

**Lockhart Road Environmental
Impact Study Phase 1**

Mattamy Homes
7880 Keele Street, Suite 500
Vaughan ON L4K 4G7



BURNSIDE

Lockhart Road Environmental Impact Study Phase 1

**Mattamy Homes
7880 Keele Street, Suite 500
Vaughan ON L4K 4G7**

**R.J. Burnside & Associates Limited
128 Wellington Street West Suite 301
Barrie ON L4N 8J6 CANADA**

**July 27, 2021
300052092.0000**

Distribution List

No. of Hard Copies	PDF	Email	Organization Name
x	Yes	Yes	Mattamy Homes
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Record of Revisions

Revision	Date	Description
0	July 27, 2021	Initial Submission to LSRCA

R.J. Burnside & Associates Limited

Report Prepared By:



Ariana Burgener, M.Sc.
Terrestrial Ecologist
AB:sc



Lorraine Adderley, M.Sc., C.E.R.P.
Project Coordinator – Terrestrial Ecologist

Report Reviewed By:



Jennifer Szczerbak, B.Sc., EMPD
Vice President Ecology, Land Development

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July 27, 2021

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1.0 Introduction

1.1 Background and Purpose

R.J. Burnside & Associates Limited (Burnside) has been retained by Mattamy Homes to conduct an Environmental Impact Study (EIS) for a residential development located at part Lot 14, Con. 11, Innisfil, in the City of Barrie (City) annexed lands, Ontario (herein referred to as the Subject Lands). The location and limits of the subject lands are shown on Figure 1. The EIS has been completed using a phased approach, and this report is Phase 1 of two. It includes a desktop assessment, a summary of the detailed field assessments completed to date, as outlined in the approved Terms of Reference (TOR) (Appendix A), constraint mapping, as appropriate, and a general overview of potential impacts and recommended mitigation measures, based on fieldwork results and the proposed development. The Phase 2 EIS will build upon Phase 1 and will include a summary of all the detailed field assessments outlined in the approved TOR and a full assessment of potential impacts and recommended mitigation measures.

The subject lands are approximately 31.1 ha in size and fall within the jurisdiction of the City of Barrie, Midhurst District Ministry of Natural Resources and Forestry (MNR), and Lake Simcoe Region Conservation Authority (LSRCA). The Subject Lands consist of an agricultural field, hedgerows and cultural meadow. The adjacent lands outside of the proposed development area contain the Natural Heritage System (NHS), located approximately 100 m to the west, as delineated in the Subwatershed Impact Study (SIS) (RJB, 2016). The subject lands are bound by agricultural land to the west and east, residential development construction to the north; and by Lover's Creek Swamp Provincially Significant Wetland (PSW) to the south, across Lockhart Road.



Lockhart Road Parcel

LAKE SIMCOE



STUDY
AREA

Sources:

- 1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
- 2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

Disclaimer:

R.J. Burnside & Associates Limited and the above mentioned sources and agencies are not responsible for the accuracy of the spatial, temporal, or other aspects of the data represented on this map. It is recommended that users confirm the accuracy of the information represented.

This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: 342.76°	Scale Factor: 0.99960



Grid North



Client

MATTAMY DEVELOPMENT CORP.

Figure Title

LOCKHART ROAD PARCEL

STUDY AREA

Drawn	Checked	Date	Figure No. 1
HN	LA	2020/11/19	
Scale		Project No.	
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1.2 Scope of Work

This document was prepared in accordance with LSRCA's approved TOR (Appendix A), Section 2.1 (Natural Heritage) of the Provincial Policy Statement (PPS; MMAH, 2020), the Natural Heritage Reference Manual for Natural Heritage Policies of the PPS, 2005 (MNR, 2010) and the Significant Wildlife Habitat Technical Guide (SWHTG; MNR, 2000). As such, the Phase 1 EIS includes:

- A review of applicable environmental policies and regulations affecting the subject lands.
- A review of existing secondary source data to identify any known natural features.
- Pre-submission consultation with agencies to identify additional features and to confirm field study methodologies.
- A summary of detailed field assessments conducted to date in 2020 and 2021.
- A description of the proposed development.
- Identification of environmental constraints.
- Preliminary assessment of potential impacts resulting from the proposed development.
- Recommended mitigating measures that will allow development to proceed in a manner that is consistent with local, regional, provincial and federal policies and regulations.

The EIS is organized according to this approach. Each of the report sections corresponds with the above objectives.

2.0 Planning and Environmental Policy Considerations

The following policies, Acts and regulations apply to features present on the subject lands.

2.1 Species at Risk Act, 2002

The *Species at Risk Act, 2002* (SARA), provides protection for Species at Risk (SAR) and their habitat. Schedule 1 of SARA is considered the official list of wildlife species at risk that receive legal protection under the Act, and includes species that have been assessed by the Committee on the Status of Endangered Wildlife in Canada (COESWIC) as Extirpated, Endangered, Threatened, or Special Concern (Government of Canada, 2017).

To ensure the protection of SAR, Section 32(1) and (2) of the SARA states,

- 1) *No person shall kill, harm, harass, capture or take an individual of a wildlife species that is listed as an extirpated species, an endangered species, or a threatened species*

- 2) *No person shall possess, collect, buy, sell or trade an individual of a wildlife species that is listed as an extirpated species, an endangered species or a threatened species, or any part or derivative of such an individual*

And Section 33 of the SARA states,

No person shall damage or destroy the residence of one or more individuals of a wildlife species that is listed as an endangered or threatened species, or that is listed as an extirpated species if a recovery strategy has recommended reintroduction of the species into the wild in Canada

SARA prohibitions pertaining to private lands include:

- Aquatic species listed on Schedule 1 as Endangered, Threatened or Extirpated.
- Migratory birds listed in the MBCA and also listed on Schedule 1 as Endangered, Threatened or Extirpated may apply through an order, to other species listed on Schedule 1 (i.e. not an aquatic or migratory bird species) as Endangered, Threatened or Extirpated, if provincial/territorial legislation or voluntary measures do not adequately protect the species and its habitat.

Although Environment and Climate Change Canada (ECCC) is the overall administrator of SARA, responsibility for implementation of the Act is shared by ECCC and the Canadian Wildlife Service, Parks Canada, and DFO. On private lands, ECCC oversees matters related to migratory birds, while DFO oversees matters related to aquatic species. In most cases pertaining to non-aquatic species on private lands, provincial laws (e.g., the *Endangered Species Act, 2007*) provide protection for critical habitat (i.e., habitat that is necessary for the survival or recovery of a listed endangered, threatened or extirpated species). Alternatively, SARA prohibitions can be applied by an order, as described above, or through federal legislation (including SARA).

2.2 Federal Fisheries Act, 1985

On February 6, 2018, the Government of Canada introduced Bill C-68, which reflected a commitment to review the changes made in 2012 to the *Fisheries Act*, in order to restore lost protections and incorporate modern safeguards. Among other updates within the Bill, proposed changes to the *Fisheries Act* included:

- Protecting all fish and fish habitats (i.e., not restricted to Commercial, Recreational and Aboriginal fisheries).
- Restoring the previous prohibitions against “Harmful Alteration, Disruption, or Destruction of fish habitat” (HADD).
- Restoring a prohibition against causing “the death of fish by means other than fishing”.

On August 28, 2019, the provisions of Bill C-68 came into force. The updated provisions supersede previous conditions of the *Fisheries Act* to provide modern safeguards to fish and fish habitat throughout Canada. The findings of this report have been developed to acknowledge the updated changes to the *Fisheries Act* and are reflective of the new provisions therein.

2.2.1 The Fisheries Act (August 28, 2019)

Construction activities that have the potential to impact fish or fish habitat must be built and operated in compliance with the federal *Fisheries Act*. If the “death of a fish by means other than fishing”, or the “harmful alteration, disruption or destruction of fish habitat” is likely to occur as a result of the project, the proponent responsible for the activities is required to obtain an Authorization from the Minister of Fisheries and Oceans Canada (DFO), as per Paragraph 34.4(2) and 35(2)(b) of the *Fisheries Act*.

2.2.2 Fisheries Act Compliance Screening Process

DFO has continued to facilitate a proponent-led review process in the determination of Fisheries Act compliance, or determines whether additional review is required. For projects near water, proponents are responsible to ensure that activities meet the criteria outlined on the Fish and Fish Habitat Protection Program website (<http://www.dfo-mpo.gc.ca/index-eng.htm>) and that best management practices (i.e., Codes of Practice) are implemented into the project design. DFO has provided a list of construction activities and waterbody types that do not require review, as well as standardized Codes of Practice and Measures to Protect Fish and Fish Habitat to mitigate contraventions of the Fisheries Act. To determine compliance with the Fisheries Act and to ensure appropriate Codes of Practice and mitigation measures are implemented, project screening should be completed by a qualified aquatic professional. If it is determined that residual impacts of the proposed works can be disrupted through avoidance and mitigation measures and a HADD is unlikely to occur, then the project does not require a review by the DFO. If HADD is anticipated as a result of the project, even following the application of feasible avoidance and mitigation strategies, then DFO review is recommended.

Following DFO review, if it is determined that the project will not cause a HADD, the project may be allowed to proceed as planned, or with the condition of additional mitigation measures. If, however, it is determined that a HADD is likely to result, proponents must apply for a Fisheries Act Authorization (Paragraph 35[2][b] Fisheries Act) from the Minister of Fisheries and Oceans. The Authorization process requires proponents to demonstrate that measures and standards have been applied to first avoid, then mitigate, and finally, offset any residual impacts to fish and fish habitat.

2.3 Migratory Birds Convention Act, 1994

The *Migratory Birds Convention Act, 1994* (MBCA) and the Migratory Bird Regulations (MBR) are federal legislative requirements that are binding on members of the public and all levels of government, including federal and provincial governments. The legislation protects certain species¹, controls the harvest of others, and prohibits the commercial sale of all species.

One key responsibility under the MBCA is described in Section 6 of the associated MBR:

Subject to subsection 5(9), no person shall disturb, destroy or take a nest, egg, nest shelter, eider duck shelter or duck box of a migratory bird, or have in his possession a live migratory bird, or a carcass, skin, nest or egg of a migratory bird except under authority of a permit therefor.

The “incidental take” of migratory birds and the disturbance, destruction or taking of the nest of a migratory bird is prohibited. “Incidental take” is the killing or harming of migratory birds due to actions, such as economic development, which are not primarily focused on taking migratory birds.

No permit can be issued for the incidental take of migratory birds or their nest or eggs as a result of economic activities. These prohibitions apply throughout the year.

On June 1, 2019, proposed changes to the MBCA Regulations were published in Part I of the Canada Gazette. Most of the changes deal with hunting and Indigenous rights, but a portion of the changes may affect the development industry on rare occasions. The changes propose to create a partial exemption from the prohibition on destroying the nests of specific species listed in the Regulation outside of the breeding season (when nests are empty) for species that usually do not re-use their nests.

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

¹ Bird species not regulated under the Act include: Rock Dove, American Crow, Brown-headed Cowbird, Common Grackle, House Sparrow, Red-winged Blackbird, and European Starling. In addition, raptors are not regulated under the MBCA. However, they are protected under provincial legislation which restricts and regulates the taking or possession of eggs and nests. Furthermore, if the species identified is protected under Ontario's ESA or the federal SARA, additional restrictions may apply.

2.4 Provincial Policy Statement, 2020

The PPS (MMAH, 2020) provides general policies on land use patterns, resources, and public health and safety that guide development across Ontario. The PPS, dated 2014, was updated in 2020 and includes some changes to the policies for Settlement Areas, Housing, Employment and Land Use Compatibility as well as Sewage, Water and Stormwater, Waste Management and Mineral Aggregate Resources. This report will address Section 2.1 of the PPS (Natural Heritage).

Eight types of natural heritage features are identified in Sections 2.1.4 and 2.1.5 of the PPS where development and site alteration are not permitted unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions:

1. Significant Wetlands in Ecoregions 5E, 6E and 7E;
2. Significant Coastal Wetlands;
3. Significant Wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
4. Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
5. Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Marys River);
6. Significant Wildlife Habitat (SWH);
7. Significant Areas of Natural and Scientific Interest (ANSIs); and
8. Coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b).

Sections 2.1.6, 2.1.7, and 2.1.8 identify three additional development and site alteration prohibitions and exemptions, as follows:

1. Fish habitat except in accordance with provincial and federal requirements;
2. Habitat of Endangered and Threatened species, except in accordance with provincial and federal requirements; and
3. 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 their ecological functions.

The presence, or potential presence, of these features as well as the policy and planning implications of these features for development are discussed in detail in this report.

As of September 3, 2019, some of the changes to the *Planning Act* came into effect that impact municipalities and land use planning processes. The proposed PPS changes work together with other recent changes to the land use planning system. Among the proposed changes under the PPS, municipalities may choose to manage wetlands not subject to policies 2.1.4 and 2.1.5, following guidelines developed by the Province.

2.5 Provincial Endangered Species Act, 2007

The *Endangered Species Act, 2007* (ESA) provides protection for SAR and their habitat. The ESA is administered by the Ministry of the Environment, Conservation and Parks (MECP) and provides policies for the protection of Extirpated, Endangered and Threatened species, as well as species of Special Concern. These four categories of species form the Species at Risk in Ontario (SARO) List, which are classified by the Committee on the Status of Species at Risk in Ontario (COSSARO). COSSARO is also responsible for maintaining criteria for assessing and classifying SAR.

The ESA helps protect species (Section 9) and their habitat (Section 10). Section 9(1)(a) of the ESA states,

no person shall kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species.

Section 10(1)(a) of the ESA states,

no person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species.

The ESA includes a general habitat regulation as well as species-specific habitat regulations. Species uplisted to Endangered or Threatened automatically receive general habitat protection under the ESA. The province is then required to prepare a species recovery strategy and establish a habitat regulation according to the requirements of the ESA.

As of April 1, 2019, the MECP assumed responsibility for the ESA, including SAR in Ontario. It is no longer the responsibility of MNR. At the same time, the Government of Ontario proposed changes to the ESA that are part of the Government's proposed Bill 108, *More Homes, More Choices Act*. The Bill received royal assent on June 6, 2019. Once the regulations have been published, it is expected that there will be changes made related to:

1. Assessing SAR and listing them on the SARO List.

2. Defining and implementing species and habitat protections.
3. Developing new SAR recovery policies.
4. Issuing ESA permits and agreements and developing regulatory exemptions.
5. Enforcing the ESA.

The SARO List is updated from time to time, therefore, it is the proponent's responsibility to practice due diligence in order to ensure that the ESA and its regulations are not violated. It is the proponent's responsibility to be apprised of any amendments to the Act that may come into force for the duration of this project.

2.6 Lake Simcoe Region Conservation Authority, Ontario Regulation 179/06

The PPS (2014) described in Section 2.4 of this Report also outlines policies for managing development within, or adjacent to, natural hazard-prone lands. These policies are generally enacted through the *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* regulations, administered by Conservation Authorities. Portions of the subject lands are located within LSRCA Regulation limits. LSRCA administers O. Reg. 179/06: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses under Section 28 of the *Conservation Authorities Act, 1990*. Through this regulation, LSRCA has the ability to:

- Prohibit development in all areas within the jurisdiction of the Authority that are delineated as the "Regulation Limit" including:
- Adjacent to or close to the shoreline of the Great Lakes – St. Lawrence River System or to inland lakes that may be affected by flooding, erosion, or dynamic beaches;
- In river or stream valleys that have depressional features associated with a river or stream, whether or not they contain a watercourse;
- In hazardous lands;
- In wetlands; or
- In other areas where development could interfere with the hydrologic function of a wetland, including areas within 120 m of all provincially significant wetlands and wetlands greater than 2 ha in size, and areas within 30 m of wetlands less than 2 ha in size.
- Require permission to develop in the aforementioned areas if, in the opinion of the authority, the control of flooding, erosion, dynamic beaches, pollution or the conservation of land will not be affected by the development.

LSRCA will assess any permit applications in order to determine if the proposed works will affect regulated features in accordance with their programs and policies. Any work being done in the regulated area requires a permit from LSRCA. Regulated areas on

the subject lands include the frontage along Lockhart Rd. extending approximately 105 m northward.

2.6.1 LSRCA Ecological Offsetting Policy

LSRCA has an Ecological Offsetting Policy. While still under development, the following compensatory measures may be considered to the satisfaction of the City and LSRCA:

- Replacement of woodland feature at a ratio of 2:1 (replacement: loss)
- Replacement of wetland feature at a ratio of 3:1 (replacement: loss)
- Replacement of the associated vegetation protection zone (VPZ) at a ratio of 1:1 (replacement: loss)
- Creation or enhancement of watercourse corridors using natural channel design principles
- NHS compensation, based on a Natural Capital Assessment or Ecological Goods and Services (EGS) Evaluation

An Ecological Offsetting Strategy (EOS) will be required. The EOS must demonstrate how the loss of a natural heritage feature will be compensated for and that this offset will result in a “net gain” of natural heritage features. The implementation of the ecological offsetting must be feasible and completed in a reasonable timeframe, preferably prior to feature removal. Monitoring will be required as part of the EOS to ensure the effectiveness of the ecological offset.

Exemptions

The subject lands contain wetlands. Ecological offsetting will not be required for wetlands smaller than 0.5 Ha, or manmade features where the wetland does not provide the following:

- a significant groundwater hydrologic linkage to an adjacent key hydrologic or protected feature
- a significant component of or ecological linkage to an adjacent key natural heritage or protected feature
- a significant surface water hydrologic linkage (permanent or intermittent surface water connection) between the wetland and an adjacent key hydrologic or protected feature

2.7 Municipal Official Plans

2.7.1 City of Barrie Official Plan

The City of Barrie adopted a new Official Plan on June 22, 2009 in conformity with the Provincial Growth Plan: Places to Grow and amendments to the Planning Act. The Official Plan was revised to address new challenges in the future growth of the City. On

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April 23, 2010, The Ministry of Municipal Affairs and Housing (MMAH) approved a new Official Plan for the City of Barrie. Since that time, many Official Plan Amendments (OPAs) have been added. The most up-to-date compilation of the OP was published in January, 2018.

The most recent OP (January 2018 consolidation) was consulted to determine land use designations and locations of natural heritage features. According to Schedule A (Land Use), the subject lands are designated as Residential with a 2.2 ha Mixed Use Node along the central south border of the subject lands. Additionally, the subject lands are located within the Secondary Plan Boundary and the Settlement Area Boundary. The adjacent lands, outside of the proposed development area, are designated as Residential, with the Natural Heritage System (NHS) located approximately 100 m to the west.

Schedule J (Lake Simcoe Watershed) shows the entirety of the subject lands within the Lake Simcoe Watershed. LSRCA published the Barrie Creeks, Lovers Creek and Hewitt's Creek Subwatershed Plan in 2012. This plan shows the subject lands are nearly entirely within Lovers Creek subwatershed, with a very small portion in the north-east corner draining to Hewitt's Creek.

The City of Barrie – Town of Innisfil boundary is coincident with Lockhart Road.

2.7.2 City of Barrie – Hewitt's Secondary Plan

The Barrie-Innisfil Boundary Adjustment Act, which came into effect in 2010, extended the City's southern boundary to incorporate 2,293 hectares of land that had previously been located within the Town of Innisfil. This expansion led to the creation of the Hewitt's Secondary Plan, which was completed in December 2016, and incorporated into the City of Barrie Official Plan as Section 9.

The Hewitt's Secondary Plan provides more detailed planning guidance for the corridor of land bordering the south-east extent of developed land. The area is bounded by Maplevue Drive East and Big Bay Point Road to the north, Lockhart Road to the south, 20th Sideroad to the east and property boundaries and existing residential subdivisions to the west.

According to Schedule 9C (Land Use) the subject lands are designated as Residential Area, with a Neighborhood Mixed Used Node along the central south boarder. Appendix 9B - Hewitt's Secondary Plan – Master Plan shows a Stormwater Management Facility in the south-west corner of the subject lands. There is no Natural Heritage System (NHS) mapped within the subject lands.

2.8 Private Tree By-Law, By-law Number 2014-115

The City's *By-law Number 2014-115 to prohibit or regulate the injuring or destruction of trees on private property* applies to all trees within woodlots, found in the boundaries of the City of Barrie. A woodlot is defined as land of at least 0.2 hectares in area covered with trees, as illustrated by the City of Barrie's Official Woodlot Map. The hedgerows on-site are mapped by the City as Woodlots. As such, a Permit to Injure or Destroy Trees under Schedule 'A' of the By-law is required. This requires a tree removal inventory to document the size, species, and number of trees, and a preservation plan signed and stamped by a Landscape Architect or Registered Professional Forester. Compensation requirements may include replacement plantings, or cash-in-lieu to fund tree planting initiatives elsewhere within the City.

The tree removal inventory was completed and submitted to the City on December 18, 2020. A copy of this plan is included in Appendix B.

