ENVIRONMENTAL IMPACT STUDY

Draft Plan of Subdivision – Flato North
Community of Dundalk
August 2016

RIVERSTONE
ENVIRONMENTAL SOLUTIONS INC.

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ENVIRONMENTAL SOLUTIONS INC.

August 24, 2016
RS# 2016-001

Shakir Rehmatullah
President
Flato Developments Inc.
3621 Highway 7 East, Suite 503
Markham, ON
L3R 0G6
via e-mail to: shakir@flatogroup.com

SUBJECT: Environmental Impact Study
Draft Plan of Subdivision – Flato North
Community of Dundalk, Township of Southgate

Dear Mr. Rehmatullah,

RiverStone Environmental Solutions Inc. is pleased to provide you with the attached report.

Please contact us if there are any questions regarding the report, or if further information is required.

Best regards,

RiverStone Environmental Solutions Inc.

Report prepared by:

Bey Wicks, Ph.D.
Principal / Senior Ecologist

Tristan Knight, M.E.S., M.Sc.
Ecologist / Botanist

ENVIRONMENTAL ASSESSMENT NON-TECHNICAL SUMMARY

Type of Study Environmental Impact Study (EIS)		**Date** August 24, 2016
Project Manager Bev Wicks	**Legal Description** Part of Lot 232, Concession 1 Southwest of Toronto and Sydenham Road, Geographic Township of Proton	**Development Proposed** Plan of Subdivision
	Planning Authorities Township of Southgate, County of Grey, Grand River Conservation Authority,	**Owner** 2358737 Ontario Inc.

Report Summary

The purpose of this study was to address municipal, provincial, and federal requirements pertaining to the protection of significant natural heritage features in association with a proposed plan of subdivision in the community of Dundalk, Township of Southgate. Based on both desktop and on-site evaluations, RiverStone has determined that the development plan conforms with all applicable environmental policies. It is RiverStone's opinion that the proposed development plan can proceed provided that the recommendations outlined in **Section 4.2** of this report are implemented in full. These recommendations are reiterated below.

RECOMMENDATIONS

Fish Habitat and Warmwater Streams

- **A 15 m setback from the Drainage Feature be established from all residential lots as indicated on the proposed draft plan of subdivision (see Appendix 1). This area is to become open space.**
- **All sediment and erosion control measures should conform to the Erosion and Sediment Control guidelines for Urban Construction (December 2006).**
- **When native soil is exposed sediment and erosion control works, in the form of heavy-duty sediment fencing, be positioned along the edge of the areas to be developed, graded, and otherwise disturbed.**
- **Sediment fencing must be constructed of heavy material and solid posts, and be properly installed (trenched in) to maintain its integrity during inclement weather events.**
- **Additional sediment fencing and appropriate control measures must be available on site so that any breach can be immediately repaired.**
- **Regular inspection and monitoring will be necessary to ensure that the structural integrity and continued functioning of the sediment control measures is maintained (i.e., proper installation is not the only action necessary to satisfy the mitigation requirements).**
- **An onsite supervisor should be responsible for daily inspections of the sediment and erosion control measures and record the time and date of inspections, the status of the mitigation measures, and any repairs undertaken.**

- **Best Management practices should be utilized with all machinery and fill being imported to the subject property to ensure that material and tracks are free from invasive species (*Phragmites australis*, etc.).**
- **Machinery should arrive on site in clean condition and is to be checked and maintained free of fluid leaks.**
- **Machinery must be refueled, washed and serviced a minimum of 30 m from the Drainage Feature.**
- **Locate all fuel and other potentially deleterious substances a minimum of 30 m from the Drainage Feature. Minimize fuels and chemicals stored onsite and ensure a spills management plan and the associated spill response equipment is available on-site at all times for implementation in the event of a spill of deleterious material.**
- **Temporary storage locations of aggregate/fill material should be located no less than 30 m from the Drainage Feature. This material is to be contained by heavy-duty sediment fencing.**
- **Offloading of construction and aggregate/fill materials should be completed during fair weather conditions.**
- **All stockpiled topsoil/overburden should be piled in low piles and stabilized as quickly as possible (e.g., erosion-prone areas covered with textile) to minimize the potential for runoff and wind erosion.**
- **Removal of non-biodegradable erosion and sediment control materials once construction is complete and the site is stabilized.**
- **Qualified personnel should monitor all near-water construction activities.**
- **The recommendations of the *Hydrogeological Study, Groundwater Monitoring and Water Balance Assessment* report (Soil Engineers Ltd., August 2016) be adhered to. This includes consideration for the use of clay collars or trench plugs within underground service trenches to mitigate the potential for a permanent lowering of the groundwater table (p. 27).**
- **Installed culverts should be open-bottom and span the bankfull width of the Drainage Feature to allow fish at all life stages to pass up and downstream under all flow conditions. Culverts should not generate backwater effects or increase stream velocity. Culverts must be embedded into the substrate.**
- **Culvert design should be reviewed by Grand River Conservation Authority and a Screening Assessment under the federal *Fisheries Act* should be undertaken.**
- **Culvert installation must respect the warm-water timing window (beginning July 1 and ending March 31).**

<u>Candidate Significant Wildlife Habitat</u>

- **Should any congregation (i.e., 2 or more) of snakes be observed on the subject property during construction activities within the same general location during spring (April-early May) or fall (October), suggesting that an active hibernaculum may be present nearby, MNRF should be contacted for further advice.**

Other Natural Features and Functions

- **Vegetation removal and disturbance outside of the development envelopes should be minimized to the extent possible.**

- **Efforts to maintain existing trees along the northern boundary of the subject property should be considered and incorporated into detailed design to the extent possible.**

- **During construction, a defined access route should be used as the primary path for accessing the property and the internal lots to minimize soil disturbance.**

- **Implement a dust prevention strategy to reduce the development and spread of dust from the site. This may include dust suppression measures, such as promptly watering exposed areas when visible dust is observed.**

- **Vegetation removal (e.g., tree/shrub clearing, grading of existing meadows/hayfields, etc.) should be completed outside of the primary breeding bird nesting window (i.e., between April 15 and August 15). If vegetation removal occurs during this period, a nest survey should be conducted by a qualified biologist within 5 days of commencement of construction activities to identify and locate active nests of bird species covered by the federal *Migratory Bird Convention Act, 1994* or provincial *Fish and Wildlife Conservation Act, 1997*. If a nest is located or evidence of breeding noted, a mitigation plan should be developed to avoid any potential impacts on birds or their active nests. Mitigation may require establishing appropriate buffers around active nests or delaying construction activities until the conclusion of the nesting season.**

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1 BACKGROUND

RiverStone Environmental Solutions Inc. (hereafter, "RiverStone") was retained to prepare an Environmental Impact Study (EIS) for a parcel that abuts the southern settlement boundary of the community of Dundalk, Township of Southgate (hereafter, "the Township"). The parcel is legally described as Part of Lot 232, Concession 1 Southwest of Toronto and Sydenham Road, in the Geographic Township of Proton. The subject property is currently designated "Neighbourhood Area" on Map 1 to Schedule A of the Township's Official Plan (OP), and zoned "Restricted Agricultural" (R2) on Schedule 17 of the Township's Zoning By-law. Grey County's (hereafter, "the County") OP designates the subject property as a "Primary Settlement Area" on Map 2 of Schedule A. The location of the subject property is identified in **Figure 1**.

It is our understanding that this EIS is required to provide the Township, County, and Grand River Conservation Authority (GRCA) with the information necessary to assess the eligibility of a subdivision application and Zoning By-law Amendment on the parcel considered herein. Contiguous parcels to the south ("Flato East") and west ("Flato West") are also subject to subdivision applications. The proposed plan of subdivision for the subject property is shown in **Appendix 1**.

