Regulation 230/08: Species at Risk in Ontario list under the Endangered Species Act, 2007, S.O. 2007, c.6. Accessed from the World Wide Web at: <https://www.ontario.ca/laws/regulation/080230>. Accessed June 8, 2018.

Government of Ontario. 2014. Provincial Policy Statement, 2014. Ministry of Municipal Affairs and Housing. Queen's Printer for Ontario. Accessed on the World Wide Web at: <http://www.mah.gov.on.ca/Page215.aspx>. Accessed August 1, 2018.

Government of Ontario. 2013. Ontario Regulation 179/06: Lake Simcoe Region Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to

- Shorelines and Watercourses. Accessed on the World Wide Web at: <https://www.ontario.ca/laws/regulation/060179>. Accessed August 1, 2018.
- Government of Canada. (1985). *Fisheries Act (R.S.C. 1985, C.F-14)*. Ottawa: Government of Canada.
- Lake Simcoe Region Conservation Authority. 1997. Uxbridge Brook Watershed Plan. Township of Uxbridge, ON. 202pp.
- Lee, H., Bakowsky, W., Riley, J., Bowles, J., Puddister, M., Uhlig, P. and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. OMNR, South Central Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.
- LSRCA. (1997). *Uxbridge Brook Watershed Plan*. Newmarket, Ontario: Lake Simcoe Region Conservation Authority.
- OMNR. (2012). *Aquatic Resource Area Survey*. Peterborough, Ontario: Land Information, Ontario Ministry of Natural Resources.
- Ontario Ministry of Municipal Affairs and Housing. 2017. Greenbelt Plan (2017). Accessed from the World Wide Web at: <http://www.mah.gov.on.ca/Page13783.aspx#2.4>. Accessed August 1, 2018.
- Ontario Ministry of Municipal Affairs and Housing. 2017b. Growth Plan for the Greater Golden Horseshoe (2017). Accessed from the World Wide Web at: https://www.placestogrow.ca/index.php?option=com_content&task=view&id=9. Accessed August 1, 2018.
- Ontario Ministry of Natural Resources and Forestry. January 2015. Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. Peterborough, 38pp.
- Ontario Ministry of Natural Resources and Forestry. 2013. Ontario Wetland Evaluation System: Southern Manual. 3rd Edition, Version 3.2. Queen's Printer for Ontario, 284pp.
- Ontario Ministry of Natural Resources. March 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. 2nd Edition. Toronto: Queen's Printer for Ontario. 248pp.
- Ontario Natural Heritage Information Centre. 2018. Make A Natural Heritage Area Map. Accessed from the World Wide Web at: http://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US. Accessed June 8, 2018.
- Ontario Nature. 2018. Ontario Reptile and Amphibian Atlas: square summary information.

Accessed on the World Wide Web at: <https://ontarionature.org/oraa/maps/>.
Accessed June 8, 2018.

Regional Municipality of Durham. 2017. Durham Regional Official Plan: Consolidation May 11, 2017.

SARA. 2018. Available at: http://www.sararegistry.gc.ca/species/schedules_e.cfm?id=1.

SARO. 2018. Species At Risk in Ontario. Ontario Ministry of Natural Resources Committee on the Status of Species At Risk in Ontario.

Stanfield, L. (2017). *Ontario Stream Assessment Protocol Version 10*. Picton, Ontario: Ontario Ministry of Natural Resources and Forestry.

Township of Uxbridge. 2014. Official Plan: Township of Uxbridge. Office consolidation January, 2014.

Varga, S., D. Leadbeater, J. Webber, J. Kaiser, B. Crins, J. Kamstra, D. Banville, E. Ashley, G. Miller, C. Kingsley, C. Jacobsen, K. Mewa, L. Tebby, E. Mosely and E. Zajc. 2000. Distribution and status of the vascular plants of the greater Toronto Area. Ontario Ministry of Natural Resources, Aurora District. August 2000. 102 pp.