2.9 The Lake Simcoe Protection Plan

Lake Simcoe Protection Plan (LSPP) policies for Settlement Areas apply to watercourses (policies 6.8-DP to 6.11-DP) and Significant Groundwater Recharge Areas (policies 6.36-DP and 6.40-DP). No watercourses are present on the subject lands; however, a Significant Groundwater Recharge Area is. As such, an EIS is required, demonstrating that the quality and quantity of groundwater in these areas and the function of the recharge areas will be protected, improved, or restored. The policies of Section 6.21-DP to 6.26-DP (Key Natural Heritage Features and Key Hydrologic Features) have been addressed through the establishment of the NHS in the Secondary Plan. That said, these policies apply to all significant woodlands, wetlands, watercourses/lakes, and significant valleylands. These features are buffered by a 30 m Vegetation Protection Zone (VPZ), under policy 6.24-DP. Previously undocumented wetlands were found on the subject lands and are discussed further in this report.

3.0 Background Records Review and Agency Consultation

The following resources were reviewed in support of the EIS:

- Recent digital aerial photography (Google Earth Pro);
- MNRF Make a Map: Natural Heritage Areas;
- Natural Heritage Information Centre (NHIC) database to identify records of rare wildlife species on, and in the vicinity of, the subject lands (1x1 km² Squares 17PK0809, 17PK0810, 17PK0909 and 17PK0910);
- The Ontario Breeding Bird Atlas (OBBA) for records of birds breeding in the area (10x10 km² Square 17PK00 and 17PK01);
- Fisheries and Oceans Canada (DFO) Aquatic Species at Risk (SAR) mapping;

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- Ministry of Natural Resources and Forestry (MNRF) Aquatic Resource Area (ARA) data;
- Ontario Reptile and Amphibian Atlas (ORAA) (10x10 km² Square 17PK00 and 17PK01);
- LSRCA regulated areas mapping (April 15, 2019);
- LSRCA Ecological Land Classification and Existing Land Use (January 2005);
- Hewitt's Secondary Plan Area Subwatershed Impact Study: Lover's, Hewitt's and Sandy Cove Creeks (R.J. Burnside & Assoc., 2016);
- Barrie Creeks, Lovers Creek, and Hewitt's Creek Subwatershed Plan (LSRCA, 2012);
- Simcoe County Official Plan (2016);
- City of Barrie Official Plan (April 2010, office consolidation January 2018);
- City of Barrie By-Law Number 2014-072 Bill No. 082 to Adopted OPA #39 (June 2014);
- City of Barrie Secondary Plan, Background Studies & Infrastructure Master Plan, Intensification & Annexed Lands, Drainage and Stormwater Management Master Plan (AMEC, 2013);
- Natural Heritage System and Restoration Strategy (Beacon Environmental & LSRCA, 2018); and
- Natural Heritage Characterization report (NRSI, 2012).

3.1 Identification of Provincially Significant Natural Features

Provincially significant natural features are natural areas that have been identified by MNRF as being valuable. Some of these areas are determined by established ranking systems, and others are determined by the wildlife they support. The following is a summary of the provincially significant natural features that were identified through the review of existing records for the subject lands. These are discussed in detail in Section 6.0.

Significant Wetlands

The Lover's Creek Swamp Provincially Significant Wetland is located immediately adjacent to the south and the west of the subject lands. The PSW was staked and surveyed as a part of the SIS. A portion of the PSW, located in MNRF mapping on the subject lands, was reviewed by MNRF in 2018 and removed from the PSW mapping (Appendix C). The wetland on site was staked and surveyed with LSRCA on June 25, 2021.

Significant Valleylands

No valleylands are located on the subject land, or within 120 m.

Significant Woodlands

No woodlands (as defined by the Natural Heritage Reference Manual, MNR, 2010) are present on the subject lands, or within the immediate vicinity. Woodlands once present to the immediate north have been removed for an adjacent development project.

Significant Areas of Natural and Scientific Interest (ANSI)

No ANSIs are present on the subject lands, or within 120 m.

Significant Wildlife Habitat

Field surveys are ongoing. SWH will be evaluated in the Phase 2 EIS.

Fish Habitat

There are no permanent or intermittent watercourses on the subject lands. Lover's Creek is located approximately 130 m west of the subject lands.

Habitat of Endangered and Threatened Species

Field surveys are ongoing. SWH will be evaluated in the Phase 2 EIS.

3.2 Species at Risk and Species of Conservation Concern

Species at Risk (SAR) are species that are identified on the Species at Risk Ontario (SARO) List, or are listed on Schedule 1 to the Species at Risk Act (2002).

The term "Species of Conservation Concern" (SCC) is defined under the Natural Heritage Reference Manual (NHRM; MNR, 2010) as follows:

- Species that are rare or are substantially declining, or have a high percentage of their global population in Ontario;
- Special Concern species identified on the SARO List that were formally referred to as "vulnerable" in the Significant Wildlife Habitat Technical Guide (SWHTG; MNR, 2000); and/or
- Species identified as nationally Endangered or Threatened by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), which are not protected in regulation under Ontario's ESA.

As part of this EIS, Burnside examined publicly available secondary source information and published reports of the study area and vicinity regarding Species at Risk (SAR) that may be present in, or adjacent to the subject lands. Species that are listed as SCC or SAR that were recorded from Burnside's background records review and field

investigations are included in the detailed SAR Screening Table, in Appendix D of this report, and also discussed in Section 7.0.

In summary, the following provincially listed SAR have been identified as potentially present in, or adjacent to the subject lands:

Plants

- Butternut (*Juglans cinerea*) (END – ESA and SARA)

Reptiles and Amphibians

- Blanding's Turtle (*Emydoidea blandingii*) (THR – ESA and SARA)
- Eastern Musk Turtle (*Sternotherus odoratus*) (SC – ESA, THR – SARA)
- Eastern Ribbonsnake (*Thamnophis sauritus*) (SC – ESA and SARA)
- Five-lined Skink (*Plestiodon fasciatus*) (SC – ESA and SARA)
- Eastern Milksnake (*Lampropeltis triangulum*) (SC – SARA)
- Northern Map Turtle (*Graptemys geographica*) (SC – ESA and SARA)
- Snapping Turtle (*Chelydra serpentina*) (SC – ESA and SARA)
- Western Chorus Frog (Great Lakes / St. Lawrence-Canadian Shield Population) (*Pseudacris triseriata*) (THR – SARA)

Birds

- Barn Swallow (*Hirundo rustica*) (THR – ESA and SARA)
- Bobolink (*Dolichonyx oryzivorus*) (THR – ESA and SARA)
- Chimney Swift (*Chaetura pelagica*) (THR – ESA and SARA)
- Eastern Meadowlark (*Sturnella magna*) (THR – ESA and SARA)
- Eastern Whip-poor-will (*Antrostomus vociferus*) (THR – ESA and SARA)
- Eastern Wood Pewee (*Contopus virens*) (SC – ESA and SARA)
- Golden-winged Warbler (*Vermivora chrysoptera*) (SC – ESA and SARA)
- Olive-sided Flycatcher (*Contopus cooperi*) (SC – ESA, THR – SARA)
- Red-headed Woodpecker (*Melanerpes erythrocephalus*) (END – ESA and SARA)
- Wood Thrush (*Hylocichla mustelina*) (SC – ESA, THR – SARA)

Insects

- Monarch (*Danaus plexippus*) (SC – ESA, SC – SARA)

Mammals

- Little Brown Myotis (*Myotis lucifugus*) (END – ESA and SARA)
- Eastern Small-footed Myotis (*Myotis leibii*) (END – ESA and SARA)
- Northern Myotis (*Myotis septentrionalis*) (END – ESA and SARA)
- Tri-colored Bat (*Perimyotis subflavus*) (END – ESA and SARA)

Additionally, the following species have been assessed by COSEWIC (2018) as SAR, but have no status under SARA (2002) or the ESA (2007).

- Midland Painted Turtle (*Chrysemys picta* subsp. *marginata*) (SC)

3.3 Vegetation & Ecological Land Classification

LSRCA's Ecological Land Classification and Existing Land Use (2005) map shows the majority of the subject lands existing land use as Intensive Agriculture. Cultural Woodland (i.e., Hedgerows) run along the east, north and half of the western perimeter. The southern portion of the subject lands are classified as Cultural Meadow. This map shows a Deciduous Forest on the northern adjacent lands, abutting the subject lands. This woodland has since been removed for a development on adjacent lands.

The Natural Heritage Characterization report (NRSI, 2012) and the SIS investigated the natural heritage features, ecological land classification and vegetation present on the adjacent lands. The subject lands were not a part of these investigations. Appendix G details the ELC and vegetation present on the adjacent lands to the west (where the NHS is closest to the subject lands). The adjacent property contains wetlands, riparian woodlands associated with Lover's Creek, cultural woodlands and meadows.

3.4 Avifauna

Breeding Bird surveys were undertaken for the Natural Heritage Characterization (NRSI 2012) and the SIS (Burnside and Azimuth 2016) on adjacent properties. No site-specific information was provided in previously completed studies. These surveys identified the presence of SAR species, such as Barn Swallow, Chimney Swift, Eastern Meadowlark and Bobolink in the overall study area. Barn Swallow was identified on an adjacent property in the secondary plan area. Whip-Poor-Will was found not to be present in the secondary plan area surveys.

3.5 Aquatic Habitat

3.5.1 The Lovers Creek Subwatershed

The subject lands are within the Lover's Creek subwatershed, which drains north into Lake Simcoe. As outlined in the Barrie Creeks, Lovers Creek, and Hewitt's Creek Subwatershed Plan (LSRCA, 2012), the drainage area is approximately 59.9 km² and contributes 2.3% of the Lake Simcoe watershed. Roughly 58% of the Lover's Creek subwatershed is located within the Town of Innisfil, with the main stem and remaining portion in the City of Barrie.

Burnside conducted a desktop review of the current data, mapping and literature for aquatic habitat conditions and fish communities within the vicinity. No fisheries or aquatic habitat potential was identified within the subject lands based on this review.

3.5.2 Headwater Drainage Feature Assessments

Headwater drainage features (HDFs) are small zero-order and first order intermittent and ephemeral streams, swales and connected headwater wetlands (CVC & TRCA, 2014). HDFs can have many hydrological and ecological functions which help to maintain watershed health, such as water quality, flow attenuation, season habitat for fish, insects and amphibians, sediment influences and allocthonous input from organic material. In many cases, these features may qualify as “watercourses” under the *Conservation Authorities Act*, which are described as “identifiable depressions in the ground in which flow of water regularly or continuously occurs”.

Land use activities associated with urbanization and agriculture, such as the drainage, piping and channelization, may result in impacts to HDF that reduce their ability to perform their natural functions. This can have detrimental effects on the watershed, particularly when many HDFs in the watershed are altered, because of the cumulative effects that may occur. Individually, their importance is often overlooked due to their small size and intermittent flow regimes, particularly in the summer when monitoring of streams typically occurs. Because of this, they are often not part of typical watershed monitoring programs.

In 2014, the Toronto Region Conservation Authority (TRCA) and Credit Valley Conservation (CVC) finalized and adopted the *Evaluation, Classification, and Management of Headwater Drainage Features* (HDF Guidelines). This document, in conjunction with supporting modules from the *Ontario Stream Assessment Protocol* (OSAP, 2017), outlines a process for assessing and classifying natural drainage features. This procedure identifies the contribution of these drainage systems on the watershed and enables the development of mitigation and management procedures, if disruption of their function is proposed.

4.0 Methodology

4.1 Vegetation Communities and Species

The study limits for characterization of vegetation communities and species included the subject lands plus approximately 50 m beyond, where accessible. Vegetation surveys for ELC and plant inventory were undertaken on June 8, 2021.

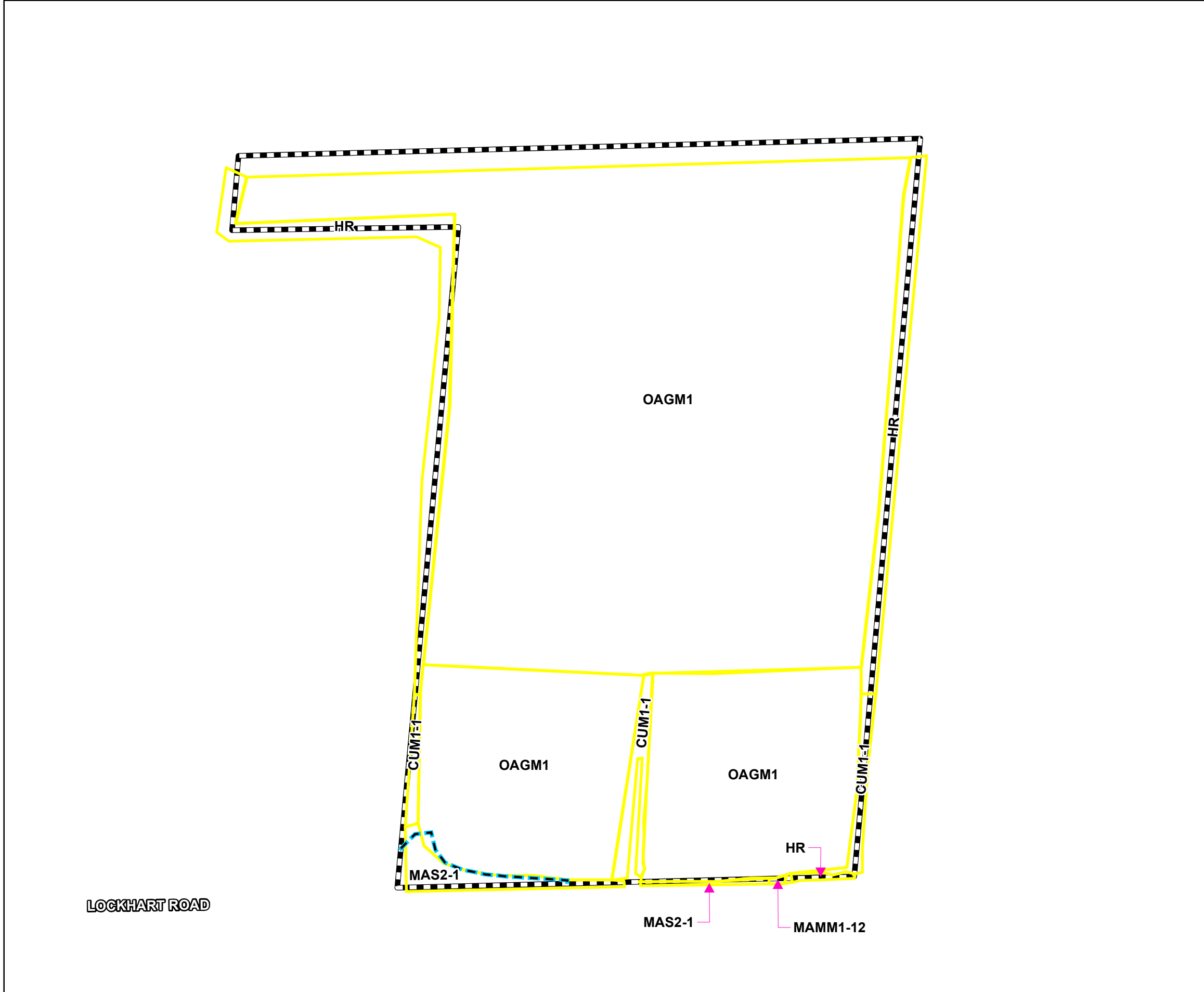
The locations of any provincially rare species encountered were recorded using GPS and included on the figures (excepting those classified as Restricted Species). Locally rare species were recorded in the ELC unit in which they are found.

All species herein are described according to nomenclature and S-ranks provided by the NHIC current to March 18, 2021. Species rarity is based on:

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- Species' status as listed on the SARO list (updated November 9, 2020), under the ESA.
- Species status, as determined by COSEWIC and listed under the Species at Risk Act, 2002.
- Species' S-rank as provided on the NHIC database; and
- A rarity for the Lake Simcoe Watershed as listed in "The State of the Lake Simcoe Watershed" Appendix 5.3 (LSRCA, 2003) and for Simcoe County in "The Distribution and Status of the Vascular Plants of Central Region" (Riley et al., 1989).

ELC communities were described according to the Ecological Land Classification for Southern Ontario: First Approximation and Its Application (Lee et al. 1998), as seen on Figure 2.



Wetland Community Limit

ELC

Lockhart Road Parcel

ELC DESCRIPTIONS:
CUM1-1: Dry - Moist Old Field Meadow Type
HR: Hedgerow
MAMM1-12: Common Reed Graminoid Mineral Meadow Marsh
MAS2-1: Cattail Mineral Shallow Marsh Type
OAGM1: Annual Row Crops

- Sources:**
- 1. County of Simcoe
 - 2. Ministry of Natural Resources, © Queen's Printer for Ontario
 - 3. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

Disclaimer:

R.J. Burnside & Associates Limited and the above mentioned sources and agencies are not responsible for the accuracy of the spatial, temporal, or other aspects of the data represented on this map. It is recommended that users confirm the accuracy of the information represented.

This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
Projection: Transverse Mercator	
Central Meridian: 81°0'0.00"W	
False Easting: 500,000m	False Northing: 0m
Page Orientation: 342.76°	Scale Factor: 0.99960

Grid North

0 50 100 150 200
Metres



Client

MATTAMY DEVELOPMENT CORP.

Figure Title

LOCKHART ROAD

ECOLOGICAL LAND CLASSIFICATION (ELC)

Drawn	Checked	Date	Figure No.
MD	LA	2021/07/07	2
Scale		Project No.	
H 1:3,500		300052092	

4.2 Tree Inventory

The eastern Hedgerow and White Cedar Hedgerow in the south-east corner were inventoried by Burnside arborists and the tree inventory and removal plan was submitted to the City of Barrie on December 18, 2020. A copy of the inventory is included in this EIS in Appendix B for ease of reference. Each tree within the two features was identified, measured, assessed for health and maturity. The western Hedgerow was not assessed as part of this EIS. Instead, the application to remove trees within the western Hedgerow was accomplished within the Tree Inventory Plan, completed by JDB Associates Ltd. in January 2020, as part of the adjacent proposed development by another proponent.

4.3 Avifauna

Standard breeding bird surveys were completed by an Avian Biologist and were conducted according to the *Ontario Breeding Bird Atlas (OBBA) Guide for Participants* (Bird Studies Canada March 2001) tailored to the needs of this project. Surveys were conducted between May 24 and July 10, between dawn and 10am, which is the recommended date range for surveys according to the OBBA (2001). Surveys were completed at a total of six point count locations, as seen on Figure 3.

- Surveys were conducted under the following weather condition requirements: counts were not completed if it was raining, there was thick fog, or if winds were greater than 19 km per hour (i.e., >3 on the Beaufort scale). Generally, weather conditions were conducive for auditory and visual surveys, with winds less than 19 km per hour and no precipitation.
- Surveying at each point count station lasted for 10 minutes and all species of birds were recorded. Standard breeding bird surveys were conducted at the designated point count locations. All birds observed and heard were recorded at each habitat unit location, including level of breeding evidence. Field data was collected using a mobile data collection application (Fulcrum) on an iOS device.



- Bat Acoustic Monitoring Stations
- Avifauna Survey Stations
- Amphibian Survey Station
- Nesting Turtle Transects
- Lockhart Road Parcel

Sources:

- County of Simcoe
- Ministry of Natural Resources, © Queen's Printer for Ontario
- Natural Resources Canada © Her Majesty the Queen in Right of Canada.

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Datum: North American 1983 CSRS	
Coord. System: NAD 1983 CSRS UTM Zone 17N	
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Page Orientation: 17.24°	Scale Factor: 0.99960

Grid North

Metres



Client

MATTAMY DEVELOPMENT CORP.

Figure Title

LOCKHART ROAD
FAUNA SURVEYS

Drawn	Checked	Date	Figure No.
MD	AB	2021/07/08	3
Scale		Project No.	
H 1:3,426		300052092	

4.4 Amphibians

Burnside staff conducted an amphibian breeding call survey in the wetland, located in the south-west corner of the subject lands (Figure 3). Surveys were conducted between April 15, 2021 and June 30, 2021 by qualified ecologists, to detect potential early, mid and late season amphibian breeding activity. The survey methodology is summarized below and in Table 1.

The Marsh Monitoring Program guidelines state that three call surveys should be completed a minimum of 15 days apart when nighttime air temperatures are greater than 5°C, 10°C and 17°C, respectively and when wind strength is less than 19 km/h (<3 on the Beaufort Scale).

Amphibian calls are used to identify species presence and are quantified by assigning a Call Level Code and an Abundance Count. The purpose of the breeding amphibian surveys was to identify wildlife habitat, as well as any potential Significant Wildlife Habitat (SWH) in the Study Area. The SWH is discussed further in Section 6.5, and Appendix F – SWH Screening Table.