The characterization of natural features and functions within this EIS relies extensively on biophysical information collected in 2015 from contiguous lands to the south ("Flato East") and west ("Flato West") during the development approval process for those lands. This 2015 data from adjacent lands is supported by multiple site investigations conducted on the subject property in spring and summer 2016. This EIS has been prepared in a manner that satisfies the Township's EIS scope and content requirements as outlined in Section 6.5.8 ("Terms of Reference - Environmental Impact Study") of the OP. The Grand River Conservation Authority (GRCA) was also consulted on the proposed scope of work for this EIS, and provided feedback in February and March of 2016.

2 APPROACH AND METHODS

The approach and methods used to carry out this EIS are detailed in this section. In general, this includes:

1. Gathering background biophysical information for the subject property and adjacent lands (i.e., approximately 120 m from subject property boundaries) to become familiar with existing records of features and species of conservation interest prior to the site investigation(s).
2. Conducting a site investigation(s) to field-verify the presence or absence of features and species of conservation interest identified during background information gathering, and to identify any additional features that are recognized as significant in the province of Ontario (wherever present).
3. Determining the potential for negative impacts associated with the proposed development and ways that these negative impacts can be mitigated via avoidance, minimization, and/or compensation measures.
4. Providing an overall assessment of conformance of the proposed development with all applicable municipal, provincial, and federal environmental policies.

2.1 Information Sources Used to Assess Site Conditions

Background biophysical information pertaining to the subject property and adjacent lands was collected from a variety of sources. This includes:

- **Township of Southgate Official Plan** (February 2009) for natural feature and natural hazard mapping, including:
    - Schedule A – Land Use
    - Map 1 to Schedule A – Dundalk
    - Schedule C – Environmental Constraints
    - Schedule D – Urban Community of Dundalk Servicing
- **Township of Southgate Zoning By-law No. 19-2002** (February 2009, as amended) for natural feature mapping, including:
    - Schedule 17
- **County of Grey Official Plan** (Office Consolidation June 25, 2013) for natural feature mapping, including:
    - Appendix A – Constraint Mapping (Map 2)
    - Appendix B – Constraint Mapping (Map 2)
    - Schedule A – Land Use Designations (Map 2)
    - Secondary Schedule – Land Use Designations (Map 2q, Dundalk)
- **MNRF Natural Areas Mapping and Natural Heritage Information Centre (NHIC) database** regarding information on occurrences of species at risk (SAR) and provincially tracked species (squares: 17NJ4891, 17NJ4991, 17NJ5091, 17NJ4890, 174990, 175090, 17NJ4889, 174989, 175089; accessed July 25, 2016, at: http://www.giscoeapp.lrc.gov.on.ca/web/MNR/NHLUPS/NaturalHeritage/Viewer/Viewer.htm
- **Ministry of Natural Resources and Forestry (MNRF) Midhurst District Information Request** for fisheries and aquatic information within and adjacent to the subject property (received from Graham Findlay, Management Biologist, on August 31, 2015).
- **Ministry of Natural Resources and Forestry (MNRF) Midhurst District (Owen Sound Area) Information Request** for occurrences of species at risk and natural heritage features within and adjacent to the subject property (received from Kathy Dodge, Management Biologist, on November 4, 2015).
- **Species at Risk Range Maps** (accessed July 25, 2016, at: http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/246809.html).
- **Grand River Conservation Authority (GRCA) Information Request** for fisheries and aquatic information within and adjacent to the subject property (received from Andrew Herreman, Resource Planner, on July 30, 2016).
- **GRCA Interactive Mapping** to identify potential features of conservation interest on the subject property and determine whether GRCA's regulated area extends onto the subject property (accessed July 25, 2016, at http://grims.grandriver.ca/imf/imf.jsp?site=grca_viewer&session=10077791&qlyr=sde_grca.GR.MUNICIPAL_BNDRY&qry=sde_grca.GR.MUNICIPAL_BNDRY.MU_LTIER%3d%27TOWNSHIP%20OF%20SOUTHGATE%27&qzoom=true&ddsid=23058a).
- **Ontario Breeding Bird Atlas (OBBA) database and the Atlas of the Breeding Birds of Ontario, 2001–2005** (Cadman et al. 2007) regarding birds that were documented to be

breeding in the vicinity of the subject property during the 2001–2005 period (square: 17NJ49; accessed at: http://www.birdsontario.org/atlas/squareinfo.jsp).

- **Ontario Reptile and Amphibian Atlas** database regarding records of reptiles and amphibians that have been observed within the vicinity of the subject property (squares: 17NJ49, 17NJ59, 17NJ48, 17NJ58; accessed July 25, 2016, at: http://www.ontarioinsects.org/herpatlas/herp_online.html).
- **Distribution of Fish Species at Risk** mapping (for GRCA's jurisdiction) generated by Fisheries and Oceans Canada in 2015 (accessed July 25, 2016, from http://www.conservation-ontario.on.ca/what-we-do/watershed-stewardship/aquatic-species-at-risk).
- **Atlas of the Mammals of Ontario** (Dobbyn 1994) regarding records of mammals in the vicinity of the subject property.
- **Great Lakes Conservation Blueprint for Terrestrial Biodiversity, Volume 2** (Henson and Brodribb (2005) regarding terrestrial biodiversity within Ecodistrict 6E-5 (Mount Forest).
- **Great Lakes Conservation Blueprint for Aquatic Biodiversity, Volume 2** (Phair et al. (2005) regarding aquatic biodiversity within tertiary watershed 2GA (Upper Grand River).
- **Physiography of Southern Ontario** (Chapman and Putnam 2007) for information pertaining to the physiography and soils of the subject property and adjacent lands.
- **Quaternary Geology of the Dundalk Area, Southern Ontario** (Gwyn 1975) for information pertaining to the bedrock and surficial geology of the subject property and adjacent lands.
- **Environmental Impact Assessment** completed in 2006 by Azimuth Environmental Consulting Inc. for a parcel immediately to the west of the subject property ("Flato West", including all related Addendums and Letters (e.g., Dec. 2006, Mar. 2008, Jul. 2008, and May 2009).
- **Environmental Impact Assessment (Addendum)** completed in 2015 by RiverStone Environmental Solutions Inc. for a parcel immediately to the west of the subject property ("Flato West").
- **Enivonmental Impact Assessment** completed in 2015 by RiverStone Environmental Solutions Inc. for a parcel immediately to the south of the subject property ("Flato East").
- **Recent and Historical Colour Aerial Photography** of the subject property.

In addition to the above information sources, we have also reviewed the following studies that form part of this development submission package and incorporated their results into this EIS (where applicable):

- **Hydrogeological Study, Groundwater Monitoring and Water Balance Assessment** by Soil Engineers Ltd. (dated August 2016).
- **A Soil Investigation for Proposed Residential Development** by Soil Engineers Ltd. (dated July 2016).
- **Water Balance Assessment** by Soil Engineers Ltd. (dated June 2, 2016)

2.2 Site Investigations

The background biophysical information gathered as outlined in **Section 2.1** helped direct data collection activities associated with multiple site investigations. As described in **Section 1**, this EIS relies in part on information collected on adjacent lands in 2015 (by Skelton Brumwell and Associates and to a lesser extent by RiverStone) as well as information collected by RiverStone on-site in 2016. **Table 1** indicates the primary tasks that occurred during each site investigation, staff involved, and the hours spent on site. Representative photographs (taken by RiverStone) are provided in **Appendix 2**. Overall, the level of effort expended on-site was deemed adequate to document features of conservation interest and their respective functions given the location of the proposed development and areal extent of disturbance.