Appendix I-A. Plant Species by Community

APPENDIX I - A Plant Species by Community

Families and genera for the plant species found in this appendix are listed in taxonomic order. The species are listed alphabetically by scientific name within each genus.

Three standard reference works were used for the botanical nomenclature and taxonomy (Newmaster et. al., 1998; Gleason and Cronquist 1991; Voss 1980; 1985). Other published works for botanical names included; ferns (Cody and Britton 1989); grasses (Dore and McNeill 1980); orchids (Whiting and Catling 1986); shrubs (Soper and Heimbürger 1982) and trees (Farrar 1995).

Total: Number of communities where plant species was recorded

X : Plant species recorded

Common Name	Scientific Name	Total	COMMUNITY NUMBER								
			1	2	3	4	5	6	7	8	9
PINE FAMILY		PINACEAE									
tamarack	<i>Larix laricina</i>	1				X					
Norway spruce	<i>Picea abies</i>	2	X								X
white spruce	<i>Picea glauca</i>	1									X
Scot's pine	<i>Pinus sylvestris</i>	1	X								
CYPRESS FAMILY		CUPRESSACEAE									
eastern red cedar	<i>Juniperus virginiana</i>	1	X								
eastern white cedar	<i>Thuja occidentalis</i>	5	X			X	X	X	X		
BUTTERCUP FAMILY		RANUNCULACEAE									
tall buttercup	<i>Ranunculus acris</i>	4	X		X			X		X	
ELM FAMILY		ULMACEAE									
American elm	<i>Ulmus americana</i>	1	X								

Common Name	Scientific Name	Total	COMMUNITY NUMBER								
			1	2	3	4	5	6	7	8	9
NETTLE FAMILY		URTICACEAE									
wood nettle	<i>Laportea canadensis</i>	1	X								
American stinging nettle	<i>Urtica dioica ssp. Gracilis</i>	1						X			
WALNUT FAMILY		JUGLANDACEAE									
butternut	<i>Juglans cinerea</i>	1							X		
black walnut	<i>Juglans nigra</i>	1	X								
BEECH FAMILY		FAGACEAE									
white oak	<i>Quercus alba</i>	1	X								
BIRCH FAMILY		BETULACEAE									
white birch	<i>Betula papyrifera</i>	4	X			X	X	X			
ironwood	<i>Ostrya virginiana</i>	1	X								
BUCKWHEAT FAMILY		POLYGONACEAE									
curled dock	<i>Rumex crispus</i>	1					X				
great water dock	<i>Rumex orbiculatus</i>	1		X							
VIOLET FAMILY		VIOLACEAE									
dog violet	<i>Viola conspersa</i>	1			X						
kidney-leaved violet	<i>Viola renifolia</i>	1						X			
GOURD FAMILY		CUCURBITACEAE									
wild cucumber	<i>Echinocystis lobata</i>	4				X	X	X			X
WILLOW FAMILY		SALICACEAE									
trembling aspen	<i>Populus tremuloides</i>	4	X			X		X	X		
crack willow	<i>Salix fragilis</i>	1						X			
slender willow	<i>Salix petiolaris</i>	1						X			
MUSTARD FAMILY		BRASSICACEAE									
garlic mustard	<i>Alliaria petiolata</i>	2				X		X			