Table 1: Summary of Amphibian Breeding Call Survey Conditions

Amphibian Breeding Call Survey Date	Observers	Start Time (24 hr)	Weather Conditions		
			Sky Code ¹	Air Temp. (°C)	Wind (Beaufort Scale) ²
April 9, 2021	Sylvia Radovic Braden Rosentretor	20:27	0	16	1
May 16, 2021	Sylvia Radovic	21:22	0	14	0
June 8, 2021	Sylvia Radovic	21:35	1	24	2

¹NAAMP/ Beaufort Sky Codes

0 = clear (no cloud cover)
 1 = partly cloudy (scattered or broken) or variable
 2 = cloudy or overcast
 3 = sandstorm, dust storm or blowing snow
 4 = fog, smoke, thick dust, or haze
 5 = drizzle or light rain
 6 = rain
 7 = snow or snow/rain mix
 8 = showers
 9 = thunderstorms

²Beaufort Wind Scale

0 = calm, smoke rises vertically (0-2km/hr)
 1 = Light air movement, smoke drifts (3-5)
 2 = Slight breeze, wind felt on face; leaves rustle (6-11)
 3 = Gentle breeze, leaves & twigs in constant motion (12-19)
 4 = Moderate breeze, small branches moving, raises dust & loose paper (20-30);
 5 = Fresh breeze, small trees begin to sway (31-39)
 6 = Strong breeze, large branches in motion (40-50)

4.5 Reptiles

Background records of SCC and SAR turtles indicate they may be present on the subject lands and in the Lover's Creek Swamp Provincially Significant Wetland, located

immediately adjacent to the south and the west of the subject lands. There are no water features that would support over-wintering habitat on the subject lands. As such, basking surveys were not conducted. However, the presence of a PSW immediately south and west of the subject lands indicates the possibility of habitat within the subject lands supporting nesting turtles. The gravel shoulder, along Lockhart Road, and the gravel laneway were identified as potential nesting habitat during a site reconnaissance in summer 2020 and were surveyed on 6 visits, completed from late May to early July 2021. Surveys were completed by a Terrestrial Ecologist with experience in surveys for SAR turtles.

Turtle Nesting

Turtle nesting and nest surveys were based on MNRF Guelph District's *Blanding's Turtle Nest and Nesting Survey Guidelines* (May 2016). The survey methodology for nesting turtles is summarized below and in Table 2:

- Six surveys occurred within all areas suitable for nesting (i.e., friable soils dominated by sand and gravel and exposed to sun and warmth). On the subject lands, this included the gravel shoulder along Lockhart Road and the gravel laneway (see Figure 3 of this report).
- As per the Protocol, nesting and nest surveys should commence when the first sign of Midland Painted Turtle or Snapping Turtle nesting in the area has begun and continue for three weeks. A mailing list for turtle nesting notifications was reviewed daily in order to determine when surveys should commence. Surveys were completed during suitable weather conditions: warm, humid nights with air temperatures above 14°C.
- All suitable nesting habitats on the subject lands were surveyed by walking systematic, repetitive transects. All signs of turtle nesting were noted, including test scrapes, tracks and trails made by commuting turtles, freshly laid nests, predated nests, and the presence of turtles laying eggs or commuting to/from nesting sites.

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Table 2: Summary of Turtle Nesting Survey Conditions

Turtle Nesting Survey Date	Observers	Start Time (24 hr)	Weather Conditions		
			Sky Code ¹	Air Temp. (°C)	Wind (Beaufort Scale) ²
May 27, 2021	Merideth Meeker Sylvia Radovic	8:26 – 8:59	0	8	2
June 3, 2021	Merideth Meeker Sylvia Radovic	19:15 -19:45	0	23	0
June 9, 2021	Sylvia Radovic Ariana Burgener	16:30-17:00	1	28	3
June 13, 2021	Sylvia Radovic	20:00 – 20:30	0	23	3
June 16, 2021	Sylvia Radovic	18:00 – 18:30	1	17	3
June 18, 2021	Sylvia Radovic	19:05 – 19:35	1	21	2

¹NAAMP/ Beaufort Sky Codes

0 = clear (no cloud cover)
1 = partly cloudy (scattered or broken) or variable
2 = cloudy or overcast
3 = sandstorm, dust storm or blowing snow
4 = fog, smoke, thick dust, or haze
5 = drizzle or light rain
6 = rain
7 = snow or snow/rain mix
8 = showers
9 = thunderstorms

²Beaufort Wind Scale

0 = calm, smoke rises vertically (0-2km/hr)
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3 = Gentle breeze, leaves & twigs in constant motion (12-19)
4 = Moderate breeze, small branches moving, raises dust & loose paper (20-30);
5 = Fresh breeze, small trees begin to sway (31-39)
6 = Strong breeze, large branches in motion (40-50)

4.6 Mammals

4.6.1 Bat Habitat Surveys

In April 2017, MNRF Guelph District released the *Survey Protocol for Species at Risk Bats within Treed Habitats* for three of Ontario's four Endangered bat species (Little Brown Myotis – *Myotis lucifugus*; Northern Myotis – *Myotis septentrionalis*; Tri-colored Bat – *Perimyotis subflavus*) (MNRF 2017b). These three species, along with Eastern Small-footed Myotis (*Myotis leibii*) are designated as Endangered under the ESA. These species receive species and general habitat protection under the ESA. Throughout eastern North America, a disease known as white-nose syndrome (WNS), which is caused by a fungus, has been the primary cause of the decline of *Myotis* bat populations.

Maternal summer roosting habitat for these species is often associated with the cavities and crevices of large diameter trees (25 to 44 cm DBH), exhibiting early stages of decay (Class 1-3; Watt and Caceres 1999), in deciduous or mixed mature forest and wetland habitat types (Environment Canada, 2015). Additionally, Little Brown Myotis is also known to form maternity roosting colonies in abandoned or derelict structures, such as barns, old buildings and residential dwellings.

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Leaf-Off Survey

A leaf-off survey was conducted on April 19, 2021 to survey for candidate maternity roosting habitat for Northern Myotis and Little Brown Myotis. The following criteria were considered when identifying a candidate maternity roosting tree during this survey:

- Decay class
- DBH
- Species
- Percent canopy cover
- Presence of habitat characteristics
- Peeling bark
- Within 10 m of another tree and/or snag
- Cavity height

For each candidate tree, the details of the criteria discussed above were collected using ArcGIS Collector and marked with a GPS waypoint.

Leaf-On Survey

Tri-colored Bat show strong preference to roosting in the foliage of oak and maple trees, especially those that feature dead or dying clusters of leaves. This survey protocol targets these genera specifically. Leaf-on surveys were completed on May 27, 2021. The following trees were documented:

- Oaks ≥ 10 cm DBH
- Maples ≥ 10 cm DBH with dead/dying needle clusters
- Maples ≥ 25 cm DBH
- White Pine trees ≥ 10 cm DBH with dead/dying needle clusters

All candidate trees were assessed based on the following criteria:

- Decay class
- DBH
- Species
- Percent canopy cover
- Dead and dying leaf clusters (or snapped branch)

As with leaf-off surveys, each tree identified as a candidate maternity roosting tree was recorded with a GPS waypoint.

4.6.2 Bat Acoustic Surveys

Acoustic surveys are used to confirm presence or absence of bat species in candidate BMH habitat. Appropriate recording stations are determined through the criteria for leaf-off and leaf-on surveys (Figure 3).

Acoustic surveys were completed by an experienced Biologist, using a handheld bat detector (heterodyne) set to 40-45 kHz, and at least one assistant. In accordance with the MNRF protocol (April 2017), two exit surveys were completed during the month of June, under appropriate conditions: temperature above 10°C, no rain, and low wind (3 and less on the Beaufort scale) (see Table 3). Viewing stations with a clear view of the candidate trees and surrounding features were chosen. Monitoring occurred from 30 minutes before sunset, until 60 minutes after sunset. Observers noted the number of bats seen exiting.

Table 3: Summary of Acoustic Bat Survey Conditions

Acoustic Bat Survey Date	Observers	Start Time (24 hr)	Weather Conditions		
			Sky Code ¹	Air Temp. (°C)	Wind (Beaufort Scale) ²
June 3 2021	Sylvia Radovic Meredith Meeker Tom Exton	20:28 – 22:08	0	23-20	0
June 22 2021	Sylvia Radovic Meredith Meeker Tom Exton	20:36 – 22:06	0	16-13	2

¹NAAMP/ Beaufort Sky Codes

0 = clear (no cloud cover)
 1 = partly cloudy (scattered or broken) or variable
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 3 = sandstorm, dust storm or blowing snow
 4 = fog, smoke, thick dust, or haze
 5 = drizzle or light rain
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²Beaufort Wind Scale

0 = calm, smoke rises vertically (0-2km/hr)
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 2 = Slight breeze, wind felt on face; leaves rustle (6-11)
 3 = Gentle breeze, leaves & twigs in constant motion (12-19)
 4 = Moderate breeze, small branches moving, raises dust & loose paper (20-30);
 5 = Fresh breeze, small trees begin to sway (31-39)
 6 = Strong breeze, large branches in motion (40-50)

4.7 Wildlife Habitat

It is anticipated that on-site features would support common wildlife, such as a variety of small mammals (e.g., Mice, Voles, Squirrels), Raccoon, Fox, Coyote, Skunk, Eastern White-Tailed Deer and Eastern Cottontail. Monarch have the potential to forage in the cultural meadow habitats on-site, which contained the Milkweed (*Asclepias* spp.) plants required for their reproduction. In the hedgerows on the subject lands, several areas containing piles of rubble may provide habitat for a variety of common snake species.

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On all site visits, visual observations of animals, tracks or scat were documented. Features that may be considered wildlife habitat were specifically sought out. These features include:

- Dens.
- Reptile hibernacula.
- Structures.
- Uncapped chimneys.
- Foundations.

Observations were made for the entire property and areas of intrusion into the NHS and 50 m onto adjacent lands, where possible.

4.8 Headwater Drainage Features Assessments

Field investigations were conducted based on procedures outlined in the TRCA (2014) guidance document, coupled with the supporting OSAP Section 4: Module 11 (OSAP, 2017). A background review of existing hydrology, ArcHydro data, LIDAR and satellite imagery were utilized to identify potential HDF features from desktop. Each potential HDF location was investigated during the initial site visit on April 14, 2021, with the subsequent monitoring visit completed at sites based on observations from previous visits.

The evaluation methods outlined in the HDF Guidelines utilize flow conditions, riparian vegetation, fish and fish habitat and terrestrial assessments as components in the determination of HDF classification. The HDF assessment protocol implemented is primarily based on the "Rapid Survey Type" assessment outline in the HDF guideline, with concurrent investigations conducted in support of this EIS to supplement information pertaining to Terrestrial Assessments (Sections 5.4.1 and 5.6) where potential disturbance may occur.

Since HDFs can vary significantly on a seasonal basis, multiple site visits are needed to correctly assess their hydrology and riparian conditions. Headwater drainage features were evaluated through a series of three site visits in 2021, which were timed to coincide with early spring (i.e., freshet), late spring and late summer conditions, as outlined the HDF Guide (TRCA, 2014). Table 4 provides a summary of field investigation dates and recommended sampling periods.

Table 4: HDF Recommended Timing and Field Investigation Dates

Site Visit	Guidelines Assessment Period	Field Investigation Date
1	Spring Freshet (Early April to mid-April)	April 14, 2021
2	Late April to May	May 13, 2021
3	July to August	pending

Following field investigations, findings of the HDF evaluations are used to inform the classification and management recommendation of the HDF, based on its respect hydrology, riparian habitat and ecological function.

5.0 Existing Conditions

5.1 Physiography and Topography

The subject lands are located entirely within the Peterborough Drumlin Field Physiographic Region. This Physiographic Region lies between the Oak Ridges Moraine and the area of shallow soils over limestone of the Gull River Formation. This rolling till plain extends along an area of about 4530 square kilometres, from Hastings County in the East to Simcoe County in the west. The region contains approximately 3000 drumlins. In general, the drumlins are oriented from northeast to southwest. The till overlies highly fossiliferous softer limestones of the Lindsay and Verulam Formations. Within this region, the subject lands are located in a drumlinized till plain Physiographic Landform (Chapman and Putnam, 1984 and 2007).

5.2 Geology

The subject lands are located on the Lindsay Formation, which consists of limestone (Armstrong and Dodge, 2007). The surficial geology is composed mainly of till which is a stone-poor, sandy silt to silty sand-textured till on Paleozoic terrain. In the northeast of the subject lands the surficial geology is composed of ice-contact stratified deposits of sand and gravel, with minor silt, clay and till. In the southwest of the subject lands the surficial geology is composed of fine-textured glaciolacustrine deposits of silt and clay, with minor sand and gravel.

5.3 Soils and Infiltration Conditions

The overburden sediments of the subject lands consist of silty to sandy glacial till, ice contact stratified sediments of sand and gravel and glaciolacustrine deposits of silty and

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clay in the southwest corner of the subject lands. The hydraulic conductivities for the dominant sediment type, silty sand till, ranges between 10^5 to 10^6 cm/sec.

SGRAs are mapped in the northeast portion of the subject lands. Significant Groundwater Recharge Areas (SGRAs) represent areas where the annual recharge rate is greater than 115% of the average recharge of 164 mm/year across the Lake Simcoe watershed (or greater than the threshold recharge rate of 189 mm/year) (LSRCA, 2012). Boreholes in the vicinity and groundwater monitoring indicate that the soil is sandy and unconfined and supports the interpretation that recharge occurs in this area.

Ecologically Significant Groundwater Recharge Areas (ESGRAs) were identified as areas of land that are assumed to support groundwater systems or environmentally sensitive features like lakes, cold water streams and wetlands (Earthfx, 2012). Within the subject lands, areas mapped as ESGRAs by the LSRCA are generally located in the southwest corner, along Lockhart Road and the north east portion of the subject lands. The actual recharge rates (based on expected groundwater flux) through the sediments confirmed on the subject lands are not expected to be significant as the silty sand till sediments that have been characterized as having a moderate to low hydraulic conductivity have a limited potential to move significant quantities of groundwater. Higher recharge is expected in the northeast portion of the subject lands, where sands were encountered at surface.

5.4 Vegetation Communities and Species

5.4.1 Ecological Land Classification

Cattail Mineral Shallow Marsh (MAS2-1)

This marsh ecosite is found in the south-west corner and along the southern boundary, west of the gravel laneway. This ecosite is dominated by Cattails (*Typha angustifolia*, *Typha glauca*, *Typha latifolia*), with abundant Reed Canarygrass (*Phalaris arundinacea*), Field Horsetail (*Equisetum arvense*), Hairy Willowherb (*Epilobium hirsutum*), Cursed Buttercup (*Ranunculus sceleratus*), Curled Dock (*Rumex crispus*) and Yellow Avens (*Geum allepicum*). The ecosite contains patches dominated by invasive European Reed (*Phragmites australis ssp. australis*). This wetland area was staked and surveyed by LSRCA and RJB on June 25, 2021, in accordance with OWES wetland delineation practices.

The MAS2-1 ecosite also occurs along the drainage ditch at the southern boundary of the subject lands, immediately north of Lockhart Road.

Dry-Moist Old Field Meadow Type (CUM1-1)

This ecosite is located in two areas along the southern portions of the east and west boundaries of the subject lands. No trees are present in these units. Sparse shrubs found within these sites include Meadow Willow (*Salix petiolaris*), Staghorn Sumac (*Rhus typhina*) and non-native Honeysuckles (*Lonicera* spp.). The ground layer was abundant with Smooth Brome (*Bromus inermis*), Kentucky Bluegrass (*Poa pratensis*), and Field Horsetail (*Equisetum arvense*), and contains many common meadow species such as Common Buttercup (*Ranunculus acris*), White Clover (*Trifolium repens*), Common Milkweed (*Asclepias syriaca*), Ox-eye daisy (*Leucanthemum vulgare*), Common Fleabane (*Erigeron philadelphicus*), Wild Strawberry (*Fragaria virginiana*) and Common Dandelion (*taraxacum officinale*).

Hedgerow (HR)

Hedgerows can be found along most of the east and west boundaries of the subject lands. The canopies of the Hedgerows are dominated by Sugar Maple (*Acer saccharum*), Basswood (*Tilia americana*), with Domestic Apple (*Malus domestica*) found abundantly through the subcanopy. American Elm (*Ulmus americana*), Black cherry (*Prunus serotina*) and Common Pear (*Pyrus communis*) are also commonly found. The understory is dominated the climbing vines River Grape (*Vitis riparia*) and Virginia Creeper (*Parthenocissus quinquefolia*), with occasional European Buckthorn (*Rhamnus cathartica*) and Currants (*Ribes* sp.). The groundlayer is dominated by Smooth Brome (*Bromus inermis*).

Annual Row Crops (OAGM1)

The majority of the subject lands are active Annual Row Crops. At the time of the inspection, soy was planted.

Common Reed Graminoid Mineral Meadow Marsh (MAMM1-12)

A small dense patch of Common Reed (*phragmites australis*) was observed at the south west of the subject lands, along Lockhart Rd.

5.4.2 Botanical Inventories

A detailed list of plants identified on the subject lands can be found in Appendix G. The following summarizes the flora observed on the subject lands during field surveys:

- 103 plant taxa were observed. Of those, 91 were identified to species or subspecies level. Of those species, 47 (52%) were native and 44 (48%) were non-native to Ontario.

- All native species were secure – common or apparently secure – uncommon (S5 or S4) in Ontario. Two species were observed that are considered rare (R) to Site District 6E-7 (Varga et al. 2000); Eastern Red Cedar and Riverbank Grape.
 - It should be noted, however, that while Eastern Red Cedar and Riverbank Grape may be rare in a naturally occurring context, that escaped planted varieties of Eastern Red Cedar are widespread in rural and suburban settings and that Riverbank Grape is now a common, almost invasive, component of edge habitats across the province (Rahemi et al. 2016). It is considered an invasive plant in nearby Ohio and Minnesota.
- No SAR flora were observed on the subject lands.

5.5 Avifauna

Findings from the bird surveys, conducted in Spring and Summer 2021, will be discussed in Phase 2 of the EIS.

5.6 Amphibians

One survey station was monitored, located in the MAS2-1 ecosite in the south-west corner of the subject lands and shown on Figure 3 of this Report.

Amphibians were heard calling in the first two of three surveys. During the first survey, Western Chorus Frog (*Pseudacris triseriata*) were heard calling at a call code of 1. During the second survey, American Toad (*Anaxyrus americanus*) and Spring Peeper (*Pseudacris crucifer*) were heard at a call code of 1. While American Toad and Spring Peeper are ranked S5 (Secure), the Great Lakes / St. Lawrence - Canadian Shield population of Western Chorus Frog are ranked S3 and listed as Threatened federally.

Incidentally, Gray Treefrog (*Hyla versicolor*) and American Toad were heard calling on the subject lands on June 3rd as a part of other surveys.

Due to the small size of the MAS2-1 area and the low numbers of calling amphibians heard, the ecosite does not meet the criteria for Significant Wildlife Habitat for Amphibian Woodland Breeding Habitat or Amphibian Wetland Breeding Habitat for Ecoregion 6E (MNRF 2015). Western Chorus Frogs are discussed in more detail in Sections 6.5, 7.0 and 10.0.

5.7 Reptiles

There are no water features that would support over-wintering habitat on the subject lands. As such, basking surveys were not conducted. However, the presence of a PSW immediately south and west of the subject lands indicates the possibility of habitat within the subject lands supporting nesting turtles. Findings from the nesting surveys conducted in Spring and Summer 2021 will be discussed in Phase 2 of the EIS.

5.8 Mammals

Findings from the candidate tree and acoustic surveys conducted in Spring 2021 will be discussed in Phase 2 of the EIS.

5.9 Anthropogenic Features

During field surveys, all anthropogenic features were noted. The only man-made feature found on the subject lands was a rock pile, located along the eastern boundary. It is possible this could provide habitat for wildlife, however none were observed at the time of investigation.

5.10 Incidental Wildlife Observations

Incidental observations of wildlife were collected during field investigations. Observations were documented to provide a general characterization of the habitat functions of the site. Examples include tracks, scat, carcasses, live sightings, etc.

Provincial ranks (i.e., S1 to S5) are used to set protection priorities for rare species and natural communities. With the exception of Monarch butterfly (discussed further in Sections 6.5, 7.2 and 10.0), the remaining species observed are not listed as provincially and/or federally significant and are listed as secure or apparently secure in Southern Ontario (in other words, they are ranked as S5 or S4, which is defined by the MNRF as species that are common, widespread and abundant in the province or uncommon but not rare). Refer to Table for a summary of incidental observations to date. As monitoring continues in Phase 2 of the EIS, this table will be updated.

Table 5: Summary of Incidental Wildlife Observations

Common Name	Scientific Name	S-Rank
Mammals		
White-tailed Deer	<i>Odocoileus virginianus</i>	S5
Eastern Cottontail	<i>Sylvilagus floridanus</i>	S5
Vole	<i>Microtus sp.</i>	S5
Amphibians and Reptiles		
Leopard Frog	<i>Lithobates pipiens</i>	S5
Tree Frog	<i>Dryophytes versicolor</i>	S5

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Common Name	Scientific Name	S-Rank
American Toad	<i>Anaxyrus americanus</i>	S5
Butterflies and Moths		
Cabbage White	<i>Pieris rapae</i>	SNA (abundant in much of its range, threats and current trends unknown)
Spring Azure	<i>Celastrina ladon</i>	SU (unrankable due to lack of information)/S5
Monarch Butterfly	<i>Danaus plexippus</i>	S2 (Imperiled)
Sulphur	<i>Colias sp.</i>	S5 / S4
Birds		
Gray Catbird	<i>Dumetella carolinensis</i>	S4
American Goldfinch	<i>Spinus tristis</i>	S5
Woodpecker sp.	<i>Dryobates sp.</i>	S5
Marsh Wren	<i>Cistothorus palustris</i>	S4
Black-capped Chickadee	<i>Poecile atricapillus</i>	S5
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	S5
Killdeer	<i>Charadrius vociferus</i>	S5
Wild Turkey	<i>Meleagris gallopavo</i>	S5
Turkey Vulture	<i>Cathartes aura</i>	S5

5.11 Headwater Drainage Features

Headwater Drainage Features will be discussed in Phase 2 of the EIS.