Table 1. Site Visits and Primary Tasks.

Date	Primary Task	Location of Data Collected	Staff (Firm)[1]	Hours spent on site (approx.)
Apr 26, 2015	Anuran Monitoring Survey #1	Adjacent Lands ("Flato East")	Kyle Fleming (SKB)	1.25
May 26, 2015	Anuran Monitoring Survey #2	Adjacent Lands ("Flato East")	Kyle Fleming (SKB)	1.25
June 3, 2015	Breeding Bird Survey #1	Adjacent Lands ("Flato East")	Kyle Fleming (SKB)	2.25
June 15, 2015	Breeding Bird Survey #2	Adjacent Lands ("Flato East")	Kyle Fleming (SKB)	2.00
June 30, 2015	Anuran Monitoring Survey #3	Adjacent Lands ("Flato East")	Kyle Fleming (SKB)	0.25
July 3, 2015	Breeding Bird Survey #3	Adjacent Lands ("Flato East")	Kyle Fleming (SKB)	2.25
July 23, 2015	Fish and Aquatic Habitat Assessment	Adjacent Lands ("Flato East")	Bev Wicks and James Eyres (RiverStone)	4.25
March 16, 2016	Preliminary Site Review and Aquatic Habitat Assessment	Subject Property	Tristan Knight (RiverStone)	3
June 06, 2016	Vegetation Mapping, Vascular Plant Survey, Characterize Natural Features and Functions	Subject Property	Tristan Knight (RiverStone)	3
July 12, 2016	Vegetation Mapping, Vascular Plant Survey, Characterize Natural Features and Functions	Subject Property	Tristan Knight (RiverStone)	1

[1] SKB – Skelton Brumwell and Associates

2.2.1 Geology, Soils, and Drainage

Geology is a significant factor in the formation of soil, the physical characteristics of a watershed, and ultimately surface water quality. The bedrock and overlying deposits influence surface runoff and infiltration, directly influencing the nutrient balance of receiving water bodies. Knowledge of the existing terrain in a study area is important in understanding how a property and its associated natural environment will respond to development pressures. The geophysical setting of this property was determined using topographic mapping, soils mapping, geological mapping, aerial photography, and the on-site investigation.

2.2.2 Vegetation Communities and Vascular Plant Inventory.

Vegetation communities on the subject property were delineated according to Ecological Land Classification (ELC) community tables (Lee et al., 1998). ELC defines ecological units or communities based on bedrock, climate (temperature, precipitation), physiography (soils, slope, aspect), and corresponding vegetation. Use of the system permits biologists and other land managers to use a common language to describe vegetation communities, which in turn facilitates the identification of communities likely to support features or functions of conservation interest. The ELC system is an organizational framework that can be applied at different scales. The ecological units most useful for site-specific evaluations are ecosites and vegetation types (also known as ecoelements). Vegetation types are the finest level of resolution in the ELC system and are recurring patterns found in the plant species assemblages that are associated with a particular ecosite (Lee et al. 1998). The vascular plant survey on the subject property was conducted using an area-search technique that adequately covered all features (e.g., edges of cropfields, wetlands, hedgerows, etc.) on the subject property.

2.2.3 Breeding Bird Surveys

Three (3) rounds of breeding bird surveys were conducted in accordance with the Ontario Breeding Bird Atlas (OBBA) protocol (Bird Studies Canada et al. 2001) on adjacent lands to the south ("Flato East") of the subject property. Surveys were conducted within the appropriate season (May 24–July 10), time of day (between dawn and 5 hours after dawn), and weather conditions (no rain, wind speed ≤3 on the Beaufort Wind Scale). A total of seven (7) point count stations were established, with stations situated approximately 250 m apart to reduce the potential for double-counting individuals. Four (4) breeding bird monitoring stations were located on lands adjacent to the subject property, and are identified on **Figure 2**.

Breeding bird surveys were not conducted on the subject property in 2016 given the dominance of cropland and general absence of natural vegetation communities; however, a number of bird species were recorded incidentally in 2016 and discussed in **Section 3.4**.

2.2.4 Anuran Calling Surveys

Calling anuran surveys were conducted in accordance with the Marsh Monitoring Program for Surveying Amphibians (Bird Studies Canada 2009) on adjacent lands to the south ("Flato East") of the subject property. This includes three separate surveys occurring within the proper season and timeframe (30 minutes after sunset until midnight) for the central region (43rd to 47th parallels) and under appropriate weather conditions (no heavy rain, wind speed ≤3 on the Beaufort Wind Scale). Anuran calling stations were placed systematically in an effort to cover all potential anuran breeding habitats within the study area. A total of six (6) anuran calling stations were established; the results at three (3) of these stations are discussed within this EIS as they occur on adjacent lands to the subject property (i.e., within 120 m). The three (3) stations located on lands adjacent to the subject property considered herein are identified on **Figure 2**.

Anuran calling surveys were not conducted on the subject property in 2016 given that two (2) of the anuran calling stations located on adjacent lands (stations "A" and "B" on **Figure 2**) would have captured potential anuran breeding habitat on the subject property.

2.2.5 Features of Conservation Interest

Features of conservation interest targeted for assessment within this EIS include all natural heritage features and areas identified in the Township's OP (p. 104). This includes:

- Significant Habitat of Threatened and Endangered Species
- Significant Wetlands
- Fish Habitat
- Significant Woodlands
- Significant Valleylands
- Significant Wildlife Habitat (including Deer Wintering Yards)
- Areas of Natural and Scientific Interest
- Cold Water Streams
- Warm Water Streams

Where present, these features and their driplines (where present) in the vicinity of the proposed areas of disturbance were delineated with a survey-grade GPS receiver capable of 2 m accuracy. Features of interest were photographed and all information collected was catalogued for future reference.

2.2.6 Species of Conservation Interest

Properly assessing whether an area is likely to contain species of conservation interest for the purposes of determining whether a proposed development is likely to have a negative impact is becoming more difficult as the number of listed species increases. Approaches that depend solely on documenting the presence of individuals of a species in an area can be misleading because of the difficulty of observing species that are usually rare and/or well camouflaged.

Given these difficulties, and the importance of protecting habitats of SAR, fish, and other species of conservation interest, RiverStone's primary approach to site assessment is habitat-based. This means that our field investigations focus on evaluating the potential for features within an area of interest to function as habitat for species considered potentially present, rather than searching for live specimens. An area is considered potential habitat if it satisfies a number of criteria, usually specific to a species, but occasionally characteristic of a broader group (e.g., several turtles of conservation interest use sandy shorelines for nesting, numerous fish species use areas of aquatic vegetation for nursery habitat). Physical attributes of a site that can be used as indicators of its potential to function as habitat for a species include structural characteristics (e.g., physical dimensions of rock fragments or trees, water depth), ecological community (e.g., meadow marsh, rock barren, coldwater stream), and structural connectivity to other habitat features required by the species. Species-specific habitat preferences and/or affinities are determined from status reports produced by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Cadman et al. (2007), published and unpublished documents, and direct experience.

For the purposes of identifying species that warrant consideration during design and implementation of the proposed subdivision plan, we have defined "species of conservation interest" to include the following:

- Species designated as "Endangered", "Threatened", or "Special Concern" under O. Reg. 230/08 pursuant to the provincial *Endangered Species Act, 2007*; and
- Species designated as Provincially Rare (i.e., S1, S2, or S3) by the Natural Heritage Information Centre (NHIC) of the MNRF.