Common Name	Scientific Name	Total	COMMUNITY NUMBER									
			1	2	3	4	5	6	7	8	9	
ROSE FAMILY	ROSACEAE											
white avens	<i>Geum canadense</i>	1								X		
apple	<i>Malus domestica</i>	3	X							X		X
sand cherry	<i>Prunus pumila var. pumila</i>	1										X
choke cherry	<i>Prunus virginiana</i>	1				X						
wild red raspberry	<i>Rubus idaeus</i>	1	X									
thimbleberry	<i>Rubus occidentalis</i>	1							X			
PEA FAMILY	FABACEAE											
honey locust	<i>Gleditsia triacanthos</i>	2	X									X
Kentucky coffee-tree	<i>Gymnocladus dioicus</i>	2				X				X		
bird's-foot trefoil	<i>Lotus corniculatus</i>	2					X			X		
black medick	<i>Medicago lupulina</i>	2								X		X
alfalfa	<i>Medicago sativa ssp. Sativa</i>	1					X					
yellow sweet-clover	<i>Melilotus officinalis</i>	1								X		
red clover	<i>Trifolium pratense</i>	3	X				X			X		
white clover	<i>Trifolium repens</i>	4	X				X				X	X
cow vetch	<i>Vicia cracca</i>	5	X	X	X		X			X		
EVENING PRIMROSE FAMILY	ONAGRACEAE											
dwarf enchanter's nightshade	<i>Circaea alpina</i>	1				X						
DOGWOOD FAMILY	CORNACEAE											
red-osier dogwood	<i>Cornus stolonifera</i>	2	X						X			
BUCKTHORN FAMILY	RHAMNACEAE											
European buckthorn	<i>Rhamnus cathartica</i>	2	X			X						
GRAPE FAMILY	VITACEAE											
Virginia creeper	<i>Parthenocissus inserta</i>	2	X							X		
wild grape	<i>Vitis riparia</i>	1	X									
BUCKEYE FAMILY	HIPPOCASTANACEAE											
horse chestnut	<i>Aesculus hippocastanum</i>	1	X									

Common Name	Scientific Name	Total	COMMUNITY NUMBER								
			1	2	3	4	5	6	7	8	9
MAPLE FAMILY	ACERACEAE										
Manitoba maple	<i>Acer negundo</i>	2				X			X		
Norway maple	<i>Acer platanoides</i>	3	X			X					X
red maple	<i>Acer rubrum</i>	1									X
silver maple	<i>Acer saccharinum</i>	1	X								
sugar maple	<i>Acer saccharum ssp. saccharum</i>	1							X		
CASHEW FAMILY	ANACARDIACEAE										
western poison-ivy	<i>Rhus rydbergii</i>	1				X					
staghorn sumac	<i>Rhus typhina</i>	1				X					
GERANIUM FAMILY	GERANIACEAE										
herb Robert	<i>Geranium robertianum</i>	1	X								
CARROT FAMILY	APIACEAE										
Queen-Anne's lace	<i>Daucus carota</i>	2					X		X		
MILKWEED FAMILY	ASCLEPIADACEAE										
swallow-wort	<i>Cynanchum rossicum</i>	1				X					
NIGHTSHADE FAMILY	SOLANACEAE										
bitter nightshade	<i>Solanum dulcamara</i>	2				X					X
BORAGE FAMILY	BORAGINACEAE										
hound's-tongue	<i>Cynoglossum officinale</i>	3				X		X	X		
MINT FAMILY	LAMIACEAE										
ground ivy	<i>Glechoma hederacea</i>	2	X								X
heal-all	<i>Prunella vulgaris ssp. lanceolata</i>	2								X	X
PLANTAIN FAMILY	PLANTAGINACEAE										
broad-leaved plantain	<i>Plantago major</i>	4	X		X					X	X
OLIVE FAMILY	OLEACEAE										
white ash	<i>Fraxinus americana</i>	1	X								
lilac	<i>Syringa vulgaris</i>	2	X						X		
TRUMPET-CREEPER FAMILY	BIGNONIACEAE										
northern catalpa	<i>Catalpa speciosa</i>	1							X		