6.0 Identification of Provincially Significant Features

6.1 Provincially Significant Wetlands

The PPS (MMAH 2014) Section 6.0 defines significant wetlands as *“an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time.”*

Provincially Significant Wetlands (PSW) are present adjacent to the subject lands, south of Lockhart Road. However, no PSW is located on the subject lands.

6.2 Significant Valleylands

The NHRM (MNR 2010) provides criteria for identifying Significant Valleylands, including a variety of landform related functions and attributes as well as ecological features and functions.

No valleylands are present for the subject lands and broader study area.

6.3 Significant Woodlands

Significant Woodlands are typically identified by the local municipality. According to the PPS (MMAH 2014), significant woodland is defined as:

“an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history.”

The City of Barrie Urban Forest Strategy (November 2013) reports that “the current forest cover is mapped at 19.6% of the land area in Barrie, while current estimates of canopy cover is around 23-25%”. According to guidelines recommended in the NHRM and the Ontario Nature - Federation of Ontario Naturalists, Suggested Conservation Guidelines for the Identification of Significant Woodlands in Southern Ontario (August 2004), in planning areas with forest cover of between 15-30%, the minimum patch size for significant woodlands is 20 ha.

Hedgerow communities were identified on the subject lands through ELC mapping, as described in Section 5.4 of this report. According to these criteria, these Hedgerows are not Significant Woodlands.

6.4 Significant Areas of Natural and Scientific Interest

The PPS (MMAH 2014), Section 6.0 defines areas of natural and scientific interest (ANSIs) as:

“areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education.”

According to the NHRM (MNR 2010), provincially significant ANSI's include some of the most significant and best examples of these features in the province.

No ANSI's are mapped by the LIO on the subject lands and wider study area.

6.5 Significant Wildlife Habitat

Determination of SWH is generally categorized and described in the NHRM (MNR 2010). MNR's SWHTG (MNR 2000) and SWH Criteria Schedule for Ecoregion 6E (MNR 2015) provides supplemental documents intended to assist in identifying SWH. The four categories of SWH are identified as:

1. Habitats of seasonal concentrations of animals.
2. Rare vegetation communities, or specialized habitat for wildlife.
3. Habitat of species of conservation concern.
4. Animal movement corridors.

Appendix H includes a screening of the various categories of SWH for the subject lands based on background records review, the findings of the field investigations in 2021, agency records and aerial photo interpretation.

6.5.1 Candidate Significant Wildlife Habitat in the Study Area

Significant Wildlife Habitat features potentially present within 120m of the subject lands are not expected to be directly impacted by the development. However, the following candidate SWH will be monitored in order to confirm their presence or absence on the subject lands.

Waterfowl Nesting Area: A waterfowl nesting area extends 120m from a wetland. As such, the southern 120m of the subject lands are considered candidate SWH, due to their proximity to the PSW immediately south of Lockhart Road.

Turtle Nesting Areas: Exposed mineral soil (sand or gravel) areas adjacent (<100 m), or within wetlands and marshes, are candidate SWH. As such, the gravel driveway through the center of the southern portion of the subject lands is considered candidate SWH. The gravel roadside edge along Lockhart Road will be monitored. However, nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH.

Amphibian Breeding Habitat (Wetlands): The MAS2-1 ecosite in the south-west corner of the subject lands is greater than 500 m² and as such, is considered candidate SWH.

6.5.2 Confirmed Significant Wildlife Habitat on the Subject Lands

Special Concern and Rare Wildlife Species: Based on observations of Milkweed (*Asclepias spp.*) and Monarch Butterflies (*Danaus plexippus*) on site, the CUM1-1 and MAS2-1 ecosites are confirmed habitat for Monarch Butterfly. Mitigation measures are discussed in Section 10.0.

Surveys are currently ongoing and confirmed Significant Wildlife Habitat will be further discussed in Phase 2 of the EIS.

6.6 Habitat of Endangered and Threatened Species

Burnside's background database review revealed the potential for SAR on the subject lands and the greater study area. These are all listed in the SAR Screening Table in Appendix D.

Western Chorus Frog (*Pseudacris triseriata*) were heard calling in the south-west corner of the subject lands during the amphibian surveys. In April 2008, the Great Lakes / St. Lawrence - Canadian Shield population was designated Threatened under the federal SARA, 2002. As this species is not listed under the provincial ESA, it does not have individual or habitat protection on non-federal lands in the province of Ontario. However, it is considered a Species of Conservation Concern.

As SAR surveys are still ongoing, Phase 2 of the EIS will further discuss confirmed and candidate habitat for Endangered and Threatened species on the subject lands.

7.0 Species at Risk and Species of Conservation Concern

7.1 Species at Risk

No vegetation or aquatic SAR were observed on the subject lands.

Surveys are currently ongoing for wildlife SAR and confirmed Species at Risk will be discussed in Phase 2 of the EIS.

7.2 Species of Conservation Concern

Two Species of Conservation Concern were identified on the subject lands during the 2021 field investigations: Monarch and Western Chorus Frog. (See Appendix D for details). Recommended mitigation measures are discussed in Section 9.0.

8.0 Delineation of Environmental Constraints

Environmental constraints were staked and surveyed with LSRCA on site on June 25, 2021. A small wetland was delineated in the southwest of the subject lands. Based on LSRCA's Ecological Offsetting Policy, this wetland could be removed.

The EOP does not require offsetting for wetlands smaller than 0.5, Ha where the wetland does not provide the following:

- a significant groundwater hydrologic linkage to an adjacent key hydrologic or protected feature.
 - This feature is connected hydrologically via groundwater to the adjacent identified key hydrologic/protected feature (i.e., PSW) to the south on adjacent lands. It is mapped as an Ecologically Significant Groundwater Recharge Area (LSRCA).
- a significant component of, or ecological linkage to, an adjacent key natural heritage or protected feature
 - There is no remaining ecological linkage to adjacent key natural heritage/protected features. Any previous linkage to the PSW has been severed by Lockhart Road and by a gravel road and farm fields to the west.
- a significant surface water hydrologic linkage (permanent or intermittent surface water connection) between the wetland and an adjacent key hydrologic or protected feature
 - There is no observed permanent or intermittent surface water connection between the wetland and the adjacent key hydrologic, or protected features. A ditch containing runoff from Lockhart Road borders the wetland. Its connection to the wetland will be further explored in the Phase 2 EIS.

9.0 Proposed Development

The proposed development plan is detailed in the FSR (Burnside, 2021). The following sections provide a summary.

9.1 Concept Plan

The entirety of the subject lands are proposed to be developed. The proposed draft plan in the Functional Servicing Report (Burnside, 2021) (Figure 4) consists of 630 residential units, a 2.52 ha park block and a 0.35 ha mixed use block. The plan also provides for roadways, open space and a small portion of the SWMF No. 3 (one of the Stormwater Management Ponds required to service the Hewitt's Secondary Plan area). As part of the Municipal Class Environmental Assessment (EA), completed with the SIS, an 11 m road widening was proposed along the northside of Lockhart Road for future development. The EA also assessed Lockhart Road as a future four-lane road and planned for a 31 m Right-of-Way (ROW) with the City (Hatch, 2017).

9.2 Preliminary Grading

Under existing conditions, drainage runs from northeast, at around an elevation of 274.0 m, to the southwest at an elevation of 255.0 m. The grading of the subject site has been proposed to match into the adjacent development designs, while conforming to the drainage boundaries presented in the SIS. The adjacent developers have deviated from the SIS grading elevations for a variety of reasons but have generally maintained the SIS drainage patterns.

The GG (9 Mile) development, along the northern boundary of the subject lands, was lowered 2-3 m below the grading elevations included in the SIS. This development has been pre-graded for site servicing at the time of preparing this report. The proposed grading of Mattamy Lockhart subdivision will match the GG (9 Mile) gradients.

The Lockhart Innisfil development is located along the western property boundary. The development has initiated the preliminary grading design at the time of preparing this report. This development includes SWMF No.3 and SWMF No.4, which Mattamy Lockhart will be dependent on for stormwater management. As such, the location of the small part of SWMF No.3 on the subject lands is required to match the adjacent development. The preliminary grading of Mattamy Lockhart has been designed to maintain the drainage catchment divide between the two SWM facilities.

The second phase of the Rainsong Development is located to the east of the Mattamy Lockhart Subdivision. All wastewater and stormwater will flow west from the Rainsong Development, through the Mattamy Lockhart development to the Lockhart Innisfil development. The conceptual grading design, provided by Rainsong, is significantly lower than the SIS along Street C, at the property line; it is understood that the change is to help balance earthworks between Rainsong Phase 1 and Phase 2. After review of the groundwater conditions found within the Mattamy Lockhart monitoring wells, grading of Street C, within the development, has been raised to maintain a closer elevation to the design of the SIS.

SWMF 4
TOP OF POND
256.60

SWMF 3
TOP OF POND
256.70

LOVER'S CREEK SWAMP (IN4)

LOCKHART ROAD

LOVER'S CREEK SWAMP (IN4)



Proposed Development

SWM Pond

Wetland Community Limit
(Staked with LSRCA, June 25,
2021)

Provincially Significant Wetlands
(MNRF)

Lockhart Road Parcel

Sources:

- County of Simcoe
- Ministry of Natural Resources, © Queen's Printer for Ontario
- Natural Resources Canada © Her Majesty the Queen in Right of Canada.

Disclaimer:

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This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.

Datum: North American 1983 CSRS

Coord. System: NAD 1983 CSRS UTM Zone 17N

Projection: Transverse Mercator

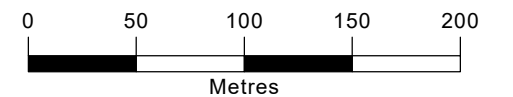
Central Meridian: 81°0'0.00"W

False Easting: 500,000m False Northing: 0m

Page Orientation: 342.76° Scale Factor: 0.99960



Grid North



Client

MATTAMY DEVELOPMENT CORP.

Figure Title

LOCKHART ROAD
PROPOSED DEVELOPMENT

Drawn

Checked

Date

Figure No.

MD

AB

2021/07/15

4

Scale

Project No.

H 1:3,500

300052092

9.3 Servicing

Due to the potential for encountering the water table during construction, the dewatering of local aquifers may be required for services to be installed below the water table. Currently, the MECP allows for construction dewatering of less than 400,000L/d to proceed under the Environmental Activity Sector Registry (EASR) process. If dewatering is to be above this threshold, then the standard Permit to Take Water (PTTW) process applies. In both cases, a groundwater study is required in support of EASR registration or PTTW application. The requirements for construction dewatering will be confirmed by geotechnical/ hydrogeological investigations completed in support of detailed design. The impacts to adjacent natural features, including the PSW complex, will be assessed in the Phase 2 EIS.

9.3.1 Water and Wastewater Servicing

There are no existing watermains within the subject property. It is assumed that the subject lands will be serviced by distribution watermains from north of the property, and will be constructed and commissioned, including the 300mm watermain on Madeline Drive which will serve as the main feed for the Lockhart development. It is proposed that the Lockhart Innisfil property to the west, and Rainsong Phase 2 development to the east, will be serviced at the same time as the subject site.

Local water infrastructure will be comprised of 150 to 200mm watermains, as specified in previous Secondary Plan studies. It will be designed to loop through the development area and maintain sufficient pressure and flows for both domestic and fire usage. The proposed water distribution within the property will be designed and constructed to current City of Barrie and MECP criteria and specifications.

9.3.2 Sanitary Servicing

There is no existing wastewater infrastructure within the subject property. The subject lands will be reliant on the downstream sewer construction within Lockhart Innisfil, GG (9 Mile) and the Bemp 2 developments that are under construction, in order to outlet to the proposed E3 connection point.

The City of Barrie stipulates the maximum riser height and service slope for sanitary servicing. Therefore, no sanitary services shall be installed on a sewer deeper than 7.5 m. Due to the grading constraints of the site, a portion of the sanitary sewer, near the west edge of Street C, is anticipated to be deeper than the maximum allowed depth and will require a stacked sewer. The stacked sewer allows service connections to be installed at ideal depth on an upper local sewer, with a trunk sewer below to convey flows by gravity.

9.4 Storm Drainage

The north half of the Mattamy Lockhart drains to SWM Facility No.4 and the south half drains to SWM Facility No.3, both of which are on the neighbouring landowner's property, Lockhart Innisfil. A small portion of SWMF 3 is located in the southwest corner of the subject lands. External flows that exceed the infiltration tank capacity will overflow back into the storm sewer network and will be conveyed to SWMF No.3. There is a small area of 1.6 ha, adjacent to Lockhart Road, that will drain to Lover's Creek, via the roadside ditch along Lockhart Road, as it is unable to drain to SWMF No.3 due to the grading restrictions.

9.5 Stormwater Management Plan

As per the SIS, Low Impact Development (LID) measures are to be implemented throughout the development, in accordance with the LSRCA Stormwater Management Design Guidelines, to help achieve the following three objectives:

Water Balance

- As per LSRCA standards, post development infiltration is to match or exceed pre-development infiltration.
- Infiltration opportunities will be confined to the park block, located along the east property line. This area of the site provides some of the better groundwater and soils parameters to promote groundwater recharge.
- In the hydrogeological report, completed by Burnside (2021), the overall deficit in groundwater infiltration post-development has been estimated to be 29,000 m³/year.
- By diverting the yearly runoff from the adjacent development (i.e., Rainsong Phase 2) to a 6500 m² subsurface infiltration tank, that is 1 m deep, 31,865 m³ of runoff will infiltrate over the year, exceeding the Mattamy Lockhart deficit of 29,054 m³/yr. This will achieve the water balance target required.
- This meets the requirements of the Lake Simcoe Protection Plan that the quantity of groundwater will be protected, improved, or restored.

Volume control up to 25 mm

- As noted in the SIS, the soils in the majority of catchments on the subject lands consist of silty clay material with low infiltration rates, thus volume control is to be on a 'best efforts' basis for this site.
- The total Mattamy Lockhart development is 31.1 ha in size. 20 mm of rain over the site area would equate to a total volume of 6,220 m³ of water, which is less than the 6,500 m³ available in the infiltration tank. This conservatively excludes infiltration and demonstrates that 20 mm volume control can be achieved, far exceeding the 'Best Efforts' requirement set out in the SIS.

Phosphorus Budget

- As per LSRCA standards, there is to be an 80% reduction in phosphorus load for the development area.
- 74% of the phosphorus will be removed downstream, prior to discharging to Lover's Creek. Pre to post development phosphorus loading summaries will be completed at detailed design.
- LSRCA's Phosphorus Offsetting Policy will be applied, where necessary, to make up any difference in phosphorus load that cannot be mitigated on site.

10.0 Evaluation of Potential Impacts and Recommended Mitigation Measures

Potential impacts to species, natural heritage features and their functions that can be predicted based on the Existing Conditions information collected to date, and the associated mitigation measures are detailed in the following table. Full potential impacts and mitigation measures for the proposed development will be presented in the Phase 2 EIS.

Table 6 – Impact Assessment and Recommended Mitigation Measures

Environmental Component	Potential Environmental Effects	Avoidance, Mitigation and/or Restoration Measures	Net Effects	Recommended Monitoring Activities
Vegetation Communities	Direct effects of construction activities will include clearing and loss/injury of both herbaceous and woody vegetation within the subject property. Specifically, the following area will be removed from these vegetated ecosites: MAS2-1 (wetland): 0.32 ha CUM1-1 (cultural meadow): 0.56 ha HR (hedgerow): 2.0 ha Potential indirect effects include the spread of invasive plant material, offsite soil compaction, equipment laydown and spills.	General Mitigation Vegetation loss should be minimized, where possible. Potential for establishing pollinator species of plants should also be included when establishing planting plans for naturalized areas and erosion and sediment control planting. Construction Mitigation The limits of the construction area should be delineated with silt fencing. Double-layer heavy duty silt fencing should be placed along the limit of construction at the southern boundary of the site, next to the roadside ditch on Lockhart Rd. Construction activity should be contained to the development area of the site. No stockpiling or refueling should occur within 30 m of the wetland to be removed or the roadside ditch of Lockhart Rd., so as to prevent the transport of deleterious substances or sediment.	Permanent loss of 2.88 ha of vegetation communities on the subject property.	Fencing shall be inspected regularly to ensure damage is repaired in a timely manner, and that sediment transport to offsite features and watercourses is minimized.
Wetlands and Provincially Significant Wetlands (Lover’s Creek Swamp)	There is one staked wetland (MAS2-1; cattail shallow marsh) community that will be directly removed. It is 0.25 ha in size. This feature is connected hydrologically, via groundwater, to the adjacent identified key hydrologic/protected feature (i.e., PSW) to the south on adjacent lands. It is mapped as an Ecologically Significant Groundwater Recharge Area (LSRCA). While site alteration and development will occur within 120 m of Lover’s Creek Swamp PSW, there will be no direct impacts to wetland features. Indirect impacts to the PSW may occur as the result of dewatering of the local aquifer required for construction. These impacts are expected to be temporary and will be assessed in detail in the Phase 2 EIS. Indirect impacts to wetland communities in the Lovers Creek PSW Complex may occur because of construction activities and the proposed development. These may include:	General Mitigation The inclusion of bio swales, infiltration galleries or other features to promote localized surface water infiltration to maintain the existing water balance are included in the detailed design and landscape plan. Lighting should be minimized along the frontage with Lockhart Rd. and directed away from the PSW. Construction Mitigation A Construction Emergency Response and Communications Plan shall be developed and followed throughout the construction phase (including spill response plans). The Contractor shall develop spill prevention and contingency plans during the construction phase. Spills should be immediately contained and cleaned up, in accordance with provincial regulatory requirements and the contingency plan. A hydrocarbon spill response kit should be on site at all times during the work. Spills	Permanent removal of MAS2-1 (0.25 ha). LSRCA Ecological Offsetting Policy requires a replacement of the wetland feature at a ratio of 3:1. This will ensure that no net effects will occur with the removal of this feature. An ecological offsetting strategy will be developed, in consultation with LRSCA, and detailed in Phase 2 of the EIS. Net effects to the PSW from the adjacent development can be reduced, using stormwater and LID measures that are effective in maintaining water balance. The temporary effects, due to dewatering during construction, will be explored in the Phase 2 EIS.	Monitoring of restoration wetland is required as part of the Ecological Offsetting Strategy that will be developed in the Phase 2 EIS.

11.0 Conclusions

The existing land use within the subject lands is dominated by agricultural fields, with limited natural features. No direct impacts are proposed to the adjacent PSW of Lover's Creek Swamp. Indirect impacts, due to dewatering measures, will be examined in detail in the Phase 2 EIS. A small wetland of 0.25 ha will be removed due to the development. This wetland is not eligible for exemption from ecological offsetting, as it is linked to the adjacent PSW complex via an Ecologically Significant Groundwater Recharge Area. An ecological offsetting strategy will be developed, in consultation with LRSCA, and detailed in Phase 2 of the EIS. To date, Significant Wildlife Habitat on site is present for two species of special concern, Monarch and Western Chorus Frog. The loss of habitat for monarch will be adequately compensated for with the addition of milkweed and wildflowers in seed mixes used on site in naturalized areas and landscape plantings. Compensation for Western Chorus Frog habitat will be explored as part of the Ecological Offsetting Strategy. Low Impact Development (LID) measures are to be implemented throughout the development, in accordance with the LSRCA Stormwater Management Design Guidelines.

A preliminary evaluation of potential environmental impacts and recommended mitigation measures has been completed in consideration of the proposed development activities. In general, the proposed draft plan is in agreement with applicable natural heritage legislation and policies. Additional refinement of the design and supporting mitigation measures will be presented in the Phase 2 EIS, along with the results of outstanding natural heritage studies.

12.0 References

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July 27, 2021

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Appendix A

Terms of Reference



November 19, 2020

Via: Email

Chris Currie
Environmental Regulations Analyst
Lake Simcoe Region Conservation Authority
120 Bayview Parkway
Newmarket, ON L3Y 3W3

Dear Chris Currie:

**Re: Environmental Impact Study, Terms of Reference
Lockhart Road (Mattamy), Innisfil, Ontario
Project No.: 300052092.0000**

R.J. Burnside & Associates Limited (Burnside) has been retained by Mattamy Development Corporation to conduct an Environmental Impact Study (EIS) for a proposed residential development located at the intersection of Lockhart Road and Yonge Street, part of Lot 14 Concession 11 in the Town of Innisfil (herein referred to as the subject lands), shown on Figure 1. This parcel is within the Barrie Annexed Lands, in the Hewitt's Secondary Plan Area. The approximate area of the parcel of land is 27 ha.

This letter provides the proposed Terms of Reference (TOR) for the EIS. At this time, we are seeking your input and would appreciate any comments on our approach, as well as any additional information you may have that is relevant to our study.