The results of our habitat-based assessments for species of conservation interest as well as descriptions of the methodology and rationale employed are provided in **Appendix 6**. Although observations of fauna were recorded, they are not reported herein unless this was important for the identification of a feature of conservation interest or another policy-related feature.

2.3 Impact Assessment and Mitigation Measures

In order to carry out a rigorous and defensible ecological assessment of potential impacts associated with the proposed development, RiverStone employs the following approach:

1. *Predict* impacts to existing features and species of conservation interest on site based on the proposed development plan (from construction to post-completion), including both direct (e.g., vegetation clearance, etc.) and indirect (e.g., light pollution, encroachment post-development, etc.) impacts.
2. *Evaluate the significance* of predicted impacts to existing biophysical features and functions based on their spatial extent, magnitude, timing, frequency (how often), and duration (how long).
3. *Assess the probability* or likelihood that the predicted impacts will occur at the level of significance expected (i.e., high, medium, low probability).

In instances where the potential for negative impacts exist, ecologically meaningful mitigation measures are offered to avoid, minimize, and/or compensate for such impacts. RiverStone's impact assessment and recommended mitigation measures are provided in **Section 4**.

2.4 Assessment of Conformance with Applicable Environmental Policies

There are a number of relevant federal, provincial, and municipal environmental policies that apply to the subject property and proposed development, which are listed below. An assessment of the proposed development's conformity with these policies is offered in **Section 4.2.3**.

- Township of Southgate Official Plan (February 2009).
- County of Grey Official Plan (Office Consolidation June 20, 2013).
- Provincial Policy Statement, 2014, pursuant to the *Planning Act*, R.S.O. 1990, c. P.13, including:
    - Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005 (OMNR 2010).
    - Significant Wildlife Habitat Technical Guide (OMNR 2000).
    - Significant Wildlife Habitat Criteria Schedules for Ecoregion 6 (OMNRF 2015).
    - Significant Wildlife Habitat Mitigation Support Tool (OMNRF 2014).
- Provincial *Conservation Authorities Act*, R.S.O. 1990, c. C.27, including:

  - O. Reg. 150/06 – Grand River Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses
  - GRCA Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Resolution No. 05-13)
  - GRCA Environmental Impact Study Guidelines and Submission Standards for Wetlands (Approved August 26, 2005)

- Provincial *Endangered Species Act*, S.O. 2007, c. 6, including:
  - O. Reg. 230/08 – Species at Risk in Ontario List.
  - O. Reg. 242/08 – General (i.e. "Exemption Regulation").
- Federal *Fisheries Act*, R.S.C. 1985, c. F-14, including:
  - Applications for Authorization under Paragraph 35(2)(b) of the Fisheries Act Regulations, S.O.R/2013-191.
  - Fisheries Protection Policy Statement (Fisheries and Oceans Canada 2013).
- Federal *Migratory Birds Convention Act*, S.C. 1994, c. 22.
  - Migratory Birds Regulations, C.R.C., c. 1035.

3 BIOPHYSICAL FEATURES AND FUNCTIONS

3.1 General Site Conditions and Land-uses

The subject property is 16.19 ha in size and situated along the southern settlement boundary of the community of Dundalk. At the time of the 2016 site investigations, the subject property consisted almost exclusively of soybean fields. Narrow hedgerows delimit the boundaries of the subject property and soybean fields. The only natural feature on the subject property is a watercourse (i.e., "Drainage Feature", see **Section 3.6**).

Immediately to the north of the subject property is a residential subdivision consisting of detached single-family homes in the community of Dundalk. Lands to the west are currently under construction as part of an approved draft plan of subdivision ("Flato West"). To the south are lands associated with a separate draft plan of subdivision application that is currently under review ("Flato East"). Wetland units associated with the Provincially Significant Melancthon Wetland Complex #1 occur greater than 450 m to the south of the subject property. The James Foley Drain is approximately 40 m southeast of the subject property. Agricultural land-uses intermixed with natural features (e.g., forests, plantations, etc.) comprise the wider landscape beyond the subject property (i.e., > 2 km) and lands east of Highway 10. The subject property and adjacent lands are indicated on **Figure 1**.

3.2 Physiographic Setting

3.2.1 Bedrock Geology

Bedrock underlying the subject property and adjacent lands consists of Middle Silurian (i.e., approximately 430 million year old) dolostones of the Guelph Formation (Armstrong and Dodge 2007). This brown-tan coloured dolostone is fine-to-medium crystalline grained, fossiliferous, and locally biohermal (i.e., has a mound-like form imparted by ancient coral reefs). The Guelph Formation stretches across southern Ontario from the Niagara River to the tip of the Bruce Peninsula but is largely

found deep below surficial deposits. Thickness of the overburden above the bedrock is approximately 50-75 m in the study area (Gwyn 1975).

3.2.2 Surficial Geology and Soils

The subject property and adjacent lands are situated within Ecodistrict 6E-5, which is part of the Dundalk Till Plain physiographic region (Chapman and Putnam 2007). At 425 m to 535 m above sea level the Dundalk Till Plain extends higher in elevation than any other area in southern Ontario (i.e., Ecoregions 6 and 7). The result is a cooler, moister climate with greater intermingling of boreal [e.g., White Spruce (*Picea glauca*), Tamarack (*Larix laricina*)] and eastern deciduous [e.g., Sugar Maple (*Acer saccharum*)] forest species than occurs in other parts of southern Ontario. The Dundalk Till Plain has a fluted surface, consisting of shallow troughs and ridges that orient southeast consistent with the direction of glacial movement in this area.

According to the Grey County soil survey (Gillespie and Richards 1954), the subject property consists mainly of Listowel series silt loam derived from medium-textured dolomitic limestone till. Drainage of this series is imperfect (i.e., the soils are moist or saturated for a significant portion of the year). On-site soil investigations were conducted via twelve (12) boreholes advanced to depths of 6.3 to 9.3 m during completion of the *Soil Investigation* by Soil Engineers Ltd. (July 2016). All boreholes contained topsoil to depths of 18-38 cm below the surface. Beneath the topsoil is a sandy silt till (intermixed with silty sand till at some boreholes), which is a heterogeneous mixture of clay to gravel particles dominated (in this case) by silt or sand and deposited beneath the glacier. Most boreholes contained sandy silt till to the depths of soil investigated. Resistance to augering encountered in a few borehole locations may indicate the presence of large boulders.

3.2.3 Topography, Drainage, and Watercourses

The subject property is relatively uniform in topography and slopes gradually (approximately 2.5-7%) but consistently in a southern direction. The northeastern portion of the property is at the highest elevation (~521 masl), while southwestern portion of the property is at the lowest elevation (~515 masl), resulting in 6 m of overall relief. The subject property is drained by one (1) watercourse, referred to herein as the "Drainage Feature" (for consistency with the EIS completed for the Flato East Subdivision in 2015). The Drainage Feature is characterized in detail in **Section 3.6.3**.

3.3 Vegetation Communities and Vascular Plant Inventory

The subject property does not contain any vegetation communities that can be described in accordance with ELC as it is under soybean production. The margins of the soybean fields are fallow in some areas and grade into woody hedgerows that delimit the boundaries of the subject property. Vegetation communities on adjacent lands have been mapped based on air-photo interpretation and the results of RiverStone's field activities in 2015 on adjacent lands. ELC mapping for the subject property and adjacent lands is provided in **Figure 3**. The results of the vascular plant survey on the subject property is provided in **Appendix 3**. None of the vascular plants observed on the subject property are considered rare within Grey County (Bruce-Grey Plant Committee 2010).