COMMUNITY NUMBER

Common Name	Scientific Name	Total	1	2	3	4	5	6	7	8	9
MADDER FAMILY	RUBIACEAE										
cleavers	<i>Galium aparine</i>	1	X								
rough bedstraw	<i>Galium asprellum</i>	1								X	
white bedstraw	<i>Galium mollugo</i>	2			X		X				
HONEYSUCKLE FAMILY	CAPRIFOLIACEAE										
tartarian honeysuckle	<i>Lonicera tatarica</i>	1							X		
ASTER FAMILY	ASTERACEAE										
common burdock	<i>Arctium minus</i>	1	X								
ox-eye daisy	<i>Chrysanthemum leucanthemum</i>	2					X		X		
Canada thistle	<i>Cirsium arvense</i>	2	X	X							
daisy fleabane	<i>Erigeron annuus</i>	1							X		
Philadelphia fleabane	<i>Erigeron philadelphicus ssp. philadelphicus</i>	1	X								
spotted joe-pyeweed	<i>Eupatorium maculatum</i>	1		X							
large-leaved aster	<i>Eurybia macrophylla</i>	1					X				
grass-leaved goldenrod	<i>Euthamia graminifolia</i>	1						X			
king devil hawkweed	<i>Hieracium x florbundum</i>	2	X						X		
elecampane	<i>Inula helenium</i>	1							X		
tall goldenrod	<i>Solidago altissima</i>	2				X	X				
Canada goldenrod	<i>Solidago canadensis</i>	2	X						X		
New England aster	<i>Symphyotrichum novae-angliae</i>	2		X				X			
purple-stemmed aster	<i>Symphyotrichum puniceum</i>	2		X			X				
common dandelion	<i>Taraxacum officinale</i>	5	X		X	X			X		X
SEDGE FAMILY	CYPERACEAE										
awl-fruited sedge	<i>Carex stipata</i>	1								X	
needle spike-rush	<i>Eleocharis acicularis</i>	1								X	
hard-stemmed bulrush	<i>Scirpus acutus</i>	1								X	

Common Name	Scientific Name	Total	COMMUNITY NUMBER								
			1	2	3	4	5	6	7	8	9
GRASS FAMILY		POACEAE									
awnless brome grass	<i>Bromus inermis ssp.inermis</i>	2			X		X				
Canada bluejoint grass	<i>Calamagrostis canadensis</i>	2	X	X							
orchard grass	<i>Dactylis glomerata</i>	3	X		X		X				
fowl manna grass	<i>Glyceria striata</i>	2			X					X	
rice cut grass	<i>Leersia oryzoides</i>	2	X				X				
reed canary grass	<i>Phalaris arundinacea</i>	5	X	X	X	X		X			
timothy	<i>Phleum pratense</i>	3	X		X		X				
common reed	<i>Phragmites australis</i>	1	X								
Kentucky blue grass	<i>Poa pratensis</i>	3	X						X		X
CATTAIL FAMILY		TYPHACEAE									
common cattail	<i>Typha latifolia</i>	1						X			
IRIS FAMILY		IRIDACEAE									
wild blue flag	<i>Iris versicolor</i>	1		X							
Total Number of Plant Species	96		44	9	11	20	19	17	26	9	16
			Number of Plant Species Per Community								

Appendix I-B. List of Significant Plants

APPENDIX I - B List of Significant Plant Species

Plant species observed by NEA with significant status on national, provincial and relevant regional lists are listed with status codes and where applicable the most current year of publication. Three standard reference works were used for the botanical nomenclature and taxonomy (Newmaster et. al., 1998; Gleason and Cronquist 1991; Voss 1980; 1985). Other published works for botanical names included; ferns (Cody and Britton 1989); grasses (Dore and McNeill 1980); orchids (Whiting and Catling 1986); shrubs (Soper and Heimburger 1982) and trees (Farrar 1995).