Part I: Background Secondary Source Information

Burnside has reviewed the following existing background data sources:

- Recent digital aerial photography;
- Ontario Base Mapping;
- The Natural Heritage Information Centre (NHIC) database to identify records of rare wildlife species on, and in the vicinity of the study lands;
- The Ontario Breeding Bird Atlas (OBBA) for records of birds breeding in the area;
- The Ontario Reptile and Amphibian Atlas (ORAA) for records of reptiles and amphibians in the area;
- Fisheries and Oceans Canada (DFO) Aquatic Species at Risk (SAR) mapping;
- Regulated Areas open data;
- Ministry of Natural Resources and Forestry (MNR) Aquatic Resource Area (ARA) data;
- City of Barrie Official Plan (April 2010, office consolidation January 2018);
- City of Barrie Official Plan 2041 (DRAFT 2020);

- City of Barrie Secondary Plan, Background Studies & Infrastructure Master Plan, Intensification & Annexed Lands, Drainage and Stormwater Management Master Plan (AMEC, 2013);
- Natural Heritage Characterization report (NRSI, 2012);
- Hewitt's Secondary Plan Area Subwatershed Impact Study: Lover's, Hewitt's and Sandy Cove Creeks (R.J. Burnside & Assoc., 2016);
- Barrie Creeks, Lovers Creek, and Hewitt's Creek Subwatershed Plan (LSRCA, 2012)
- Simcoe County Official Plan (2016);
- Lake Simcoe Protection Plan (MMAH, 2009);
- Natural Heritage System and Restoration Strategy (Beacon Environmental & LSRCA, 2018)
- Provincial Policy Statement (PPS) (2020);
- Provincial Endangered Species Act (2007);
- Federal Fisheries Act (1985); and
- Federal Migratory Birds Convention Act, 1994 (MBCA) and the Migratory Bird Regulations (MBR).

Based on this review, we have identified the following relevant information:

The Lover's Creek Swamp Provincially Significant Wetland Complex is located on the adjacent lands, to the south across Lockhart Road and to the west. Per the Official Plan Schedule A (Land Use) and the Secondary Plan Schedule 9A (Community Structure), the subject lands have been designated as Residential, with Mixed-Use Nodes and Corridors adjacent to Lockhart Road. The adjacent lands outside of the proposed development area are designated as Residential, with the Natural Heritage System (NHS) located approximately 100 m to the west. Residential development construction is underway to the north and agricultural lands are located to the east and west of the subject lands.

The Lake Simcoe Protection Plan (LSPP) policies for Settlement Areas apply to the subject lands. The policies of Section 6.21-DP to 6.26-DP (Key Natural Heritage Features and Key Hydrologic Features and their associated Vegetation Protection Zones) have been addressed through the establishment of the NHS in the Secondary Plan. A Significant Groundwater Recharge Area is present on the subject lands and as such, policies 6.36-DP and 6.40-DP apply.

Area regulated under the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation Ontario Regulation (O.Reg.) 179/06 exist on the subject lands along the frontage of Lockhart Road., extending approximately 105 m northward. Work being done in the regulated area will require a permit from LSRCA.

Table 1: Applicable Environmental Policies

Plan / Regulation	Land Use Designations
Endangered Species Act, 2007	Potential Species at Risk identified in background review from the vicinity of the subject lands: • Butternut (<i>Juglans cinerea</i>), • Blanding's Turtle (<i>Emydoidea blandingii</i>), • Barn Swallow (<i>Hirundo rustica</i>), • Bobolink (<i>Dolichonyx oryzivorus</i>), • Chimney Swift (<i>Chaetura pelagica</i>), • Eastern Meadowlark (<i>Sturnella magna</i>), • Eastern Musk Turtle (<i>Sternotherus odoratus</i>), • Eastern Ribbonsnake (<i>Thamnophis sauritus</i>), • Eastern Wood Pewee (<i>Contopus virens</i>) • Five-lined Skink (<i>Plestiodon fasciatus</i>), • Golden-winged Warbler (<i>Vermivora chrysoptera</i>), • Monarch (<i>Danaus plexippus</i>), • Northern Map Turtle (<i>Graptemys geographica</i>), • Olive-sided Flycatcher (<i>Contopus cooperi</i>), • Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>), • Snapping Turtle (<i>Chelydra serpentina</i>), • Eastern Whip-poor-will (<i>Antrostomus vociferus</i>), • Wood Thrush (<i>Hylocichla mustelina</i>), • Little Brown Myotis (<i>Myotis lucifugus</i>), • Eastern Small-footed Myotis (<i>Myotis leibii</i>), • Northern Myotis (<i>Myotis septentrionalis</i>), and Tri-colored Bat (<i>Perimyotis subflavus</i>)
City of Barrie Official Plan (April 2010, office consolidation January 2018)	Schedule A - Land Use Schedule B - Planning Area Schedule F - Conservation Authority Regulation Limits & Watercourses Schedule G - Drinking Water System Vulnerable Areas Schedule H - Natural Heritage Resources
City of Barrie Official Plan (2020, under review)	2.3.1 Natural Heritage System and Greenspace 2.5 General Land Use Policies 2.6 Land Use Designations 6.1 Planning for Resilience
LSRCA Regulated Areas (Ontario Regulation 179/06)	No watercourses are present on the subject lands. A Significant Groundwater Recharge Area is present on the subject lands.

Part II: Proposed EIS Methodology

Fieldwork Methodology

Based on the background review, the proposed fieldwork methodology for the EIS is summarized in Table 2, below. The proposed natural heritage surveys are to be completed in 2021.

Table 2: Fieldwork Methodology

Survey Type	Existing Data and Survey Rationale	Fieldwork Requirements	Features/Areas to be Assessed	Timing
ELC and botanical inventory	ELC mapping was undertaken for the Natural Heritage Characterization (NRSI 2012) and the SIS (Burnside and Azimuth 2016) on adjacent properties.	- Following the protocol of ELC for Southern Ontario (Lee et al., 1998; Lee 2008; Lee 2013). - ELC to be undertaken on subject lands. - ELC off subject lands verified. 1 season botanical inventory and analysis of flora rarity.	The entire property, as well as in areas of intrusion into NHS (e.g., anticipated stormwater outfall and LID locations, grading) and 50 m onto adjacent lands, where possible.	1 visit June to September 2021.
Butternut Survey	Butternut has been confirmed on lands throughout the Hewitt's Creek Secondary Plan area.	Survey for the location of Butternut trees throughout subject lands by a Certified Butternut Health Assessor.	The entire property, areas of intrusion into the NHS and 50 m onto adjacent lands.	Leaf-on period, as defined in MNRF guidelines (May 15 to August 31, 2021).

Survey Type	Existing Data and Survey Rationale	Fieldwork Requirements	Features/Areas to be Assessed	Timing
Identification and characterization of wildlife habitats and incidental wildlife observations	Wildlife surveys were undertaken for the Natural Heritage Characterization (NRSI 2012) and the SIS (Burnside and Azimuth 2016) on adjacent properties. No site-specific information was provided in previously completed studies.	Visual observations of animals, tracks or scat. Recording features present that may be considered wildlife habitat such as: • Dens. • Reptile hibernacula. • Structures. • Uncapped chimneys. • Foundations. Observations will be recorded during all site visits.	Entire property and areas of intrusion into the NHS and 50 m onto adjacent lands.	All field surveys in 2021.
Amphibian Breeding Call Surveys	Amphibian breeding call surveys were undertaken for the Natural Heritage Characterization (NRSI 2012) and the SIS (Burnside and Azimuth 2016) on adjacent properties. No site-specific information was provided in previously completed studies. Wetlands are found immediately adjacent to the property and may extend onto the subject lands.	Three surveys, following Marsh Monitoring Program Participant's Handbook for Surveying Amphibians (Bird Studies Canada), for wetland/watercourse features potentially impacted by the proposed development.	Potential wetland at the southwest corner of subject lands.	Three surveys from April to June 2021, as detailed in the Marsh Monitoring protocol.

Survey Type	Existing Data and Survey Rationale	Fieldwork Requirements	Features/Areas to be Assessed	Timing
Breeding Bird Surveys	Breeding Bird surveys were undertaken for the Natural Heritage Characterization (NRSI 2012) and the SIS (Burnside and Azimuth 2016) on adjacent properties. No site-specific information was provided in previously completed studies. These surveys identified the presence of SAR species, such as Barn Swallow, Chimney Swift and Eastern Meadowlark/Bobolink. Barn Swallow was identified on the adjacent property in the secondary plan area. Whip-Poor-Will was found not to be present in the secondary plan area surveys.	Two surveys to be completed following the OBBA Guide for Participants (March 2001). A third survey will be considered based on the presence/absence of Eastern Meadowlark/Bobolink in the early surveys.	Entire property and areas of intrusion into the NHS.	Between May 24, 2021, and July 10, 2021. Surveys must be conducted between dawn and 10 a.m.
Headwater Drainage Feature Assessments	Site-specific headwater drainage feature investigations were not conducted as part of previous studies.	Field investigations following the CVC and TRCA Headwater Drainage Feature Guidelines (January 2014).	Entire property and areas of intrusion into the NHS (i.e., anticipated stormwater outfall and LID locations, grading).	Up to three site visits between late March and August 2021.
Turtle Nesting Survey	SAR turtles identified from background review. PSW is located on adjacent lands.	Six surveys to be completed once notification that nesting turtles have been observed in the area.	Gravel shoulder along Lockhart Road and the gravel laneway.	6 visits completed from Late May to Early July 2021.

Criteria for Determining the Significance, Sensitivity and Rarity of Features Found Onsite.

In accordance with the Natural Heritage Reference Manual (NHRM) (MNR, 2010), habitats of endangered and threatened species are identified and evaluated based on provincial criteria. Burnside will consult with the MECP to ensure that the appropriate criteria are utilized, including species-specific habitat regulations and guidance material.

The identification and evaluation of Significant Woodlands are undertaken at the local planning level, using landscape-level data and criteria from the NHRM. This was examined in the Secondary Plan delineation of the NHS. No Significant woodlands are identified within the subject lands. Significant Wildlife Habitat (SWH) will be evaluated based on the Ecoregional Criteria for Ecoregion 6-E (MNRF, 2015).

Species rarity will be based on:

- Species' status under the Endangered Species Act, 2007;
- Species' S-rank as provided on the NHIC database; and
- A rarity for the Lake Simcoe Watershed as listed in "The State of the Lake Simcoe Watershed" Appendix 5.3 (LSRCA, 2003) and for Simcoe County in "The Distribution and Status of the Vascular Plants of Central Region" (Riley et al., 1989).

The locations of all provincially rare species encountered will be recorded using GPS and included on the figures (excepting those classified as Restricted Species). Locally rare species will also be recorded in the ELC unit in which they are found.

Analysis and Recommendations

The EIS will provide an analysis of potential impacts, recommend mitigation measures to minimize impacts and demonstrate conformity with all applicable natural heritage policies.

Specifically, the EIS will include the following:

- A demonstration that the development meets the requirements of the Town and Regional Official Plans, and the Provincial Policy Statement (PPS);
- Identification of the significance of natural features;
- A general description of the proposed development;
- Identification of potential impacts to natural heritage features and quantification of impacts resulting from the proposed development;
- Identification of mitigation and enhancement measures, where necessary; and
- Incorporation of the results of the Hydrogeological Study to assess impacts on the quality and quantity of groundwater and the function of the recharge area.

Reporting

All findings will be summarized in a report, complete with figures.

Part III: Information Requests

We request the following information to assist in our study:

- Any relevant natural heritage or regulation GIS data not available on LSRCA's open data website.
- Any additional records of natural features, flora or fauna in the area.
- A copy of any locally rare species lists, or comment on which locally rare species list is preferred, in order to assist with the assessment of species significance and rarity.

If you have any questions or comments regarding these Terms of Reference, please feel free to contact me or Lorraine Adderley at 705-718-9746 (lorraine.adderley@rjburnside.com).

Yours truly,

R.J. Burnside & Associates Limited



Meredith Meeker B.A.S., CER
Ecologist
MM:sc

Enclosure(s) Figure 1 – Study Area

cc: Lorraine Adderley, R.J. Burnside & Associates Ltd. (enc.) (Via: email)
 Jennifer Szczerbak, R.J. Burnside & Associates Ltd. (enc.) (Via: email)
 Mitchel Minniti, Mattamy Homes (enc.) (Via: email)

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Lockhart Road Parcel



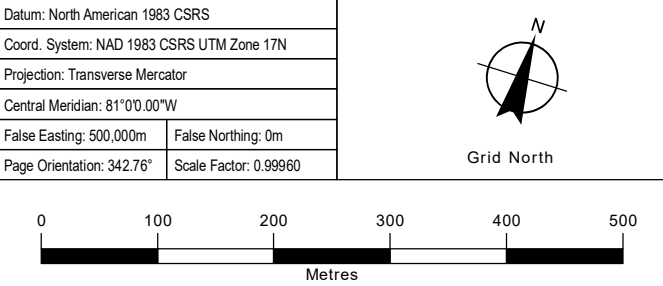
Sources:

- 1. Ministry of Natural Resources and Forestry, © Queen's Printer for Ontario.
- 2. Natural Resources Canada © Her Majesty the Queen in Right of Canada.

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This map is the product of a Geographic Information System (GIS). As such, the data represented on this map may be subject to updates and future reproductions may not be identical.



Client

MATTAMY DEVELOPMENT CORP.

Figure Title

LOCKHART ROAD PARCEL
STUDY AREA

Drawn	Checked	Date	Figure No.
HN	LA	2020/11/19	1
Scale		Project No.	
H 1:6,500		300052092	

Meredith Meeker

From: Kate Lillie <K.Lillie@lsrca.on.ca>
Sent: Wednesday, December 02, 2020 12:05 PM
To: Meredith Meeker
Cc: Melinda Bessey; Chris Currie; Jennifer Szczerbak; Lorraine Adderley; Mitchell.Minniti@mattamycorp.com
Subject: RE: 300052092 Lockhart Road (Mattamy) Environmental Impact Study, Terms of Reference
Attachments: 201117 Lockhart TOR_052092_Revised.pdf
Follow Up Flag: Follow up
Flag Status: Completed

Hi Meredith,

Thanks for email and your patience. Chris forwarded your inquiry over to me for a response. I've reviewed the attached terms of reference for an EIS and the scope of study you've proposed is appropriate with one minor change. Please complete ELC as per Lee et al. **1998**.

If wetland exists on the subject property, the boundary of this feature will need to be confirmed in the field with LSRCA. Wetland staking generally takes place between June 15 and Sept. 30. Please contact us to coordinate as necessary. Note that a site visit fee may apply. Additionally, if wetland is present and within 750m of provincially significant wetland (PSW), please contact MNRF for further direction regarding any need to complex into the PSW.

You've included amphibian breeding surveys as part of the scope of study. Should your initial field investigations determine that suitable breeding habitat is not present on or directly adjacent to the property, there would be no need for completing these surveys.

Please make sure that your final report includes a figure that shows the natural heritage features, ELC communities and any other environmental features (habitat, seeps/springs, etc.) on a high quality orthoimage. Please also include a figure that shows the proposed development and limit of disturbance on a high quality orthoimage.

For the information you've requested, the State of Lake Simcoe Watershed Report (2003) is our preferred resource for determining the rarity of species in the watershed. Unfortunately, there are no additional natural heritage records or data available for this property. However, I have observed evidence of terrestrial crayfish in the areas surrounding this property.

Lastly, I've included Melinda Bessy, Director, Planning and Engineering, on this email as she'll be the LSRCA planner overseeing this file. It's highly recommended that a formal pre-consultation be requested through Melinda to ensure that any additional planning or technical study requirements are identified early on in the process.

Please let me know if you have any questions or need something further.

Kind regards,

Kate Lillie, HBSc, EP, ISA
Natural Heritage Ecologist
Lake Simcoe Region Conservation Authority
120 Bayview Parkway,
Newmarket, Ontario L3Y 3W3

Twitter: @LSRCA

Facebook: LakeSimcoeConservation

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From: Meredith Meeker <Meredith.Meeker@rjburnside.com>

Sent: November 26, 2020 4:37 PM

To: Chris Currie <C.Currie@lsrca.on.ca>

Cc: Jennifer Szczerbak <Jennifer.Szczerbak@rjburnside.com>; Lorraine Adderley <Lorraine.Adderley@rjburnside.com>;

Mitchell Minniti <Mitchell.Minniti@mattamycorp.com>

Subject: 300052092 Lockhart Road (Mattamy) Environmental Impact Study, Terms of Reference

CAUTION: This email originated outside of LSRCA. DO NOT click links or open attachments unless you recognize the sender and trusted content. If in doubt, contact the IT Helpdesk at ITHelpdesk@lsrca.on.ca

Dear Chris Currie,

I hope you are having a good week so far.

Please find attached the Terms of Reference for Mattamy's Lockhart Road property, ahead of EIS reporting.

If you have any questions or concerns please feel free to contact me, otherwise I look forward to receiving your comments.

All the best,

Meredith



R.J. Burnside & Associates Limited
1465 Pickering Parkway, Suite 200, Pickering, Ontario L1V 7G7
Office: +1 800-265-9662 Direct: +1 289-545-3433
www.rjburnside.com

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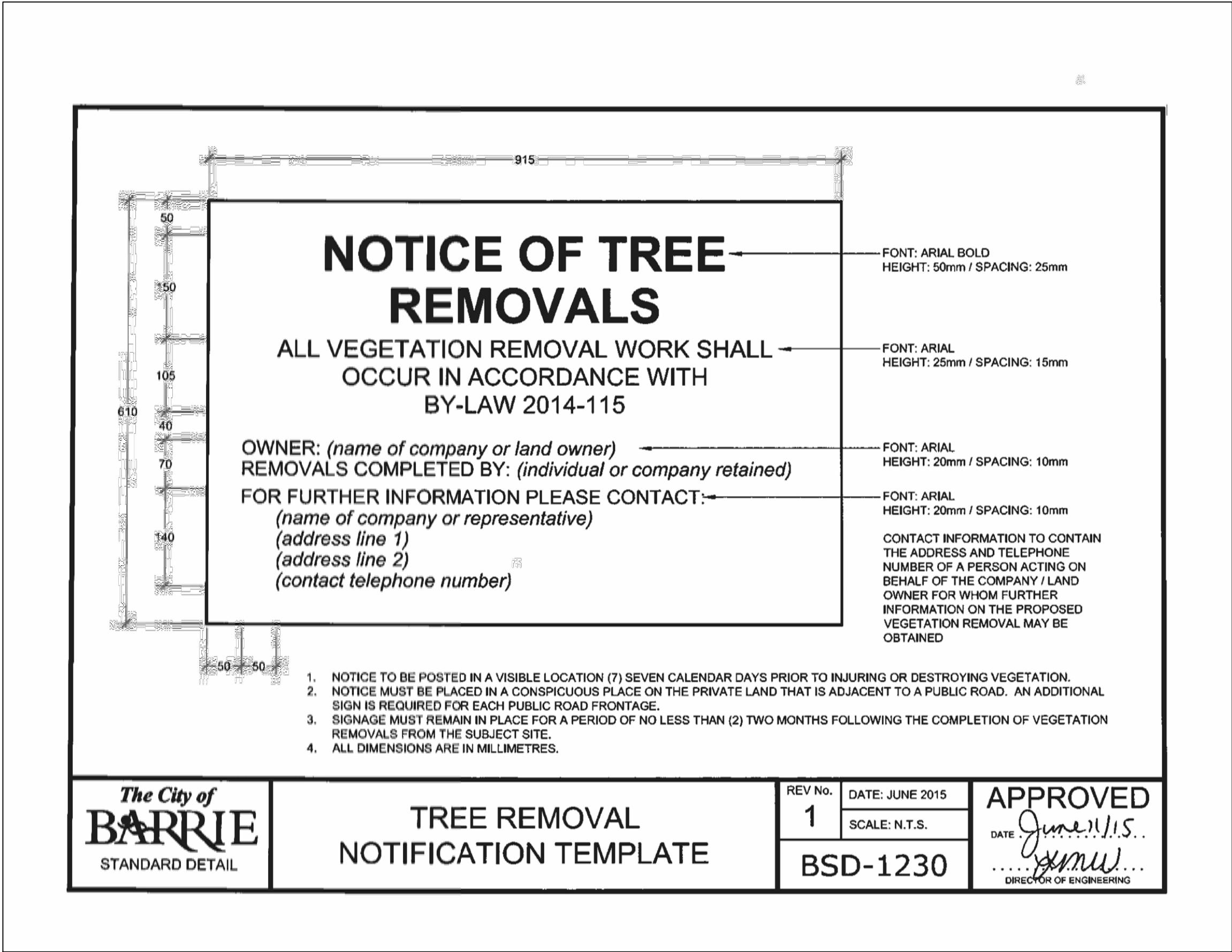


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Appendix B

Tree Inventory and Removal Plan



East Hedgerow Tree Tally - Lockhart Road

Canopy Cover	Common Name	Scientific Name	Count	Frequency	DBH (cm)	Avg Height (m)	Crown Diameter (m)	Maturity	General Health	Recommendation
70%	Black Cherry	Prunus serotina	47	35%	≤30	~15	~6	Uneven Aged	Fair	Remove
	Basswood	Tilia americana	11	8%	≤35	~20	~8	Intermediate - Mature	Good	Remove
	Ironwood	Ostrya virginiana	2	1%	≤15	~15	~5	Intermediate	Good	Remove
	American Elm	Ulmus americana	5	4%	≤60	~15	~7	Uneven Aged	Fair	Remove
	Apple	Malus spp.	53	39%	≤35	~10	~6	Uneven Aged	Fair	Remove
	Red Maple	Acer rubrum	4	3%	≤35	~20	~8	Mature	Good	Remove
	Sugar Maple	Acer saccharum	4	3%	≤25	~20	~7	Mature	Good	Remove
	White Ash	Fraxinus americana	9	7%	≤20	~15	~5	Uneven Aged	Fair - Good	Remove
Totals			135							