3.4 Breeding Bird Surveys

Breeding bird surveys in accordance with the Ontario Breeding Bird Atlas protocol were completed in 2015 on adjacent lands to the south (by Skelton Brumwell and Associates) in concert with the draft plan of subdivision application for "Flato East". A total of thirty-one (31) bird species were recorded

during breeding bird surveys on adjacent lands. Two (2) additional bird species were recorded incidentally during completion of the site investigations on the subject property 2016. Bird species recorded incidentally on the subject property in 2016 and during breeding bird surveys on adjacent lands in 2015 are indicated in **Appendix 4**.

3.5 Anuran Calling Surveys

Anuran calling surveys in accordance with Marsh Monitoring protocol were completed in 2015 on adjacent lands to the south (by Skelton Brumwell and Associates) in concert with the draft plan of subdivision application for Flato East. Three (3) monitoring stations on Flato East occurred within lands adjacent to the subject property considered herein (i.e., within 120 m); their results are summarized below. A total of five (5) anuran species were recorded during anuran calling surveys on adjacent lands to the south; however, all calls from every species were heard greater than 100 m from the centre of the monitoring station and occurred outside the limits of the subject property. Spring Peeper (*Pseudacris crucifer*) was the most abundant anuran species recorded. Survey results are summarized in **Table 2**.

Table 2. Results of Calling Anuran Surveys on the Subject Property according to Marsh Monitoring Program Protocols.

Station ID	Survey #1 – Species Recorded (Call Code)	Survey #2 – Species Recorded (Call Code)	Survey #3 – Species Recorded (Call Code)	Comments
A	Spring Peeper (3)	-	-	Calls > 100 m away from station.
B	Spring Peeper (3)	-	-	Calls > 100 m away from station.
C	Wood Frog (2) Spring Peeper (3)	-	Grey Treefrog (2) American Toad (2) Spring Peeper (2) Northern Leopard Frog (3)	Calls > 100 m away from station.

3.6 Features of Conservation Interest

Based on the background information collected (**Section 2.1**) and site investigation (**Section 2.2**), RiverStone has provided a determination of whether or not features of conservation interest protected via policies outlined in the Township's OP and/or 2014 PPS are present on the subject property. **Table 3** below and the sections that follow outline our rationale. All features of conservation interest present on the subject property and adjacent lands are mapped on **Figure 4**, which also highlights our recommended buffer distances for protecting these features.

Table 3. Summary of the Assessment of Features of Conservation Interest (according to the Township's OP) on the Subject Property.

Features of Conservation Interest[1]	**Presence or Absence of Feature of Conservation Interest on the Subject Property.**	**Presence or Absence of Feature of Conservation Interest on Adjacent Lands (i.e., within 120 m of Subject Property).**
Significant Habitat of Threatened and Endangered Species	*Absent*. See **Section 3.6.1.**	*Absent*. See **Section 3.6.1.**
Significant Wetlands	*Absent*. See **Section 3.6.2.**	*Absent*. See **Section 3.6.2.**
Fish Habitat	*Present*. See **Section 3.6.3.**	*Present*. See **Section 3.6.3.**
Significant Woodlands	*Absent*. See **Section 3.6.4.**	*Absent*. See **Section 3.6.4.**
Significant Valleylands	*Absent*. See **Section 3.6.5.**	*Absent*. See **Section 3.6.5.**
Significant Wildlife Habitat	*Potentially Present*. See **Section 3.6.6.**	*Potentially Present*. See **Section 3.6.6.**
Life Science Areas of Natural and Scientific Interest	*Absent*. See **Section 3.6.7.**	*Absent*. See **Section 3.6.7.**
Coldwater Streams	*Absent.* See **Section 3.6.8.**	*Absent.* See **Section 3.6.8.**
Warmwater Streams	*Present*. See **Section 3.6.8.**	*Present*. See **Section 3.6.8.**

[1] - Shaded rows denote features of conservation interest for which negative impacts on the subject property or adjacent lands have been deemed possible.

3.6.1 Significant Habitat of Threatened and Endangered Species

The Township's OP does not expressly define "significant habitat" in the context of endangered and threatened species. The protection of "significant habitat" of endangered and threatened species was language employed by 2005 PPS (which explains its use in the Township's OP), but the term "significant" has been removed in 2014 PPS. The most appropriate approach to identifying endangered and threatened species habitat is to use the definition in the provincial *Endangered Species Act*, 2007 (s. 2), which is also employed by the 2014 PPS:

> **Habitat of Endangered and Threatened Species:** *a) with respect to a species listed on the Species at Risk in Ontario List as an endangered or threatened species for which a regulation made under clause 55(1)(a) of the Endangered Species Act, 2007 is in force, the area prescribed by that regulation as the habitat of the species; or*
>
> *b) with respect to any other species listed on the Species at Risk in Ontario List as an endangered or threatened species, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding, as approved by the Ontario Ministry of Natural Resources; and*
>
> *places in the areas described in clause (a) or (b), whichever is applicable, that are used by members of the species as dens, nests, hibernacula or other residences.*

RiverStone submitted an information request to MNRF (Midhurst District, Owen Sound Area) for occurrences of species at risk on the subject property and adjacent lands; the results of MNRF's screening are provided in **Appendix 5**. See **Appendix 6** for a detailed technical description of RiverStone's assessment of habitat for species of conservation interest on the subject property. No endangered or threatened species designated under O. Reg. 230/08 of the *Endangered Species Act* have the potential to occur on the subject property or be negatively impacted by implementation of the proposed development plan.

3.6.2 Significant Wetlands

A specific definition of "wetlands" or "significant" (in the context of wetlands) is not provided within the Township's OP. For the purposes of defining wetlands on the subject property and adjacent lands, we have applied the relevant definition from the 2014 PPS from section. 6.0:

> **Wetlands:** means *lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic plants or water tolerant plants. The four major types of wetlands are swamps, marshes, bogs and fens.*
>
> **Significant:** means *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*

Although the Township's OP does not contain provisions for the protection of identified wetlands, identified wetlands are protected under GRCA's regulation (see **Section 5.4**); therefore, it is appropriate to classify identified wetlands as a feature of conservation interest in this assessment.

Based on our assessment of existing vegetation on the subject property in **Section 2.2.2** and **Figure 3**, no wetlands are present on the subject property.

3.6.3 Fish Habitat

A specific definition of "fish habitat" is not provided within the Township's OP. For the purposes of defining fish habitat on the subject property and adjacent lands, we have applied the relevant definition from the 2014 PPS from section. 6.0:

> **Fish habitat:** *as defined in the Fisheries Act, c. F-14, as amended, means spawning grounds and any other areas, including nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes.*

One (1) watercourse, identified herein as the "Drainage Feature", occurs on the subject property and provides habitat for fish. A second watercourse, identified herein as the "James Foley Drain", occurs approximately 40 m southeast of the subject property at its nearest point. A summary of the fish and aquatic habitat characteristics of the Drainage Feature is provided below and summarized **Table 4**. A brief summary of the fish and aquatic habitat characteristics of the James Foley Drain based on information collected during completion of the Flato East EIS in 2015 is also summarized **Table 4**. Locations where detailed aquatic habitat assessments were conducted on the subject property and adjacent lands are indicated on **Figure 2**.

3.6.3.1 Drainage Feature

The subject property is situated near the northern terminus of the Grand River watershed where it meets the headwaters of the Saugeen River. Upstream of the subject property the Drainage Feature is conveyed through the Dundalk settlement area via a straightened swale. After exiting a 2 m wide concrete box culvert on the south side of Victoria Street North approximately 90 m north of the subject property, the Drainage Feature flows through the subject property via a straightened open channel with a southeast alignment. Brook Stickleback (*Culaea inconstans*) were observed at the culvert mouth along Victoria Street North in pools along with beds of Watercress (*Nasturtium officinale*). An additional culvert is located within subject property boundaries to convey the Drainage Feature beneath a pathway used by agricultural machinery. The Drainage Feature has not been mapped on the Township's OP (Schedule D), GRCA's interactive mapping database, or MNRF's Natural Areas Mapping database.