NATIONAL RANKING **Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Government of Canada**
Species at Risk Act (SARA), SCHEDULE 1 (Subsections 2(1), 42(2) and 68(2)), Government of Canada

PROVINCIAL RANKING **Species at Risk in Ontario (COSSARO), Government of Ontario**
Provincial Rank (SRANK), Natural Heritage Information Center, Government of Ontario

REGIONAL RANKING **Varga, Durham** Varga et al., 2001, Durham

STATUS CODES

COSEWIC	END *	- Endangered Species	*Year of Status Publication included in Code
COSSARO	THR *	- Threatened Species	
SARA	SC *	- Species of Concern	
SRANK	S1	- Extremely Rare	Other national or provincial codes not listed
	S2	- Very Rare	
	S3	- Rare to Uncommon	
Regional Lists	R	- Rare native species	Other Regional codes not listed
	EXP	- Extirpated native species	

Common Name	Scientific Name	NATIONAL RANKINGS		PROVINCIAL RANKINGS		REGIONAL RANKINGS				
		COSEWIC	SARA	COSSARO	SRank	Varga, Durham				
butternut	Juglans cinerea	END Apr/14	END Mar/13	END Jun/14	S3?					
white oak	Quercus alba					R				
Kentucky coffee-tree	Gymnocladus dioicis	THR May/13	THR Dec/11	THR Jun/14	S2					
hard-stemmed bulrush	Scirpus acutus					R				
Plants with Ranking	Total: 4	Status List Totals:	2	2	2	2	0	0	0	0

Appendix II-A Bird Status Report

APPENDIX II-A Bird Status Report

Bird species observed by NEA are listed in the order followed the American Ornithologists' Union (AOU) Check-list of North American birds (7th edition, 1999, 47th Supplement). Common and scientific nomenclature are based on those used by AOU. Any significant status for a species on national and provincial lists is displayed as well as those from relevant regional lists.

List Status :	END - endangered	A wildlife species facing imminent extirpation or extinction.
	END-R -endangered regulated	A wildlife species facing imminent extirpation or extinction in Ontario which has been regulated under Ontario's Endangered Species Act (ESA).
	THR - threatened	A wildlife species likely to become endangered if limiting factors are not reversed.
	SC - special concern	A wildlife species that may become threatened or an endangered species because of a combination of biological characteristics and identified threats.
	YES - Area Sensitive	A wildlife species that requires large areas of suitable habitat in order to sustain their population numbers.
	* Other status levels are not displayed	

List Sources:	COSEWIC	The Committee on the Status of Endangered Wildlife in Canada, May 2018.
	COSSARO	The Committee on the Status of Species at Risk in Ontario, June 2018.
	SARA	Species At Risk Act, Schedule 1, Government of Canada, 2018.
	Area Sensitive	Significant Wildlife Technical Guide, Appendix C, OMNR, Oct. 2000
	Region 6	Southern Ontario Wetland Evaluation Appendix 11B, Version 3.2, March 2013

Breeding Status: (Observed By NEA)	B -species observed in breeding season in suitable habitat with some evidence of breeding (confirmed, probable or possible as per Ontario Breeding Bird Atlas, 2002).
	F -species observed in breeding season but no evidence of breeding or suitable nest sites available on the study site (includes flyovers, migrants and foraging colonial breeders).
	M -species observed outside of breeding season for that species and in area outside of the known

AOU Code	Common Name	Scientific Name	COSEWIC	COSSARO	SARA	Area			
						Sensitive	Region 6		
RBGU	Ring-billed Gull	<i>Larus delawarensis</i>				No			
MODO	Mourning Dove	<i>Zenaida macroura</i>				No			
REVI	Red-eyed Vireo	<i>Vireo olivaceus</i>				No			
AMCR	American Crow	<i>Corvus brachyrhynchos</i>				No			
BARS	Barn Swallow	<i>Hirundo rustica</i>	THR	THR	THR	No			
AMRO	American Robin	<i>Turdus migratorius</i>				No			
EUST	European Starling	<i>Sturnus vulgaris</i>				No			
YEWA	Yellow Warbler	<i>Dendroica petechia</i>				No			
SASP	Savannah Sparrow	<i>Passerculus sandwichensi</i>				No			
SOSP	Song Sparrow	<i>Melospiza melodia</i>				No			
NOCA	Northern Cardinal	<i>Cardinalis cardinalis</i>				No			
RWBL	Red-winged Blackbird	<i>Agelaius phoeniceus</i>				No			
COGR	Common Grackle	<i>Quiscalus quiscula</i>				No			
AMGO	American Goldfinch	<i>Carduelis tristis</i>				No			
TOTAL SPECIES OBSERVED:	14		1	1	1	0	0	0	0