Individual Tree Inventory - Lockhart Road

ID #	Species		DBH (cm)	Height (m)	Multistem (#)	Maturity	Crown Diameter (m)	Health	Recommendation
1	Eastern White Cedar	Thuja occidentalis	6 - 14	10	Yes (16)	Intermediate	6	Good	Remove
2	White Ash	Fraxinus americana	9	10	No (1)	Immature	2	Good	Remove
3	Eastern White Cedar	Thuja occidentalis	8 - 13	10	Yes (12)	Intermediate	5	Good	Remove
4	Eastern White Cedar	Thuja occidentalis	5 - 15	9	Yes (13)	Intermediate	5	Good	Remove
5	Eastern White Cedar	Thuja occidentalis	6 - 13	8.5	Yes (4)	Intermediate	3	Good	Remove
6	Eastern White Cedar	Thuja occidentalis	6 - 15	9	Yes (9)	Intermediate	5	Good	Remove
7	Eastern White Cedar	Thuja occidentalis	6 - 13	9	Yes (12)	Intermediate	5.5	Good	Remove
8	Eastern White Cedar	Thuja occidentalis	10 - 14	8.5	Yes (2)	Intermediate	3	Good	Remove
9	Eastern White Cedar	Thuja occidentalis	5 - 11	8	Yes (8)	Intermediate	4	Good	Remove
10	White Ash	Fraxinus americana	8	8	No (1)	Immature	2	Good	Remove
11	Eastern White Cedar	Thuja occidentalis	10 - 13	10	Yes (4)	Intermediate	5	Good	Remove
12	Eastern White Cedar	Thuja occidentalis	5 - 10	7	Yes (8)	Intermediate	5	Good	Remove
13	Eastern White Cedar	Thuja occidentalis	5 - 13	8	Yes (12)	Intermediate	6	Good	Remove



 BURNSIDE	Figure Title MATTAMY LOCKHART Tree Inventory			Figure No. FIG 2
	Client MATTAMY HOME	Drawn MD Scale 1:1250	Checked SG Date 12/18/20 Project No. 052092	



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Appendix C

MNRF Correspondence – PSW, 2018

Fwd: wetland map amendment

2 messages

Syv <syv.peppy@gmail.com>

Sat, Apr 7, 2018 at 5:49 PM

To: Tom & Sue Irving <tom.sue.irving1186@gmail.com>

----- Forwarded message -----

From: **Findlay, Graham (MNR)** <graham.findlay@ontario.ca>

Date: Tue, May 14, 2013 at 9:09 AM

Subject: wetland map amendment

To: "syv.peppy@gmail.com" <syv.peppy@gmail.com>

Cc: "McLachlan, Amanda (MNR)" <Amanda.McLachlan@ontario.ca>

Mr. Irving attached for your attention is a map showing that all wetland area previously mapped on your property has been removed from our wetland data layer.

Please call with any further questions.

Regards,

Graham Findlay

Management Biologist

Midhurst District

Ministry of Natural Resources

705-725-7530

705-725-7584 FAX

graham.findlay@ontario.ca

 **Tlrving_WetlandAmendment_20131_05_14.pdf**
941K

Tom & Sue Irving <tom.sue.irving1186@gmail.com>

Wed, Aug 5, 2020 at 9:45 PM

To: Tom & Sue Irving <tom.sue.irving1186@gmail.com>

[Quoted text hidden]

 **Tlrving_WetlandAmendment_20131_05_14.pdf**
941K

Irving Property, City of Barrie



Legend

- MPAC_Jan2012
- Evaluated_wetlands_current_version

200 100 0 200 Meters



© Queen's Printer for Ontario
Ministry of Natural Resources, 2013

The drawing, map or plan supplied is not a Plan of Survey but graphical illustration only. The true positional accuracy of the information shown hereon must not be used as evidence of the location of legal boundaries, township lot fabric, features, or routes. Any coordinates supplied are derived from the drawing and are approximate only. They cannot be used to establish the location of parcel corners.

Note:
Wetland and photography data
layers from MNR NRVIS database.



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Appendix D

SAR Screening Table

300052092 - Lockhart Road Environmental Impact Study
Background Review of Potential Species at Risk and Species of Conservation Concern in the Study Area

COMMON NAME	SCIENTIFIC NAME	Provincial S-RANK ¹	Provincial SARO Status ²	COSEWIC ³	Federal SARA Status ³	Federal SARA Schedule ⁴	Habitat Description	Habitat Present on Site?	Species Observed?
Amphibians									
Western Chorus Frog (Great Lakes/St. Lawrence - Canadian Shield population)	<i>Pseudacris triseriata</i>	S3	No status	THR	THR	1	Inhabits forest openings around woodland ponds but can also be found in or near damp meadows, marshes, bottomland swamps, and temporary ponds in open country, or even urban areas. Breeds in almost any fishless pond with at least 10 cm of water, including quiet, shallow, temporary waterbodies with vegetation that is submerged or protrudes from the water, especially in rain-flooded meadows and ditches, and in temporary ponds on floodplains. ¹⁴	Yes	A single individual was heard calling in MAS2-1
Anthropods									
Monarch Butterfly	<i>Danaus plexippus</i>	S2N, S4B	SC	END	SC	1	Throughout their life cycle, Monarchs use three different types of habitat. Only the caterpillars (larvae) feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adult butterflies can be found in more diverse habitats where they feed on nectar from a variety of wildflowers. Monarchs spend the winter in Oyamel Fir forests found in central Mexico. The largest threat to Ontario Monarchs is habitat loss and fragmentation at overwintering sites in central Mexico where forests are being logged and converted into agricultural fields and pastures. Widespread pesticide and herbicide use throughout the Monarch's range may also limit recovery. ¹⁰	Yes	Monarch Butterflies and Milkweed (<i>Asclepias spp.</i>) were observed in MAS2-1 and CUM1-1 ecosites.
Birds									
Barn Swallow	<i>Hirundo rustica</i>	S4B	THR	THR	THR	1	Prefers farmland, lake/river shorelines, wooded clearings, urban populated areas, rocky cliffs, and wetlands. Nests inside or on exterior of buildings; under bridges and in road culverts; on rock faces, and in caves, etc. ⁸	No suitable breeding habitat present.	Results of Breeding Bird Surveys will be reported in the Phase 2 EIS.
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	THR	THR	THR	1	Generally prefers open grasslands and hay fields for nesting, typically featuring relatively tall vegetation. Sometimes uses large fields of winter wheat and rye in southwestern Ontario. Sensitive to vegetation structure and composition. Positively associated with high grass-to-forb ratios; moderate litter depth; tolerate wetter portions of fields compared to Eastern Meadowlark (EAME) and more likely to nest closer to field centres rather than field margins. Lower tolerance to presence of patches of bare ground. Appear to prefer larger fields than EAME. ⁹	No suitable breeding habitat present. Farm fields are currently planted with soy.	Results of Breeding Bird Surveys will be reported in the Phase 2 EIS.

COMMON NAME	SCIENTIFIC NAME	Provincial S-RANK ¹	Provincial SARO Status ²	COSEWIC ³	Federal SARA Status ³	Federal SARA Schedule ⁴	Habitat Description	Habitat Present on Site?	Species Observed?
Chimney Swift	<i>Chaetura pelagica</i>	S4B,S4N	THR	THR	THR	1	Historically nested in large hollow trees, other tree cavities and cracks in cliffs. Currently, most are found in developed areas in large, uncapped chimneys. Proximity to lakes is also a preferred habitat feature as they will forage for flying insects close to water. ⁷	No suitable breeding habitat present.	Results of Breeding Bird Surveys will be reported in the Phase 2 EIS.
Eastern Meadowlark	<i>Sturnella magna</i>	S4B	THR	THR	THR	1	Generally prefers grassy pastures, meadows and hay fields. Prefers moderately tall grass with abundant litter cover, a high proportion of grass cover, moderate forb density, low proportions of shrub and woody vegetation cover, and low percent of bare ground. Prefers to nest in drier sites and frequently nests around field margins. ⁹	No suitable breeding habitat present. Farm fields are currently planted with soy.	Results of Breeding Bird Surveys will be reported in the Phase 2 EIS.
Eastern Wood-Pewee	<i>Contopus virens</i>	S4B	SC	SC	SC	1	Prefers open space near the nest in the form of forest edges, clearings, roadways, and water. Does not require large areas of woods but occurs less frequently in woodlots surrounded by development than in those without. ⁷	No suitable breeding habitat present.	Results of Breeding Bird Surveys will be reported in the Phase 2 EIS.
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	S4B	SC	THR	THR	1	Generally prefer areas of early successional vegetation, found primarily on field edges, hydro or utility right-of-ways, or recently logged areas. ⁷	Yes	Results of Breeding Bird Surveys will be reported in the Phase 2 EIS.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	S4B	SC	SC	THR	1	Generally prefers natural forest edges and openings. The breeding habitat usually consists of mixed forest adjacent to rivers or wetlands. This species commonly nests in conifers such as White and Black Spruce, Jack Pine and Balsam Fir. ¹⁰	No suitable breeding habitat present.	Results of Breeding Bird Surveys will be reported in the Phase 2 EIS.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	S4B	SC	END	THR	1	Breeds in open woodland and woodland edges, especially oak savannah and riparian forest. These habitats can occur in parks, golf courses, cemeteries and private woodlands. Existence of large, dead, weathered trees or live trees with large dead branches are an important characteristic of habitat. ⁷	No suitable breeding habitat present.	Results of Breeding Bird Surveys will be reported in the Phase 2 EIS.
Wood Thrush	<i>Hylocichla mustelina</i>	S4B	SC	THR	THR	1	Inhabits and breeds in woodlands ranging from small (3 ha) and isolated to large and contiguous. The presence of tall trees and a thick understorey are usually prerequisites for site occupancy. ⁷	No suitable breeding habitat present.	Results of Breeding Bird Surveys will be reported in the Phase 2 EIS.
Mammals									
Little Brown Myotis	<i>Myotis lucifugus</i>	S4	END	END	END	1	Overwintering habitat: Caves and mines that remain above 0 degrees Celsius. Maternal Roosts: Often associated with buildings (attics, barns etc.). Occasionally found in trees (25-44 cm dbh). ¹⁵	No suitable overwintering habitat present. Possible roosting habitat present in Hedgerows.	Results of SAR Bat Surveys will be reported in the Phase 2 EIS.

COMMON NAME	SCIENTIFIC NAME	Provincial S-RANK ¹	Provincial SARO Status ²	COSEWIC ³	Federal SARA Status ³	Federal SARA Schedule ⁴	Habitat Description	Habitat Present on Site?	Species Observed?
Eastern Small-footed Myotis	<i>Myotis leibii</i>	S2S3	END	END	No status	No schedule	Overwintering habitat: Caves and abandoned mines. According to the Recovery Strategy for the Eastern Small-footed Myotis in Ontario, summer / roosting habitats used by the species in Ontario are poorly understood, but elsewhere in its range it primarily roosts in open, sunny rocky habitats, and, occasionally, in buildings. Summer roosts for this species are believed to be located in close proximity to their hibernacula (i.e., less than 100 m). The species' preference for rocky habitats in summer may limit an individual's home range to those rocky areas which also contain hibernacula (i.e., karst areas and Canadian Shield areas containing abandoned mines with adits). ¹⁶	No suitable overwintering or breeding habitat present.	Results of SAR Bat Surveys will be reported in the Phase 2 EIS.
Northern Myotis	<i>Myotis septentrionalis</i>	S3	END	END	END	1	Overwintering habitat: Caves and mines that remain above 0 Maternal Roosts: Often associated with cavities of large diameter trees (25-44 cm dbh). Occasionally found in structures (attics, barns etc.) ¹⁵	No suitable overwintering habitat present. Possible roosting habitat present in Hedgerows.	Results of SAR Bat Surveys will be reported in the Phase 2 EIS.
Tri-colored Bat	<i>Perimyotis subflavus</i>	S3?	END	END	END	1	Overwintering habitat: Deepest parts of caves and mines where temperature is the least variable. Maternal Roosts: Less is known about roosts of Tri-colored Bats. Most roost sites found within forested habitats. May roost in clumps of dead foliage and lichens. In more anthropogenically modified landscapes, maternity roosts may be barns or similar human-made structures. ¹⁵	No suitable overwintering habitat present. Possible roosting habitat present in Hedgerows.	Results of SAR Bat Surveys will be reported in the Phase 2 EIS.
Reptiles									
Blanding's Turtle	<i>Emydoidea blandingii</i>	S3	THR	END	THR	1	Generally occur in freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes and swamps. They prefer shallow water that is rich in nutrients, organic soil and dense vegetation. Adults are generally found in open or partially vegetated sites, and juveniles prefer areas that contain thick aquatic vegetation including sphagnum, water lilies and algae. They dig their nest in a variety of loose substrates, including sand, organic soil, gravel and cobblestone. Overwintering occurs in permanent pools that average about one metre in depth, or in slow-flowing streams. ²⁰	No suitable overwintering habitat present. Possible nesting habitat present along gravel driveway.	Results of Turtle Nesting Surveys will be reported in the Phase 2 EIS.
Eastern Musk Turtle	<i>Sternotherus odoratus</i>	S3	SC	SC	SC	1	Inhabit a wide variety of permanent waters, including ponds, lakes, marshes, sloughs, and rivers. Most common in clear lakes or ponds with marl, sand, or gravel bottoms and a moderate growth of aquatic plants. Prefer slow current. Highly aquatic and rarely wander far from water. Typically nests within 45 m of water. ¹⁹	No suitable overwintering habitat present. Possible nesting habitat present along gravel driveway.	Results of Turtle Nesting Surveys will be reported in the Phase 2 EIS.

COMMON NAME	SCIENTIFIC NAME	Provincial S-RANK ¹	Provincial SARO Status ²	COSEWIC ³	Federal SARA Status ³	Federal SARA Schedule ⁴	Habitat Description	Habitat Present on Site?	Species Observed?
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	S4	SC	SC	SC	1	Generally occur along the edges of shallow ponds, streams, marshes, swamps, or bogs bordered by dense vegetation that provides cover. Abundant exposure to sunlight is also required, and adjacent upland areas may be used for nesting. ²⁰	No suitable habitat present.	Results of Wildlife Surveys will be reported in the Phase 2 EIS.
Common Five-lined Skink (Southern Shield population)	<i>Plestiodon fasciatus</i> <i>pop. 2</i>	S3	SC	SC	No status	No schedule	Habitats include wooded areas of many kinds, especially those that are humid, well-drained, supply abundant cover (rocks, logs, stumps, leaf litter), and have a patchy canopy; also seasonally flooded lowlands in some areas. Eggs are laid in or under rotting logs, stumps, or humus, or under rocks. In Ontario, preferred nest sites were large, moderately decayed logs with high substrate moisture. Oviposition sites may be outside the non-nesting home range. ²⁴	No suitable habitat present.	Results of Wildlife Surveys will be reported in the Phase 2 EIS.
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	S4	NAR	SC	NAR	No schedule	Generally prefers waterbodies such as ponds, marshes, lakes and slow-moving creeks that have a soft bottom and provide abundant basking sites and aquatic vegetation. ¹⁴	No suitable habitat present.	Results of Turtle Nesting Surveys will be reported in the Phase 2 EIS.
Eastern Milksnake	<i>Lampropeltis triangulum</i>	S4	NAR	SC	SC	1	Habitat generalist. Found in wide variety of habitats, from open woodlands, bogs, swamps, woodland edges, marshes, lakeshores, old fields, pastures, farmyards, parks, gardens. Often in or near farm outbuildings, barns, and sheds, and are attracted to piles of rocks, logs, firewood, or building materials, or any place that offers shelter to snakes and their prey (rodents). ¹⁴	Yes	Results of Wildlife Surveys will be reported in the Phase 2 EIS.
Northern Map Turtle	<i>Graptemys geographica</i>	S3	SC	SC	SC	1	Highly aquatic. Inhabit slow moving water in larger lakes, rivers, reservoirs, oxbow sloughs, and open marshes, including some of the bays and inlets of the Great Lakes themselves with soft mud to sand, gravel, or marl bottom substrates. Less common in smaller lakes and streams; juveniles may reside in small ponds. Require high-quality water that supports the female's mollusc prey. ¹⁹	No suitable habitat present.	Results of Turtle Nesting Surveys will be reported in the Phase 2 EIS.
Snapping Turtle	<i>Chelydra serpentina</i>	S3	SC	SC	SC	1	Generally inhabit shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravelly or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits. ¹⁰	No suitable overwintering habitat present. Possible nesting habitat present along gravel driveway.	Results of Turtle Nesting Surveys will be reported in the Phase 2 EIS.
Vegetation									
Butternut	<i>Juglans cinerea</i>	S2?	END	END	END	1	Butternut grows best in rich, moist and well-drained soils or limestone gravel sites. They are less commonly found in dry, rocky and sterile soils. They generally grow alone or in small groups in deciduous forests that are commonly comprised of Basswood, Black Cherry, Beed, Black Walnut, Elm, Hemlock, Hickory, Oak, Red Maple, Sugar Maple, Poplar, White Ash and Yellow Birch. ⁶ In Ontario, they can be found throughout the southern Ontario, south of the Canadian Shield. ¹⁰	Yes	No Butternut found on site. Surveys were conducted twice, once during the MNRF recommended leaf-on (May 15-August 31) period by two certified Butternut Health Assessors.

¹**S-Ranks (provincial)**

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario (Please refer to: <http://explorer.natureserve.org/nsranks.htm>)

- SX — Presumed Extirpated** - Species or community is believed to be extirpated from the province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
- SH — Possibly Extirpated (Historical)** - Species or community occurred historically in the province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20–40 years. A species or community could become SH without such a 20–40 year delay if the only known occurrences in a province were destroyed or if it had been extensively and unsuccessfully looked for. The SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.
- S1 — Critically Imperiled** - Critically imperiled in the province or state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the province.
- S2 — Imperiled** - Imperiled in the province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the province.
- S3 — Vulnerable** - Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
- S4 — Apparently Secure** - Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- S5 — Secure** - Common, widespread, and abundant in the province.
- SNR — Unranked** - Province conservation status not yet assessed.
- SU — Unrankable** - Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
- SNA — Not Applicable** - A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
- S#S# — Range Rank** - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
- S#? – Inexact or Uncertain** - Denotes inexact or uncertain numeric rank.

Breeding Status Qualifiers

- B – Breeding Conservation status refers to the breeding population of the species in the nation or state/province.
- N – Nonbreeding Conservation status refers to the non-breeding population of the species in the province.
- M – Migrant species occurring regularly on migration at particular staging areas or concentration spots where the species might warrant conservation attention. Conservation status refers to the aggregating transient population of the species in the province.

²**SARO Endangered Species Act, 2007**

(provincial status from <http://www.ontario.ca/environment-and-energy/how-species-risk-are-listed#section-3>)
The provincial review process is implemented by the MNRF’s Committee on the Status of Species at Risk in Ontario (COSSARO).

- Extinct** - A species that no longer exists anywhere.
- Extirpated (EXT)** - Lives somewhere in the world, and at one time lived in the wild in Ontario, but no longer lives in the wild in Ontario.
- Endangered (END)** - Lives in the wild in Ontario but is facing imminent extinction or extirpation.
- Threatened (THR)** - Lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening it.
- Special concern (SC)** - Lives in the wild in Ontario, is not endangered or threatened, but may become threatened or endangered due to a combination of biological characteristics and identified threats.
- Not at Risk (NAR)** - A species that has been evaluated and found to be not at risk.
- Data Deficient (DD)** - A species for which there is insufficient information for a provincial status recommendation.

³**SARA (Federal Species at Risk Act) Status and Schedule (includes COSEWIC Status)**

The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

- Extinct** - A wildlife species that no longer exists.
- Extirpated (EXT)** - A wildlife species that no longer exists in the wild in Canada, but exists elsewhere.
- Endangered (END)** - A wildlife species facing imminent extirpation or extinction.
- Threatened (THR)** - A wildlife species that is likely to become an endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
- Special Concern (SC)** - A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.
- Data Deficient (DD)** - A category that applies when the available information is insufficient (a) to resolve a wildlife species’ eligibility for assessment or (b) to permit an assessment of the wildlife species’ risk of extinction.
- Not At Risk (NAR)** - A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

⁴**SARA Schedule**

- Schedule 1:** is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
- Schedule 2:** species listed in Schedule 2 are species that had been designated as endangered or threatened and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
- Schedule 3:** species listed in Schedule 3 are species that had been designated as special concern and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk.

⁵**Sources:**

⁶Cadman, M.D., et al. (eds). 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp

⁷Species at Risk Public Registry <http://www.sararegistry.gc.ca>

⁸McCracken, J.D. et al. 2013. Recovery Strategy for the Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario, viii + 88 pp.