Detailed aquatic information for the Drainage Feature was collected at two (2) stations (see **Figure 2**). The bed of this watercourse was observed to be largely vegetated with minimal flowing water on the date of assessment (March 16, 2016). The density of vegetation observed during subsequent site visits suggests that there is limited fish passage between areas upstream and downstream of the subject property. The substrate of the watercourse is largely composed of organics/detritus. Based on the conditions observed, the Drainage Feature is considered to be a warm to coolwater intermittent system that may only contain flowing water following the spring freshet. Pockets of refugia habitat for fish may exist in certain areas (particularly the pool on the downstream side of the culvert) during the summer months as a result of groundwater contributions.

Potential impacts to warmwater fish habitat within the Drainage Feature stemming from implementation of the proposed development plan are reviewed in **Section 3.6.3**.

Table 4. Channel Morphological and Aquatic Characteristics of the Drainage Feature and James Foley Drain.

Watercourse	Station No.	Date Assessed	Channel Morphology and Aquatic Habitat Characteristics	Water Quantity and Quality Characteristics
James Foley Drain	1	July 23, 2015	**Bankfull Width**: 2.5 m **Wetted Width**: 1.1 m **Water Depth at Thalweg:** 10 cm **Bed Feature:** 100% Run **Substrates:** Sand, Gravel, Small Cobble; layer of silt and algae partially covering substrate. **Incision:** ~2 m to top of bank **Observed Aquatic Species**: Crayfish **Aquatic Vegetation:** Watercress (*Nasturtium officinale*) **Riparian Vegetation**: Joe-Pye weed (*Eutrochium maculatum*), Goldenrod (*Solidago altissima*), Red-osier Dogwood (*Cornus sericea*), Reed-canary Grass (*Phalaris arundinacea*).	**Discharge (m^3/s)**: 0.0045 **Discharge (l/s)**: 4.5 **Water Temperature ^oC (Air Temperature ^oC):** 15.1 (20.5) **Dissolved Oxygen (% Saturation):** 50.4 **Dissolved Oxygen (mg/L):** 5.4 **Specific Conductivity (ug/L):** 691 **pH:** 7.27
Drainage Feature	2	March 16, 2016	**Bankfull Width**: 5 m **Wetted Width**: 2.25 m **Water Depth at Thalweg:** 4 cm **Bed Feature:** 100% Run **Substrates:** organics/detritus. **Aquatic Vegetation:** Watercress (*Nasturtium officinale*), Broad-leaved Cattail (*Typha latifolia*), Reed-canary Grass (*Phalaris arundinacea*) **Riparian Vegetation**: Panicled Aster (*Symphyotrichum lanceolatum*)	**Water Temperature ^oC (Air Temperature ^oC)**: 5 (5)
Drainage Feature	3	March 16, 2016	**Bankfull Width**: 4.5 m **Wetted Width**: 1.5 m **Water Depth at Thalweg:** 4 cm **Bed Feature:** 100% Run **Substrates:** organics/detritus covering sand (partially obscured by Watercress) **Aquatic Vegetation:** Watercress (*Nasturtium officinale*), Broad-leaved Cattail (*Typha latifolia*), Reed-canary Grass (*Phalaris arundinacea*) **Riparian Vegetation**: Panicled Aster (*Symphyotrichum lanceolatum*)	**Water Temperature ^oC (Air Temperature ^oC)**: 5 (5)

3.6.4 Significant Woodlands

A specific definition of "woodlands" or "significant" (in the context of woodlands) is not provided within the Township's OP. For the purposes of identifying significant woodlands on the subject property and adjacent lands, we have applied the relevant definition from the 2014 PPS (s. 6.0):

> **Woodland:** means *treed areas that provide environmental and economic benefits to both the private landowner and the general public, such as erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial levels. Woodlands may be delineated according to the Forestry Act definition or the Province's Ecological Land Classification system definition for "forest."*
>
> **Significant:** means *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. These are to be identified using criteria established by the Ontario Ministry of Natural Resources*

As indicated in **Section 3.3**, no forests or woodlands are present on the subject property. A small (~0.32 ha) Deciduous Forest is present along the northern boundary of the subject property west of the Drainage Feature; however, this feature would not be considered "significant" and has not been mapped as such on Appendix B ("Constraint Mapping – Map 2") of Grey County's OP.

3.6.5 Significant Valleylands

A specific definition of "valleylands" or "significant" (in the context of valleylands) is not provided within the Township's OP. For the purposes of identifying Significant Valleylands on the subject property, we have applied the 2014 PPS definition from section. 6.0:

> **Valleyland**: *a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year"*.
>
> **Significant**: *means d) in regard to other features and areas in policy 2.1, ecologically important in terms of features, functions, representation, or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system.*

Based on the conditions observed during the site investigations, the on-site Drainage Feature is not associated with a valleyland. A review of topographic mapping (1 m contours) indicates that valleylands are also absent from adjacent lands.

3.6.6 Significant Wildlife Habitat

A specific definition of "wildlife habitat" or "significant" (in the context of wildlife habitat) is not provided within the Township's OP. For the purposes of identifying significant wildlife habitat on the subject property, we have applied the 2014 PPS definition from section. 6.0:

> **Wildlife habitat:** *means areas where plants, animals and other organisms live, and find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory or non-migratory species.*
>
> **Significant:** *means d) in regard to other features and areas in policy 2.1, ecologically important in terms of features, functions, representation, or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system.*

Our assessment of the potential for features on the subject property and adjacent lands to act as candidate significant wildlife habitat (SWH) is provided in **Appendix 7**. A total of three (3) SWH features or areas occur or have the potential to be present on the subject property: 1) Reptile Hibernaculum, 2) Terrestrial Crayfish, and 3) Special Concern and Rare Wildlife Species. The potential for negative impacts stemming from implementation of the development plan on these SWH features is assessed in **Section 4.2.2**.

3.6.7 Areas of Natural and Scientific Interest

A specific definition of "Areas of Natural and Scientific Interest" (ANSI) or "significant" (in the context of ANSI's) is not provided within the Township's OP. For the purposes of identifying ANSI's on the subject property and adjacent lands, we have applied the 2014 PPS definition from section. 6.0:

> **Areas of Natural and Scientific Interest:** means 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.
>
> **Significant:** *means 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*

A review of NHIC's Natural Areas Mapping database and the County's OP (Appendix B, Map 2) revealed that no ANSI's are present on the subject property or adjacent lands.

3.6.8 Coldwater and Warmwater Streams

No coldwater streams are present on the subject property or adjacent lands. One (1) warmwater stream, referred to herein as the "Drainage Feature", is present and was characterized in **Section 3.6.3**. Potential impacts to the Drainage Feature as a warmwater system stemming from implementation of the proposed development plan are reviewed in **Section 4.2.1**.

4 IMPACT ASSESSMENT AND RECOMMENDATIONS

4.1 Proposed Development Plan

Development features and areas of disturbance that form part of this draft plan of subdivision application include the following (as outlined in the bottom left corner of **Appendix 1**):

- 267 single detached lots (11.44 ha);
- Right-of-ways (3.78 ha);
- 6 park blocks (0.37 ha);
- 3 open space blocks (0.52 ha); and
- Future right of way (0.08 ha).