Appendix II-B Breeding Bird Surveys-Detailed Report

Appendix II-B Breeding Bird Survey -Detailed Report

This report summarizes all bird observations recorded by NEA for each visit to survey stations established within a project site. Details for each visit include station physical and spatial descriptions as well as sampling conditions and timing. Observations will note breeding status, quantity and location when applicable.

Project ID: 18-066

Location:

Project Name: Brock Street Dev - Uxbridg

Project Remarks

Number of Bird Species Observed in Project: 14

Station No.: 01BB

Vegetation Community No. (if applicable): 1

Habitat Description Edge of CUM1-1 with
fencerow

UCLatitude: 0
UCLongitude 0

Corrected Latitude: 0
Corrected Longitude 0

Way Point #

SampleID: 1677

Visit No. 1

StatWayPt:

Date: 12/06/2018 Temp Start: 17
Start Time 8:20:00 AM Water Temp Start:
End Time: 8:25:00 AM Wind Conditions 0
CloudCover: 0

Background Noise: 3
Precipitation: None
Precipitation (within 24hrs

Remarks:
fairly steady road
traffic

Recorder: KVA Observers:

OBSERVATIONS

ObsID	BCode	Quantity	Breeding Code	Breed EvidRank	Distance (m)	Direction	Comment
18643	EUST	5	B	H			
18644	YEWA	1	B	S			
18645	SOSP	1	B	S			
18646	RWBL	1	B	H			
18647	COGR	1	B	H			
18648	AMGO	2	B	S			
18649	BARS	1	B	H			
18642	MODO	1	B	S			

Number of Birds Observed in Sample: 13

SampleID: 1822

Visit No. 2

StatWayPt:

Date: 28/06/2018 Temp Start: 18
 Start Time 8:14:00 AM Water Temp Start:
 End Time: 8:19:00 AM Wind Conditions 0
 CloudCover: 10

Background Noise: 1
 Precipitation: None
 Precipitation (within 24hrs

Remarks:
 very humid, mist

Recorder: KVA Observers:

OBSERVATIONS

ObsID	BCode	Quantity	Breeding Code	Breed EvidRank	Distance (m)	Direction	Comment
19924	NOCA	1	B	S			
19918	REVI	1	B	S			
19919	AMCR	1	B	H			
19920	AMRO	2	B	S			
19921	SASP	1	B	S			
19923	AMGO	2	B	H			
19922	SOSP	1	B	S			

Number of Birds Observed in Sample: 9

Number of Birds Observed in Station 01BB : 15

Number of Bird Species Observed in Station 01BB : 13

Station No.: 02BB

Vegetation Community No. (if applicable): 3

Habitat Description Old field CUM1-1

UCLatitude: 0

Corrected Latitude: 0

UCLongitude 0

Corrected Longitude 0

Way Point #

SampleID: 1678

Visit No. 1

StatWayPt:

Date: 12/06/2018 Temp Start: 18

Background Noise: 2

Remarks:

Start Time 8:27:00 AM Water Temp Start:

Precipitation: None

End Time: 8:32:00 AM Wind Conditions 0

Precipitation (within 24hrs

CloudCover: 0

Recorder: KVA

Observers:

OBSERVATIONS

ObsID	BCode	Quantity	Breeding Code	Breed EvidRank	Distance (m)	Direction	Comment
18650	RBGU	1	B	X			
18651	AMRO	1	B	S			
18652	EUST	10	B	H			
18653	SOSP	2	B	S			
18654	RWBL	2	B	H			
18655	COGR	1	B	H			
18656	AMGO	2	B	H			

Number of Birds Observed in Sample: 19

SampleID: 1823

Visit No. 2

StatWayPt:

Date: 28/06/2018 Temp Start: 19
Start Time 8:21:00 AM Water Temp Start:
End Time: 8:26:00 AM Wind Conditions 0
CloudCover: 10

Background Noise: 1
Precipitation: Fog
Precipitation (within 24hrs

Remarks:
field has been mowed

Recorder: KVA Observers:

OBSERVATIONS

ObsID	BCode	Quantity	Breeding Code	Breed EvidRank	Distance (m)	Direction	Comment
19930	NOCA	1	B	S			
19925	EUST	2	B	H			
19926	SOSP	1	B	S			
19927	RWBL	2	B	P			
19928	COGR	3	B	H			
19929	AMGO	2	B	S			

Number of Birds Observed in Sample: 11

Number of Birds Observed in Station 02BB : 13

Number of Bird Species Observed in Station 02BB : 8

Number of Birds Observed in Project: 28

Number of Bird Species Observed in Project: 14

Appendix III. Fish Species List Historically Documented in the Unnamed Tributary to Uxbridge Brook

Appendix III: Fish Community

Fish species list for the unnamed tributary to Uxbridge Brook obtained from the Ontario Ministry of Natural Resources (OMNR, 2012). Fish species spawning season obtained from the *Ontario Freshwater Fishes Life History Database* (Eakins, 2017).

Table 1. Fish Species List for Unnamed Tributary to Uxbridge Brook

Family Name	Common Name	Scientific Name	Thermal Regime	Spawning Season
Catostomidae	White Sucker	<i>Catostomus commersonii</i>	Coolwater	Spring (April-June)
Centrarchidae	Largemouth Bass	<i>Micropterus salmoides</i>	Warmwater	Spring (May-June)
	Pumpkinseed	<i>Lepomis gibbosus</i>	Warmwater	Spring-summer (May-August)
Cottidae	Mottled Sculpin	<i>Cottus bairdii</i>	Coolwater	Spring (April-May)
	Slimy Sculpin	<i>Cottus cognatus</i>	Coldwater	Spring (April-May)
Cyprinidae	Bluntnose Minnow	<i>Pimephales notatus</i>	Warmwater	Summer (June-August)
	Brassy Minnow	<i>Hybognathus hankinsoni</i>	Coolwater	Spring-Summer (May-July)
	Common Shiner	<i>Luxilus cornutus</i>	Coolwater	Spring (May-June)
	Creek Chub	<i>Semotilus atromaculatus</i>	Coolwater	Spring (May-June)
	Eastern Blacknose Dace	<i>Rhinichthys atratulus</i>	Coolwater	Spring (May-June)
	Fathead Minnow	<i>Pimephales promelas</i>	Warmwater	Spring (May-August)
	Goldfish	<i>Carassius auratus</i>	Warmwater	Spring-Summer (May-July)
	Longnose Dace	<i>Rhinichthys cataractae</i>	Coolwater	Spring-summer (May-July)
	Northern Redbelly Dace	<i>Chrosomus eos</i>	Coolwater	Spring-summer (May-July)
	Pearl Dace	<i>Margariscus nachtriebi</i>	Coolwater	Spring (May-June)
Gasterosteidae	Brook Stickleback	<i>Culaea inconstans</i>	Coolwater	Spring-summer (May-July)
Ictaluridae	Brown Bullhead	<i>Ameiurus nebulosus</i>	Warmwater	Spring (May-June)
Percidae	Yellow Perch	<i>Perca flavescens</i>	Coolwater	Spring (April-May)
Salmonidae	Brook Trout	<i>Salvelinus fontinalis</i>	Coldwater	Fall (September-November)
	Brown Trout	<i>Salmo trutta</i>	Coldwater	Fall (October-November)
Umbridae	Central Mudminnow	<i>Umbra limi</i>	Coolwater	Spring (April-May)

Appendix IV. Preliminary Development Plan, GHD (July 2018)