⁹MNRF SARO List Species Descriptions (http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/MNR_SAR_CSSR_SARO_LST_EN.html)

¹⁰Ontario Nature Reptile and Amphibian Atlas (<https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas/species/>)

¹¹Environment Canada. 2015. Recovery Strategy for Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-colored Bat (*Perimyotis subflavus*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. lx + 110 pp.

¹²Humphrey, C. 2017. Recovery Strategy for the Eastern Small-footed Myotis (*Myotis leibii*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 76 pp.

¹³MNRF. 2018. City of Niagara Falls Species at Risk Table. Guelph District.

¹⁴Department of Fisheries and Oceans (DFO) Aquatic Species at Risk found online at: <http://www.dfo-mpo.gc.ca/species-especes/sara-lep/identify-eng.html>.

¹⁵Fisheries and Oceans Canada (DFO). 2018. Management Plan for the Northern Brook Lamprey (*Ichthyomyzon fossor*), Great Lakes – Upper St. Lawrence populations, in Canada. *Species at Risk Act* Management Plan Series. Fisheries and Oceans Canada, Ottawa. vi + 33 pp.



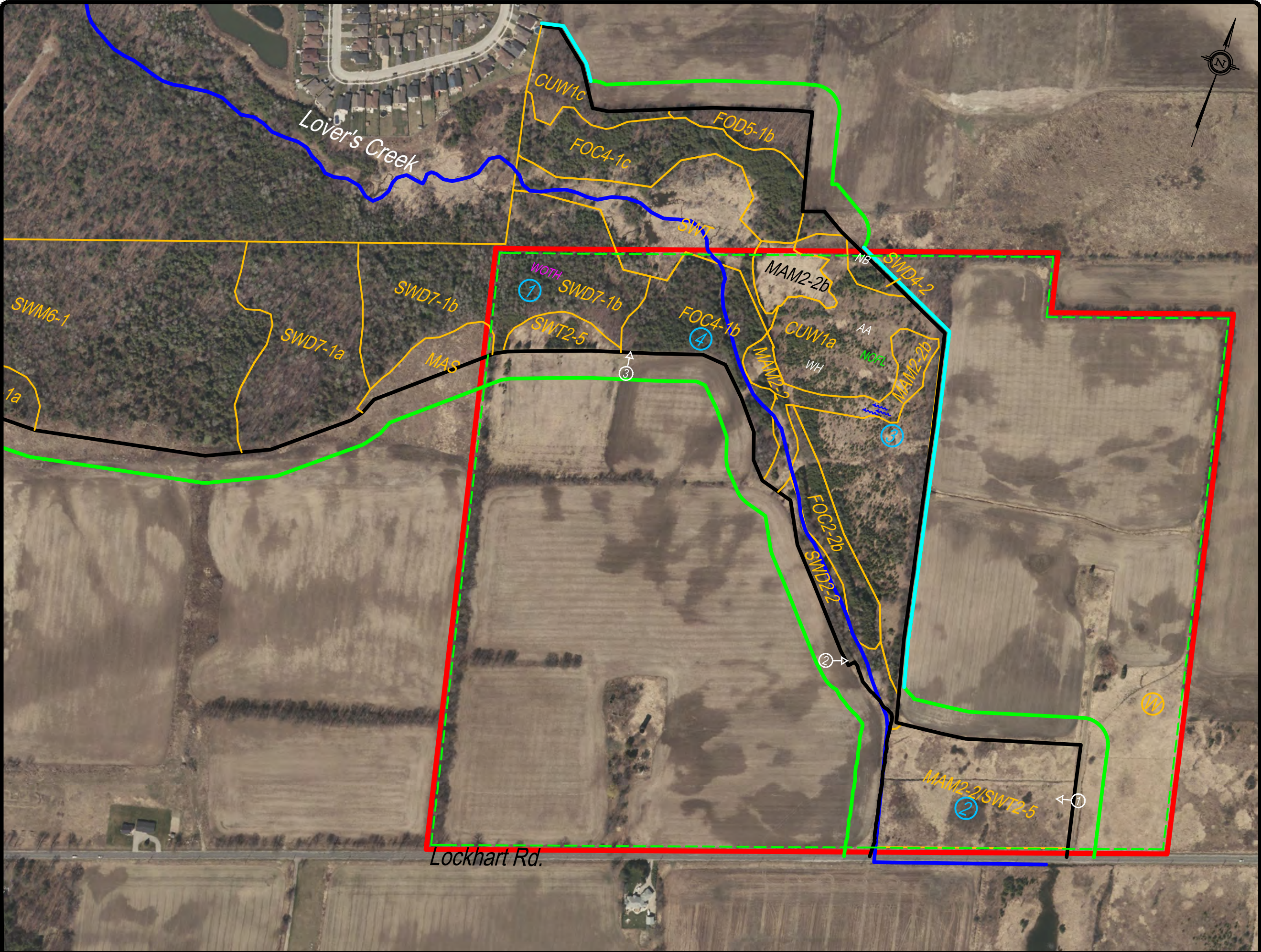
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Appendix E

SIS Environmental Mapping

Plotted by: JMCARTNEY on July 21, 2016 at 4:13pm
File: M:\11 Projects\11-076 East Moratorium Landowners Group\Drafting\dwg\11-076.dwg Layout: L11 PlotScale: 2



LEGEND:

- Property Boundary/Study Area
- Watercourse
- Amphibian Survey Stations (white)
- Bird Survey Stations
- Whip-poor-will Survey Station
- Natural Heritage Core
- 30m Buffer to Natural Heritage Core Areas
- 5m Buffer to Natural Heritage Core Areas
- 3 Season Surveys
- Groundwater Seeps
- Vegetation Communities
- CUW1a Mineral Cultural Woodland Type
- FOC2-2b Dry-Fresh White Cedar Deciduous Forest Type
- FOC4-1b Fresh-Moist White Cedar Coniferous Forest Type
- MAM2-2b Reed Canary Grass Mineral Meadow Marsh Type
- SWD2-2 Green Ash Mineral Deciduous Swamp Type
- SWD4-2 White Elm Mineral Deciduous Swamp Type
- SWD7-1b White Birch-Poplar Organic Deciduous Swamp Type
- SWT Thicket Swamp Type
- SWT2-5 Red-osier Mineral Thicket Swamp Type

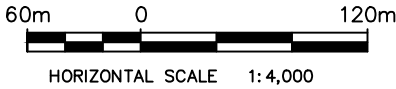
Birds of Regional Concern

- NOFL - Northern Flicker
- Regionally Rare Plant Species (white)
- AA - Arrow-leaved Aster*
- WH - Woodland Horsetail*
- NB - Northern Bedshaw*

Species at Risk

- WOTH - Wood Thrush (SC)

* = Denotes the ELC Community where found, not exact location



Environmental Features
Lockhart Innisfil Investments Ltd.

East Moratorium Landowners Group
Hewitt's Secondary Plan, Barrie, ON

DATE ISSUED:	July 2016	Figure No. I.II
CREATED BY:	JLM	
PROJECT NO.:	11-076g	
REFERENCE:	First Base Solutions	



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Appendix F

SWH Screening Table

300052092 - Lockhart Road Environmental Impact Study

Significant Wildlife Habitat Screening in the Study Area – Ecoregion 6E Criteria (2015)

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
Table 1.1: Seasonal Concentration Areas of Animals						
Waterfowl Stopover & Staging Areas (Terrestrial) Rationale: Habitat important to migrating waterfowl.	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these ecosites.	Fields with sheet water during Spring (mid-March to May). - Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. - Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available.	Candidate SWH is not present on subject lands.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects." - Any mixed species aggregations of 100 or more individuals required. - The flooded field ecosite habitat plus a 100300 m radius area, dependent on local site conditions and adjacent land use is the SWH. - Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). SWHMiST Index #7 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Waterfowl Stopover & Staging Areas (Aquatic) Rationale:	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and SWM ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify.	Candidate SWH is not present on subject lands.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup	Studies carried out & verified presence of: - Aggregations of 100 or more of listed species for 7 days, results in >700 waterfowl use days. - Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH. - The combined area of the Ecological Land Classification (ELC) ecosites and a 100 m radius area is the SWH.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.		These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water).		Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck	- Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are SWH. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). SWHMIST Index #7 provides development effects and mitigation measures.	
Shorebird Migratory Stopover Area <u>Rationale:</u> High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	- Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and unvegetated shoreline habitats. - Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. - Sewage treatment ponds and storm water ponds do not qualify as a SWH.	Candidate SWH is not present on subject lands.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird’s Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	Studies confirming: - Presence of 3 or more of listed species and >1000 shorebird use days during spring or fall migration period (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period). - Whimbrel stop briefly (<24 hrs.) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. - The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100 m radius area. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMIST Index #8 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Raptor Wintering Area <u>Rationale:</u>	<u>Hawks/Owls:</u> Combination of ELC Community Series; need to have present one	The habitat provides a combination of fields and woodlands that provide roosting,	Candidate SWH is not present on subject lands.	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl	Studies confirm the use of these habitats by: One or more Short-eared Owls or; One or more Bald Eagle or;	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
Sites used by multiple species, a high number of individuals and used annually are most significant.	Community Series from each land class; <u>Forest:</u> FOD, FOM, FOC. <u>Upland:</u> CUM; CUT; CUS; CUW. <u>Bald Eagle:</u> Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	foraging and resting habitats for wintering raptors. • Raptor wintering sites (hawk/owl) need to be > 20 ha, with a combination of forest and upland. • Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands. • Field area of the habitat is to be wind swept with limited snow depth or accumulation. • Eagle sites have open water, large trees and snags available for roosting.		<u>Special Concern:</u> Short-eared Owl Bald Eagle	At least 10 individuals and two of the listed hawk/owl species. • To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects.” • SWHMiST Index #10 and #11 provides development effects and mitigation measures.	
Bat Hibernacula <u>Rationale:</u> Bat hibernacula are rare habitats in all Ontario landscapes.	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	• Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. • Active mine sites should not be considered as SWH. • The locations of bat hibernacula are relatively poorly known.	Candidate SWH is not present on subject lands.	Big Brown Bat Tri-coloured Bat	• All sites with confirmed hibernating bats are SWH. • The habitat area includes a 200 m radius around the entrance of the hibernaculum for most development types and 1000 m for wind farms. • Studies are to be conducted during the peak swarming period (August to September). Surveys should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”. • SWHMiST Index #1 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
Bat Maternity Colonies Rationale: Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.	Maternity colonies considered SWH are found in forested ecosites. All ELC ecosites in ELC Community Series: FOD FOM SWD SWM	- Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). - Maternity roosts are not found in caves and mines in Ontario. - Maternity colonies located in Mature deciduous or mixed forest stands with >10 ha large diameter (>25 cm dbh) wildlife trees. - Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. - Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred.	Candidate SWH is not present on subject lands.	Big Brown Bat Silver-haired Bat	- Maternity Colonies with confirmed use by: >10 Big Brown Bats >5 Adult Female Silver-haired Bats - The area of the habitat includes the entire woodland, or a forest stand ELC ecosite or an ecoelement containing the maternity colonies. - Evaluation methods for maternity colonies should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”. SWHMIST Index #12 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Turtle Wintering Areas Rationale: Generally, sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Snapping and Midland Painted Turtles. ELC Community Classes: SW, MA, OA and SA ELC Community Series: FEO and BOO	- For most turtles, wintering areas are in the same general area as their core habitat. Water must be deep enough not to freeze and have soft mud substrates. - Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen.	Candidate SWH is not present on subject lands.	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	- Presence of 5 over-wintering Midland Painted Turtles is significant. - One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. - The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. - Over wintering areas may be identified by searching for	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
	For Northern Map Turtle: Open water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH.			congregations (Basking Areas) of turtles on warm, sunny days during the fall (September–October) or spring (March–May). - Congregation of turtles is more common where wintering areas are limited and therefore significant. SWHMiST Index #28 provides development effects and mitigation measures for turtle wintering habitat.	
Reptile Hibernaculum Rationale: Generally, sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and ecosites: FOC1 and FOC3.	- For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. - Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. - Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or	Candidate SWH is not present on subject lands.	Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Special Concern: Milksnake Eastern Ribbonsnake Lizard: Special Concern: (Southern Shield population): Five-lined Skink	Studies confirming: - Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. - Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (e.g., foundation or rocky slope) on sunny warm days in Spring (April/May) and Fall (September/October). Note: If there are Special Concern Species present, then site is SWH. Note: Sites for hibernation possess specific habitat parameters (e.g., temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e., strong hibernation site fidelity). Other critical life processes (e.g., mating) often take place near hibernacula. The feature in which the hibernacula is located plus a 30 m radius area is the SWH. SWHMiST Index #13 provides development effects and mitigation measures for snake hibernacula.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
		sedge hummock groundcover. Five-lined Skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures.			- Presence of any active hibernaculum for Skink is significant. - SWHMiST Index #37 provides development effects and mitigation measures for five-lined Skink wintering habitat.	
Colonially - Nesting Bird Breeding Habitat (Bank & Cliff) Rationale: Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles. Cliff faces, bridge abutments, silos, barns. Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	- Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed permitted aggregate area. - Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. - Does not include a licensed/permitted Mineral Aggregate Operation.	Candidate SWH is not present on subject lands.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Studies confirming: - Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. - A colony identified as SWH will include a 50 m radius habitat area from the peripheral nests. - Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #4 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs) Rationale: Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	- Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. - Most nests in trees are 11 to 15 m from ground, near the top of the tree.	Candidate SWH is not present on subject lands.	Great Blue Heron Black-crowned Nigh-Heron Great Egret Green Heron	Studies confirming: - Presence of 5 or more active nests of Great Blue Heron or other listed species. - The habitat extends from the edge of the colony and a minimum 300 m radius or extent of the Forest ecosite containing the colony or any island <15.0 ha with a colony is the SWH. - Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells. SWHMiST Index #5 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Colonially - Nesting Bird Breeding Habitat (Ground) Rationale: Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird). MAM1 – 6 MAS1 – 3 CUM CUT CUS	- Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. - Brewers Blackbird colonies are found loosely on the ground in low bushes in close proximity to streams and irrigation ditches within farmlands.	Candidate SWH is not present on subject lands.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Studies confirming: - Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. - Presence of 5 or more pairs for Brewer's Blackbird. - Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. - The edge of the colony and a minimum 150 m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0 ha with a colony is the SWH. - Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects". SWHMiST Index #6 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
Migratory Butterfly Stopover Areas Rationale: Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Combination of ELC Community Series; need to have present one Community Series from each land class. <u>Field:</u> CUM CUT CUS <u>Forest:</u> FOC FOD FOM CUP Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.	- A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present and will be located within 5 km of Lake Erie or Ontario. - The habitat is typically a combination of field and forest and provides the butterflies with a location to rest prior to their long migration south. - The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. - Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes.	Candidate SWH is not present on subject lands.	Painted Lady Red Admiral <u>Special Concern</u> Monarch	Studies confirm: - The presence of Monarch Use Days (MUD) during fall migration (August/October). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur. - Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. - MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant. SWHMiST Index #16 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Landbird Migratory Stopover Areas Rationale: Sites with a high diversity of species as well as high numbers are most significant.	All ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	- Woodlots >10 ha in size and within 5 km of Lake Ontario. - If woodlands are rare in an area of shoreline, woodland fragments 2-5 ha can be considered for this habitat. - If multiple woodlands are	Candidate SWH is not present on subject lands.	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1 All migrant raptors species: <i>Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)</i>	Studies confirm: - Use of the habitat by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. - Studies should be completed during spring (April/May) and fall	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
		located along the shoreline those Woodlands <2 km from Lake Ontario are more significant. - Sites have a variety of habitats; forest, grassland and wetland complexes. - The largest sites are more significant. - Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5 km of Lake Ontario are Candidate SWH.			(August/October) migration using standardized assessment techniques. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #9 provides development effects and mitigation measures.	
Deer Yarding Areas Rationale: Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in “yards” to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.	Note: MNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include: FOM FOC SWM SWC Or these ELC ecosites: CUP2 CUP3 FOD3 CUT	Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when	Candidate SWH is not present on subject lands.	White-tailed Deer	No Studies Required: - Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40 cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. - Deer Yards are mapped by MNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by MNRF will be available at local MNRF offices or via Land Information Ontario (LIO). - Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. - If a SWH is determined for Deer Wintering Area or if a proposed	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
		snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. • The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%. • MNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual". • Woodlots with high densities of deer due to artificial feeding are not significant.			development is within Stratum II yarding area, then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST Index #2 provides development effects and mitigation measures.	