The open space blocks are situated within the recommended setback from the Drainage Feature (see **Section 4.2.1**).

4.2 Impact Assessment

Although the majority of the subject property contains limited potential to support features or species of conservation interest (given the extent of cropland), two (2) features of conservation interest have the potential to be impacted by the proposed development plan: 1) fish habitat and warmwater streams, and 2) potentially candidate Significant Wildlife Habitat. Based on the results of background information gathering and the site investigation, in concert with a review of the proposed draft plan of subdivision, the following sections outline the potential negative impacts to features and species of conservation interest on the subject property and adjacent lands.

4.2.1 Fish Habitat and Warmwater Stream (Drainage Feature)

In general, negative impacts to fish habitat that may be associated with implementation of the development plan as described in **Section 4.1** can result via the following processes:

- Land-based activities such as excavation, grading, use of industrial equipment, dewatering, and vegetation clearing. These activities may result in inputs of soil/sediment, nutrients, and toxic substances to the watercourses during construction, which may adversely affect water quality and fish habitat via increased turbidity, nutrient enrichment, contamination by toxic substances, changes in pH, etc.
- In-water activities that may be required during culvert installations for the two (2) proposed crossings of the Drainage Feature.
- Fish passage issues if culverts are undersized and create barriers to fish movement.
- Increased human activity/encroachment within the watercourses, which may result in channel bank degradation, dumping and material or other disturbances.

The establishment of ecologically appropriate development setbacks is an important first step in the protection of fish and aquatic habitat during and post-implementation of the proposed development plan. Given that the Drainage Feature is a warmwater system, RiverStone recommends the following measure:

- **A 15 m setback from the Drainage Feature be established from all residential lots as indicated on the proposed draft plan of subdivision (see Appendix 1). This area is to become open space.**

The potential for water quality impacts within the Drainage Feature related to inputs of sediment, nutrients, and toxic substances during construction can be greatly minimized via a comprehensive system of erosion and sediment control (ESC) measures. The most effective ESC system incorporates a multi-barrier approach, is adaptive and thereby responds to shifting site conditions, and involves regular inspection and monitoring. To protect both the Drainage Feature from water quality impacts during and post-construction, RiverStone recommends the following measures:

- **All sediment and erosion control measures should conform to the Erosion and Sediment Control guidelines for Urban Construction (December 2006).**
- **When native soil is exposed sediment and erosion control works, in the form of heavy-duty sediment fencing, be positioned along the edge of the areas to be developed, graded, and otherwise disturbed.**
- **Sediment fencing must be constructed of heavy material and solid posts, and be properly installed (trenched in) to maintain its integrity during inclement weather events.**
- **Additional sediment fencing and appropriate control measures must be available on site so that any breach can be immediately repaired.**
- **Regular inspection and monitoring will be necessary to ensure that the structural integrity and continued functioning of the sediment control measures is maintained (i.e., proper installation is not the only action necessary to satisfy the mitigation requirements).**
- **An onsite supervisor should be responsible for daily inspections of the sediment and erosion control measures and record the time and date of inspections, the status of the mitigation measures, and any repairs undertaken.**
- **Best Management practices should be utilized with all machinery and fill being imported to the subject property to ensure that material and tracks are free from invasive species (*Phragmites australis*, etc.).**
- **Machinery should arrive on site in clean condition and is to be checked and maintained free of fluid leaks.**
- **Machinery must be refueled, washed and serviced a minimum of 30 m from the Drainage Feature.**
- **Locate all fuel and other potentially deleterious substances a minimum of 30 m from the Drainage Feature. Minimize fuels and chemicals stored onsite and ensure a spills management plan and the associated spill response equipment is available on-site at all times for implementation in the event of a spill of deleterious material.**
- **Temporary storage locations of aggregate/fill material should be located no less than 30 m from the Drainage Feature. This material is to be contained by heavy-duty sediment fencing.**
- **Offloading of construction and aggregate/fill materials should be completed during fair weather conditions.**
- **All stockpiled topsoil/overburden should be piled in low piles and stabilized as quickly as possible (e.g., erosion-prone areas covered with textile) to minimize the potential for runoff and wind erosion.**
- **Removal of non-biodegradable erosion and sediment control materials once construction is complete and the site is stabilized.**

- **Qualified personnel should monitor all near-water construction activities.**

To maintain baseflow contributions to the Drainage Feature downstream of the subject property during and following culvert installation, RiverStone recommends the following:

- **The recommendations of the *Hydrogeological Study, Groundwater Monitoring and Water Balance Assessment* report (Soil Engineers Ltd., August 2016) be adhered to. This includes consideration for the use of clay collars or trench plugs within underground service trenches to mitigate the potential for a permanent lowering of the groundwater table (p. 27).**
- **Installed culverts should be open-bottom and span the bankfull width of the Drainage Feature to allow fish at all life stages to pass up and downstream under all flow conditions. Culverts should not generate backwater effects or increase stream velocity. Culverts must be embedded into the substrate.**
- **Culvert design should be reviewed by Grand River Conservation Authority and a Screening Assessment under the federal *Fisheries Act* should be undertaken.**
- **Culvert installation must respect the warm-water timing window (beginning July 1 and ending March 31).**

4.2.2 Candidate Significant Wildlife Habitat

According to the assessment outlined in **Appendix 7**, three (3) candidate significant wildlife habitat features may be present on the subject property or adjacent lands: 1) Reptile Hibernaculum, 2) Terrestrial Crayfish, and 3) Special Concern and Rare Wildlife Species. The potential for these features to be negatively impacted by implementation of the proposed development plan is assessed below.

4.2.2.1 Reptile Hibernaculum

Snakes in Ontario hibernate in areas where they are able to gain access to features located below the frost line or that do not freeze during winter months. The wide array of features that may function as hibernacula – including both natural (e.g., small mammal burrows, crevices in bedrock, etc.) and human-built features (e.g., rock piles, old stone foundations, etc.) – suggests that candidate snake hibernacula are present on many natural or rural properties across southern and central Ontario. Proper techniques for identifying snake hibernacula typically involve spring or fall surveys to identify congregations of snakes near their point of exit or emergence from a hibernaculum; however, such surveys may still produce a false negative (i.e., fail to successfully identify hibernacula) given the camouflaged, cryptic nature of snakes.

As noted in **Appendix 7**, candidate snake hibernacula on the subject property may exist within the hedgerows that delineate the southern boundary of the subject property. Small mammal burrows in the agricultural field are frequently disturbed by ploughing and would not be expected to function as hibernacula. No individuals or congregations of snakes were observed during any site investigation on the subject property carried out in spring 2016 (or adjacent lands in 2015), suggesting there is a low likelihood that any active hibernacula currently exist. To provide an added degree of protection to candidate snake hibernacula on the subject property, RiverStone recommends the following:

- **Should any congregation (i.e., 2 or more) of snakes be observed on the subject property during construction activities within the same general location during spring (April-early May) or fall (October), suggesting that an active hibernaculum may be present nearby, MNRF should be contacted for further advice.**

4.2.2.2 Terrestrial Crayfish

Two (2) species of crayfish in Ontario are considered "obligate burrowers", including the Chimney/Digger Crayfish (*Fallicambarus fodiens*) and Devil/Meadow Crayfish (*Cambarus diogenes*). These species excavate burrows in wetland or moist terrestrial environments, which are often topped by a "chimney" of mud pellets.