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
Deer Winter Congregation Areas Rationale: Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions.	All Forested ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50 ha may also be used.	• Woodlots will typically be >100 ha in size. Woodlots <100 ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. • If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. • Large woodlots > 100 ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha. • Woodlots with high densities of deer due to artificial feeding are not significant.	Candidate SWH is not present on subject lands.	White-tailed Deer	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF. • Studies should be completed during winter (January/February) when >20 cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey. • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area, then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMIST Index #2 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Table 1.2.1: Rare Vegetation Communities						
Cliffs and Talus Slopes Rationale: Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC ecosite within Community Series: TAO CLO TAS CLS TAT CLT	• A Cliff is vertical to near vertical bedrock >3 m in height. • A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	Candidate SWH is not present on subject lands.		• Most cliff and talus slopes occur along the Niagara Escarpment. • Confirm any ELC Vegetation Type for Cliffs or Talus Slopes. • SWHMIST Index #21 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
Sand Barren Rationale: Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	ELC ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered, but less than 60%.	Candidate SWH is not present on subject lands.		- A sand barren area >0.5 ha in size. - Confirm any ELC Vegetation Type for Sand Barrens. - Site must not be dominated by exotic or introduced species (<50% vegetative cover is exotic sp.). SWHMiST Index #20 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Alvar Rationale: Alvars are extremely rare habitats in Ecoregion 6E.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 Five Alvar Indicator Species: <i>Carex crawei</i> <i>Panicum philadelphicum</i> <i>Eleocharis compressa</i> <i>Scutellaria parvula</i> <i>Trichostema brachiatum</i> These indicator species are very specific to Alvars within Ecoregion 6E.	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. Vegetation cover	Candidate SWH is not present on subject lands.		Field studies that identify: - An Alvar site > 0.5 ha in size. - Four of the five Alvar Indicator Species at a Candidate Alvar site is Significant. - Site must not be dominated by exotic or introduced species (<50% vegetative cover is exotic sp.). - The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses. SWHMiST Index #17 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
		varies from patchy to barren with a less than 60% tree cover. Alvar is particularly rare in Ecoregion 6E where the only known sites are found in the western islands of Lake Erie.				
Old Growth Forest <u>Rationale:</u> Due to historic logging practices and land clearance for agriculture, old growth forest is rare in the Ecoregion 6E.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Candidate SWH is not present on subject lands.		Field Studies will determine: - If dominant trees species are >140 years old, then the area containing these trees is SWH. - The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present). - The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. - Determine ELC vegetation types for the forest area containing the old growth characteristics. SWHMiST Index #23 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Savannah <u>Rationale:</u> Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25–60%.	Candidate SWH is not present on subject lands.		Field studies confirm: - No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. - One or more of the Savannah indicator species listed in Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used. - Area of the ELC ecosite is the SWH. - Site must not be dominated by exotic or introduced species (<50% vegetative cover is exotic sp.).	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
					• SWHMiST Index #18 provides development effects and mitigation measures.	
Tallgrass Prairie Rationale: Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	• No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway Right of Ways (ROW) are not considered to be SWH. • A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover.	Candidate SWH is not present on subject lands.		Field studies confirm: • One or more of the Prairie indicator species listed in Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 6E should be used. • Area of the ELC ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover is exotic sp.). • SWHMiST Index #19 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Other Rare Vegetation Communities Rationale: Plant communities that often contain rare species which depend on the habitat for survival.	• Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG. • Any ELC ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	• Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	Candidate SWH is not present on subject lands.		• ELC ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in Appendix M. • The MNRF/Natural Heritage Information Centre (NHIC) will have up to date listing for rare vegetation communities. Field studies should confirm: • If an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG. • Area of the ELC Vegetation Type polygon is the SWH. • SWHMiST Index #37 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
Table 1.2.2: Specialized Habitats for Wildlife considered Significant Wildlife Habitat						
Waterfowl Nesting Area Rationale: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	All upland habitats located adjacent to these wetland ELC ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 Note: includes adjacency to Provincially Significant Wetlands (PSW).	• A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120 m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. • Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40 cm dbh) in woodlands for cavity nest sites.	Candidate SWH present in the following communities/locations: • The southern 120m of the subject lands are within 120m of a PSW and so are considered Candidtate Waterfowl Nesting Areas	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or; • Presence of 10 or more nesting pairs for listed species including Mallards. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMiST Index #25 provides development effects and mitigation measures.	Presence or absence of Confirmed SWH on subject lands to be determined in Stage 2 of the EIS.
Bald Eagle & Osprey Nesting, Foraging & Perching Habitat Rationale: Nest sites are fairly uncommon in Eco-region 6E and are used annually by these species. Many suitable nesting locations may be lost due	ELC Forest Community Series: FOD FOM FOC SWD SWM and SWC (directly adjacent to riparian areas – rivers, lakes, ponds and wetlands.	• Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree’s canopy.	Candidate SWH is not present on subject lands.	Osprey Special Concern Bald Eagle	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
to increasing shoreline development pressures and scarcity of habitat.		Nests located on man-made objects are not to be included as SWH (e.g., telephone poles and constructed nesting platforms).			large trees within this area is important. - For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800 m is dependent on-site lines from the nest to the development and inclusion of perching and foraging habitat. - To be significant a site must be used annually. When found inactive, the site must be known to be inactive for >3 years or suspected of not being used for >5 years before being considered not significant. - Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid-March to mid-August. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #26 provides development effects and mitigation measures.	
Woodland Raptor Nesting Habitat <u>Rationale:</u> Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	May be found in all forested ELC ecosites. May also be found in: SWC SWM SWD and CUP3	- All natural or conifer plantation woodland/forest stands >30 ha with >10ha of interior habitat. Interior habitat determined with a 200 m buffer. - Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers Hawk nest along forest edges sometimes on	Candidate SWH is not present on subject lands.	Northern Goshawk Cooper’s Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	Studies confirm: - Presence of 1 or more active nests from species list is considered significant. - Red-shouldered Hawk and Northern Goshawk – A 400 m radius around the nest or 28 ha area of habitat is the SWH (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest). - Barred Owl – A 200 m radius around the nest is the SWH. - Broad-winged Hawk and Coopers Hawk– A 100 m radius around the nest is the SWH.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
		peninsulas or small off-shore islands. In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.			- Sharp-Shinned Hawk – A 50 m radius around the nest is the SWH. - Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. SWHMiST Index #27 provides development effects and mitigation measures.	
Turtle Nesting Areas Rationale: These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Exposed mineral soil (sand or gravel) areas adjacent (<100 m) or within the following ELC ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	- Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. - For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. - Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.	Candidate SWH present in the following communities/locations: Gravel driveway through the center of the southern portion of the subject lands Gravel roadside edge along Lockhart Road is being monitored as a part of the Phase 2 EIS. However, nesting areas on the sides of municipal or provincial road embankments and shoulders are not considered SWH.	Midland Painted Turtle <u>Special Concern Species:</u> Northern Map Turtle Snapping Turtle	Studies confirm: - Presence of 5 or more nesting Midland Painted Turtles. - One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. - The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100 m around the nesting area dependent on slope, riparian vegetation and adjacent land use is the SWH. - Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100 m area of habitat. - Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. SWHMiST Index #28 provides development effects and mitigation measures for turtle nesting habitat.	Presence or absence of Confirmed SWH on subject lands to be determined in Stage 2 of the EIS.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
Seeps and Springs Rationale: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Seeps/Springs are areas where ground water comes to the surface. Often, they are found within headwater areas within forested habitats. Any forested ecosite within the headwater areas of a stream could have seeps/springs.	- Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system. - Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species.	Candidate SWH is not present on subject lands.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Field Studies confirm: - Presence of a site with 2 or more seeps/springs should be considered SWH. - The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat. SWHMiST Index #30 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Amphibian Breeding Habitat (Woodland) Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations.	All ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	- Presence of a wetland, pond or woodland pool (including vernal pools) >500 m² (about 25 m diameter) within or adjacent (within 120 m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. - Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat.	Candidate SWH is not present on subject lands.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	Studies confirm: - Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3. - A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. - The habitat is the wetland area plus a 230 m radius of woodland area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. SWHMiST Index #14 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
Amphibian Breeding Habitat (Wetlands) Rationale: Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	ELC Community Classes: SW MA FE BO OA and SA. Typically, these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g., Bull Frog) may be adjacent to woodlands.	- Wetlands >500 m² (about 25 m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. - Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. - Bullfrogs require permanent water bodies with abundant emergent vegetation.	Candidate SWH present in the following communities/locations: MAS2-1 ecosite in the south-west corner of the subject lands.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	Studies confirm: - Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3 or; Wetland with confirmed breeding Bullfrogs are significant. - The ELC ecosite wetland area and the shoreline are the SWH. - A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. - If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. SWHMiST Index #15 provides development effects and mitigation measures.	No Confirmed SWH. Amphibian breeding call surveys did <u>not</u> detect: 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3; - Breeding Bullfrogs; or - Presence of breeding population of 1 or more of the listed newt/salamander species.
Woodland Area-Sensitive Bird Breeding Habitat Rationale: Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important	All ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	- Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs. old) forest stands or woodlots >30 ha. - Interior forest habitat is at least 200 m from forest edge habitat.	Candidate SWH is not present on subject lands.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Special Concern: Cerulean Warbler Canada Warbler	Studies confirm: - Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. - Conduct field investigations in spring and early summer when birds are singing and defending their territories.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
habitats for area sensitive interior forest song birds.					- Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #34 provides development effects and mitigation measures.	
Table 1.3: Habitat for Species of Conservation Concern considered Significant Wildlife Habitat						
Marsh Breeding Bird Habitat Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites	- Nesting occurs in wetlands. - All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. - For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water.	Candidate SWH is not present on subject lands.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan Special Concern: Black Tern Yellow Rail	Studies confirm: - Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes breeding by any combination of 5 or more of the listed species. Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. - Area of the ELC ecosite is the SWH. - Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #35 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Open Country Bird Breeding Habitat Rationale: This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined	CUM1 CUM2	- Large grassland areas (includes natural and cultural fields and meadows) >30 ha. - Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e., no row cropping or intensive hay or livestock pasturing in the last 5 years).	Candidate SWH is not present on subject lands.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow Special Concern Short-eared Owl	Field Studies confirm: - Presence of nesting or breeding of 2 or more of the listed species. - A field with 1 or more breeding Short-eared Owls is to be considered SWH. - The area of SWH is the contiguous ELC ecosite field areas. - Conduct field investigations of the most likely areas in spring and early summer when birds	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
significantly the past 40 years based on CWS (2004) trend records.		- Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. - The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species.			are singing and defending their territories. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST Index #32 provides development effects and mitigation measures.	
Shrub/Early Successional Bird Breeding Habitat Rationale: This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species.	- Large field areas succeeding to shrub and thicket habitats >10 ha in size. - Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e., no row-cropping, haying or live-stock pasturing in the last 5 years). - Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. - Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands.	Candidate SWH is not present on subject lands.	Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler	Field Studies confirm: - Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. - A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as SWH. - The area of the SWH is the contiguous ELC ecosite field/thicket area. - Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. SWHMiST cxlix Index #33 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Terrestrial Crayfish Rationale:	MAM1 MAM2 MAM3 MAM4	Wet meadow and edges of shallow marshes (no minimum size)	Candidate SWH is not present on subject lands.	Chimney or Digger Crayfish (<i>Fallicambarus fodiens</i>) Devil Crayfish or Meadow Crayfish (<i>Cambarus Diogenes</i>)	Studies Confirm: Presence of 1 or more individuals of species listed or	No potential.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh or swamp ecosites can be used by terrestrial crayfish.	should be surveyed for Terrestrial Crayfish. - Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. - Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed.			their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites. - Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. - Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult. SWHMiST Index #36 provides development effects and mitigation measures.	The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Special Concern and Rare Wildlife Species <u>Rationale:</u> These species are quite rare or have experienced significant population declines in Ontario.	All plant and animal Element Occurrences (EO) within a 1 or 10 km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC ecosites.	Candidate SWH present in the following communities/locations: - CUM ecosites on subject lands are Candidate habitat for Monarch Butterfly (<i>Danaus plexippus</i>) - MAS2-1 is Candidate habitat for Western Chorus Frog	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the NHIC.	Studies Confirm: - Assessment/inventory of the site for the identified Special Concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. - The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g., specific nesting habitat or foraging habitat. SWHMiST Index #37 provides development effects and mitigation measures.	Confirmed Monarch Butterfly, a species of Special Concern was observed on site in spring 2021. A single Western Chorus Frog was heard calling on site.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
Table 1.4.1: Animal Movement Corridors						
Amphibian Movement Corridors Rationale: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Corridors may be found in all ecosites associated with water. Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1.	• Movement corridors between breeding habitat and summer habitat. • Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat–Wetland) of this Schedule.	Candidate SWH is not present on subject lands.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. • Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant. • Corridors should have at least 15 m of vegetation on both sides of waterway or be up to 200 m wide of woodland habitat and with gaps <20 m. • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat. • SWHMiST Index #40 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
Deer Movement Corridors Rationale: Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule. • A deer wintering habitat identified by the MNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion. • Corridors typically follow riparian areas, woodlots, areas of physical geography	Candidate SWH is not present on subject lands.	White-tailed Deer	• Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. • Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. • Corridors should be at least 200 m wide with gaps <20 m and if following riparian area with at least 15 m of vegetation on both sides of waterway. • Shorter corridors are more significant than longer corridors, SWHMiST Index #39 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
		(ravines, or ridges).				
Table 1.5.1: Significant Wildlife Habitat Exceptions for Ecodistricts within EcoRegion 6E						
6E-14 Mast Producing Areas Rationale: The Bruce Peninsula has an isolated and distinct population of black bears. Maintenance of large woodland tracts with mast-producing tree species is important for bear.	All Forested habitat represented by ELC Community Series: FOM FOD	- Woodland ecosites >30 ha with mast-producing tree species, either soft (cherry) or hard (oak and beech). - Black bears require forested habitat that provides cover, winter hibernation sites, and mast-producing tree species. - Forested habitats need to be large enough to provide cover and protection for black bears.	Candidate SWH is not present on subject lands.	Black Bear	All woodlands >30 ha with a 50% composition of these ELC Vegetation Types are considered significant: FOM1-1 FOM2-1 FOM3-1 FOD1-1 FOD1-2 FOD2-1 FOD2-2 FOD2-3 FOD2-4 FOD4-1 FOD5-2 FOD5-3 FOD5-7 FOD6-5 SWHMiST Index #3 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.
6E- 17 Lek Rationale: Sharp-tailed grouse only occur on Manitoulin Island in EcoRegion 6E, Leks are an important habitat to maintain their population.	CUM CUS CUT	- The Lek or dancing ground consists of bare, grassy or sparse shrubland. There is often a hill or rise in topography. - Leks are typically a grassy field/meadow >15 ha with adjacent shrublands and >30 ha with adjacent deciduous woodland. Conifer trees within 500 m are not tolerated. - Grasslands (field/meadow) are to be >15 ha when adjacent to shrubland and >30 ha when	Candidate SWH is not present on subject lands.	Sharp-tailed Grouse	- Studies confirming Lek habitat are to be completed from late March to June. - Any site confirmed with sharp-tailed grouse courtship activities is considered significant. - The field/meadow ELC ecosites plus a 200 m radius area with shrub or deciduous woodland is the Lek habitat. - SWHMiST cxlix Index #32 provides development effects and mitigation measures.	No potential. The habitat criteria for Significant Wildlife Habitat is not present on the subject lands.

Habitat	CANDIDATE - Significant Wildlife Habitat			CONFIRMED - Significant Wildlife Habitat		
	Ecological Land Classification Ecosite Codes	Habitat Criteria	Presence of Candidate Habitat on the Subject Lands	Wildlife Species	Defining Criteria	Presence of Confirmed Significant Wildlife Habitat on the Subject Lands
		adjacent to deciduous woodland. • Grasslands are to be undisturbed with low intensities of agriculture (light grazing or late haying). • Leks will be used annually if not destroyed by cultivation or invasion by woody plants or tree planting.				



BURNSIDE

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Appendix G

Plant List

300052092 - Lockhart Road Environmental Impact Study
 Botanical Inventory Plant List

Scientific Name	Common Name	ESA	COSEWIC	SARA	G-Rank	S-Rank	Native/ Introduced	Site District 6E-7 (Uxbridge/Seaton) (Varga et al. 2000)	Simcoe (Riley et al. 1989)	Lake Simcoe Watershed (State of the Watershed 2003)
<i>Acer saccharum</i>	Sugar Maple				G5	S5	N	X	X	
<i>Agrostis gigantea</i>	Redtop				G4G5	SNA	I	X	X	+
<i>Alliaria petiolata</i>	Garlic Mustard				GNR	SNA	I	X	X	+
<i>Ambrosia artemisiifolia</i>	Common Ragweed				G5	S5	N	X	X	(+)
<i>Anemonastrum canadense</i>	Canada Anemone				G5	S5	N	X	X	
<i>Apocynum androsaemifolium</i>	Spreading Dogbane				G5	S5	N	X	X	
<i>Arctium minus</i>	Common Burdock				GNR	SNA	I	X	X	+
<i>Asclepias incarnata</i>	Swamp Milkweed				G5	S5	N	X	X	+
<i>Asclepias syriaca</i>	Common Milkweed				G5	S5	N	X	X	
<i>Asparagus officinalis</i>	Garden Asparagus				G5?	SNA	I	X	X	+
<i>Barbarea vulgaris</i>	Bitter Wintercress				GNR	SNA	I	X	X	+
<i>Bromus inermis</i>	Smooth Brome				G5T5	SNA	I	X	X	+
<i>Calamagrostis canadensis var. canadensis</i>	Bluejoint Reedgrass				G5T5	S5	N	X	X	
<i>Carex lupulina</i>	Hop Sedge				G5	S5	N	X	X	
<i>Carex vulpinoidea</i>	Fox Sedge				G5	S5	N	X	X	
<i>Cerastium arvense ssp. arvense</i>	Field Chickweed				G5T5	SNA	I	X	R-5	+
<i>Chenopodium album</i>	Common Lamb's-quarters				G5	SNA	I	X	X	+
<i>Cirsium vulgare</i>	Bull Thistle				GNR	SNA	I	X	X	+
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood				G5	S5	N	X	X	
<i>Cornus sericea</i>	Red-osier Dogwood				G5	S5	N	X	X	
<i>Crataegus punctata</i>	Dotted Hawthorn				G5	S5	N	X	X	
<i>Crataegus sp.</i>	Hawthorn Species									
<i>Dactylis glomerata</i>	Orchard Grass				GNR	SNA	I	X	X	+
<i>Daucus carota</i>	Wild Carrot				GNR	SNA	I	X	X	+
<i>Dipsacus fullonum</i>	Common Teasel				GNR	SNA	I	X	X	+
<i>Echinochloa sp.</i>	Barneyard Grass Species									
<i>Elymus repens</i>	Quackgrass				GNR	SNA	I	X	X	+
<i>Epilobium hirsutum</i>	Hairy Willowherb				GNR	SNA	I	X	X	+
<i>Equisetum arvense</i>	Field Horsetail				G5	S5	N	X	X	
<i>Equisetum sp.</i>	Horsetail Species									
<i>Erigeron annuus</i>	Annual Fleabane				G5	S5	N	X	X	

Scientific Name	Common Name	ESA	COSEWIC	SARA	G-Rank	S-Rank	Native/ Introduced	Site District 6E-7 (Uxbridge/Seaton) (Varga et al. 2000)	Simcoe (Riley et al. 1989)	Lake Simcoe Watershed (State of the Watershed 2003)
<i>Erigeron philadelphicus</i>	Philadelphia Fleabane				G5	S5	N	X	X	
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod				G5	S5	N	X	X	
<i>Fragaria virginiana</i> ssp. <i>virginiana</i>	Wild Strawberry				G5T5	S5	N	X	X	
<i>Fraxinus americana</i>	White Ash				G5	S4	N	X	X	
<i>Fraxinus pennsylvanica</i>	Red Ash				G5	S4	N	X	X	
<i>Geranium robertianum</i>	Herb-Robert				G5	S5	N	X	X	+
<i>Geum aleppicum</i>	Yellow Avens				G5	S5	N	X	X	
<i>Geum canadense</i>	Canada Avens				G5	S5	N	X	X	
<i>Glyceria striata</i>	Fowl Mannagrass				G5	S5	N	X	X	
<i>Helianthus annuus</i>	Common Sunflower				G5	SNA	I	X	X	+
<i>Hesperis matronalis</i>	Dame's Rocket				G4G5	SNA	I	X	X	+
<i>Juncus</i> sp.	Rush Species									
<i>Juniperus virginiana</i>	Eastern Red Cedar				G5	S5	N	R	VA	
<i>Leucanthemum vulgare</i>	Oxeye Daisy				GNR	SNA	I		VA*	
<i>Lonicera morrowii</i>	Morrow's Honeysuckle				GNR	SNA	I		O*	
<i>Lonicera</i> sp.	Honeysuckle Species									
<i>Lythrum salicaria</i>	Purple Loosestrife				G5	SNA	I		*	
<i>Malus</i> sp.	Apple Species									
<i>Medicago lupulina</i>	Black Medick				GNR	SNA	I		A*	
<i>Oenothera biennis</i>	Common Evening-primrose				G5	S5	N		A	
<i>Oxalis stricta</i>	Upright Yellow Wood-sorrel				G5	SNA	I		VC	
<i>Parthenocissus quinquefolia</i>	Virginia Creeper				G5	S4?	N		A	
<i>Phalaris arundinacea</i>	Reed Canarygrass				G5	S5	N		A	
<i>Phragmites australis</i> ssp. <i>australis</i>	European Reed				G5T5	SNA	I		A	
<i>Plantago lanceolata</i>	English Plantain				G5	SNA	I		F*	
<i>Plantago major</i>	Common Plantain				G5	SNA	I		A*	
<i>Poa compressa</i>	Canada Bluegrass				GNR	SNA	I		A	
<i>Poa pratensis</i>	Kentucky Bluegrass				G5	S5	N		VA	
<i>Prunus avium</i>	Sweet Cherry				GNR	SNA	I		R*	
<i>Prunus serotina</i>	Black Cherry				G5	S5	N		A	
<i>Prunus virginiana</i>	Chokecherry				G5	S5	N		C	
<i>Ranunculus acris</i>	Common Buttercup				G5	SNA	I		VC*	
<i>Ranunculus sceleratus</i> var. <i>sceleratus</i>	Cursed Buttercup				G5T5	SNA	I		F	
<i>Ranunculus</i> sp.	Buttercup Species									
<i>Rhamnus cathartica</i>	European Buckthorn				GNR	SNA	I		A*	
<i>Rhus typhina</i>	Staghorn Sumac				G5	S5	N		A	
<i>Ribes</i> sp.	Currant species									

Scientific Name	Common Name	ESA	COSEWIC	SARA	G-Rank	S-Rank	Native/ Introduced	Site District 6E-7 (Uxbridge/Seaton) (Varga et al. 2000)	Simcoe (Riley et al. 1989)	Lake Simcoe Watershed (State of the Watershed 2003)
<i>Rosa multiflora</i>	Multiflora Rose				GNR	SNA	I		R*	
<i>Rosa sp.</i>	Rose Species									
<i>Rubus idaeus ssp. strigosus</i>	North American Red Raspberry				G5T5	S5	N		VA	
<i>Rumex crispus</i>	Curled Dock				GNR	SNA	I		A*	
<i>Rumex sp.</i>	Dock Species									
<i>Salix eriocephala</i>	Cottony Willow				G5	S5	N		R	
<i>Salix petiolaris</i>	Meadow Willow				G5	S5	N		A	
<i>Saponaria officinalis</i>	Bouncing-bet				GNR	SNA	I		A*	
<i>Scirpus atrovirens</i>	Dark-green Bulrush				G5	S5	N		A	
<i>Solidago canadensis</i>	Canada Goldenrod				G5	S5	N		A	
<i>Solidago sp.</i>	Goldenrod Species									
<i>Sonchus arvensis</i>	Field Sow-thistle				GNR	SNA	I		R*	
<i>Sorbus aucuparia</i>	European Mountain-ash				G5	SNA	I		R*	
<i>Symphyotrichum lanceolatum</i>	Panicled Aster				G5	S5	N		F	
<i>Symphyotrichum lateriflorum var. lateriflorum</i>	Calico Aster				G5T5	S5	N		A	
<i>Symphyotrichum novae-angliae</i>	New England Aster				G5	S5	N		C	
<i>Symphyotrichum puniceum</i>	Purple-stemmed Aster				G5	S5	N			
<i>Symphyotricum sp.</i>	Aster Species									
<i>Taraxacum officinale</i>	Common Dandelion				G5	SNA	I		VC*	
<i>Thuja occidentalis</i>	Eastern White Cedar				G5	S5	N		VA	
<i>Tilia americana</i>	Basswood				G5	S5	N		VA	
<i>Tragopogon dubius</i>	Yellow Goatsbeard				GNR	SNA	I		F*	
<i>Trifolium pratense</i>	Red Clover				GNR	SNA	I		A*	
<i>Trifolium repens</i>	White Clover				GNR	SNA	I		A*	
<i>Tussilago farfara</i>	Coltsfoot				GNR	SNA	I		R*	
<i>Typha angustifolia</i>	Narrow-leaved Cattail				G5	SNA	I		C	
<i>Typha latifolia</i>	Broad-leaved Cattail				G5	S5	N		VC	
<i>Typha x glauca</i>	(Typha angustifolia X Typha latifolia)				GNA	SNA	N		O	
<i>Ulmus americana</i>	White Elm				G4	S5	N		VC	
<i>Verbascum thapsus</i>	Common Mullein				GNR	SNA	I		A*	
<i>Verbena hastata</i>	Blue Vervain				G5	S5	N		A	
<i>Viburnum lantana</i>	Wayfaring Viburnum				GNR	SNA	I			
<i>Viburnum opulus var. opulus</i>	Cranberry Viburnum				G5TNR	SNA	I			
<i>Vicia cracca</i>	Tufted Vetch				GNR	SNA	I		A*	
<i>Vitis riparia</i>	Riverbank Grape				G5	S5	N	R	A	

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