Two (2) crayfish "chimneys" were observed approximately 20-30 m from the edge of the Drainage Feature. Because the known range of the Devil/Meadow Crayfish is restricted to southwestern Ontario near Lake Erie (R. C. Guiasu et al. 1996), it is probable that the "chimneys" observed are associated with the Chimney/Digger Crayfish. Protection of the Drainage Feature and the recommended 15 m setback is expected to provide adequate protection to habitat for Chimney/Digger Crayfish on the subject property.

4.2.2.3 Special Concern and Rare Wildlife Species

According to the assessment in **Appendix 6**, a total of one (1) Special Concern species has the potential to be impacted by the development plan: Monarch (*Danaus plexippus*). A further assessment of this species and the potential habitat on the subject property and surrounding landscape included in **Appendix 6** indicates that significant habitat for these species will not be impacted by implementation of the development plan.

4.2.3 Other Natural Features and Functions

The proposed land use changes will result in the loss of vegetation (hedgerows and cultivated fields) within the proposed development envelope and limits of site alteration. Consequently, the ecological function of these areas will be impacted. The following measures are recommended to reduce adverse effects of development on the property's natural features and functions:

- **Vegetation removal and disturbance outside of the development envelopes should be minimized to the extent possible.**
- **Efforts to maintain existing trees along the northern boundary of the subject property should be considered and incorporated into detailed design to the extent possible.**
- **During construction, a defined access route should be used as the primary path for accessing the property and the internal lots to minimize soil disturbance.**
- **Implement a dust prevention strategy to reduce the development and spread of dust from the site. This may include dust suppression measures, such as promptly watering exposed areas when visible dust is observed.**
- **Vegetation removal (e.g., tree/shrub clearing, grading of existing meadows/hayfields, etc.) should be completed outside of the primary breeding bird nesting window (i.e., between April 15 and August 15). If vegetation removal occurs during this period, a nest survey should be conducted by a qualified biologist within 5 days of commencement of construction activities to identify and locate active nests of bird species covered by the federal *Migratory Bird Convention Act, 1994* or provincial *Fish and Wildlife Conservation Act, 1997*. If a nest is located or evidence of breeding noted, a mitigation plan should be developed to avoid any potential impacts on birds or their active nests. Mitigation may require establishing appropriate buffers**

around active nests or delaying construction activities until the conclusion of the nesting season.

5 CONFORMANCE WITH APPLICABLE ENVIRONMENTAL POLICIES

The following section summarizes the federal, provincial, and municipal environmental policies that are relevant to this draft plan of subdivision application, and describes how the recommendations provided in this report will ensure compliance of the proposed land-use changes with these policies.

5.1 Township of Southgate Official Plan (February 2009)

The Township's OP prescribes policies related to land-use and future development throughout the municipality. Policy 3.1.2 of the OP provides high-level direction related to the protection of natural heritage features:

> *3.1.2 Objectives*
>
> *1. To protect significant natural heritage features and areas including their associated ecological functions and features.*
>
> *2. To ensure that development and/or site alteration on lands adjacent to significant natural heritage features and areas, does not result in a negative impact on the natural features or their ecological functions.*

The Township's policies for protecting natural heritage features are outlined in section 6.0 under the heading "Natural Environment Area". These are summarized below:

> ***Provincially Significant Wetlands:*** *No development or site alteration permitted in provincially significant wetlands, except where such activity is associated with forestry (excluding logging) and uses connected with the conservation of water, soil, wildlife and other natural resources (s. 6.1.2[a]). No development or site alteration shall be permitted on adjacent lands located within 120 metres of an identified Provincially Significant Wetland (PSW), unless the proposed method of avoiding or mitigating the potential impacts, of such development on the adjacent resource is satisfactory to the Township of Southgate and/or other responsible approval authority (s. 6.1.2[b]).*
>
> ***Deer Wintering Areas:*** *Development or site alteration within or adjacent (50 metres) to deer wintering yards may be permitted provided an acceptable Environmental Impact Study is completed which demonstrates that there will be no negative impacts on the natural features or the ecological functions for which the area is identified.*
>
> ***Areas of Natural and Scientific Interest:*** *Development and site alteration may be permitted in Areas of Natural and Scientific Interest and in the adjacent lands (50 metres) provided an acceptable Environmental Impact Study is completed which demonstrates that there will be no negative impacts on the natural features or the ecological functions for which the area is identified.*
>
> ***Threatened and Endangered Species Habitat:*** *Development and site alteration within the significant habitat of threatened and endangered species will not be permitted. Development*

and site alteration adjacent to significant habitat of threatened and endangered species may be permitted provided an Environmental Impact Study is completed to the satisfaction of the Township of Southgate and the County of Grey which demonstrates that there will be no negative impacts on the natural features or ecological functions for which the area is identified.

Significant Wildlife Habitat: *Development and site alteration within or adjacent to significant wildlife habitats will require the completion of an Environmental Impact Study to the satisfaction of the Township of Southgate and the County of Grey which demonstrates that no negative impacts on the natural features or ecological functions of the area will occur.*

Coldwater and Warmwater Streams: *New development or site alteration shall not be permitted within 30 metres of a cold water stream or 15 metres of a warm water stream, except for the restoration or minor expansion of buildings or structures legally existing at the date of adoption of this Plan, or site alteration in association with a legally established use.*

Based on our identification of features of conservation interest on the subject property (**Section 3.6**), and our assessment of potential impacts to these features (**Section 4.2**), we have determined that no negative impacts to any features of conservation interest protected under the Township's OP is expected. As such, the proposed development is deemed to comply with the Natural Environment Area provisions of the Township's OP.

5.2 County of Grey Official Plan (Office Consolidation June 20, 2013)

The County's OP provides recommendations for promoting a sustainable natural environment across the County. Section 2.8 puts forth policies to identify and protect natural heritage features and hazard lands. Components of the County's natural heritage features and areas and their respective adjacent lands are defined in section 2.8.1:

- **Significant Habitat of Threatened or Endangered Species** – 50 metres
- **Significant Wetlands** – 120 metres
- **Other Identified Wetlands** – 30 metres
- **Fish Habitat** – 50 metres
- **Significant Woodlands** – 50 metres
- **Significant Valleylands** – 50 metres
- **Significant Wildlife Habitat** – 50 metres
- **Area of natural and Scientific Interest** – 50 metres

Policies that pertain to the protection of natural heritage features in the County's OP are consistent with what is provided under the Township's OP with the exception of Significant Woodlands (which are not directly afforded protection under the Township's OP):

Significant Woodlands: *No development or site alteration may occur within Significant Woodlands or their adjacent lands unless it has been demonstrated through an Environmental Impact Study, as per section 2.8.7 of this Plan, that there will be no negative impacts on the natural features or their ecological functions.*

As shown in **Section 3.6.4**, no Significant Woodlands are present on the subject property or adjacent lands. As stated in **Section 5.1**, no negative impacts to any feature of conservation interest occurring on or adjacent to the subject property is expected provided that RiverStone's recommendations are implemented in full. Given this, and the fact that the proposed development has been determined to be in compliance with the natural heritage provisions of the Township's OP, the proposed development is deemed to comply with the natural heritage provisions of Grey County's OP.

5.3 Provincial Policy Statement, pursuant to the Planning Act, R.S.O. 1990, c. P. 13

The Provincial Policy Statement (PPS) provides direction to municipalities on matters of provincial interest related to land-use planning under the *Planning Act, 1990*. Municipal OP's must be consistent with the PPS. The PPS instructs that natural features and areas shall be protected for the long term (s. 2.1.1) and that (s. 2.1.2):

> *The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.*

The PPS does not permit development and site alteration within the following natural heritage features in Ecoregion 6E (s. 2.1.4):

- Significant Wetlands in Ecoregions 5E, 6E and 7E: and
- Significant Coastal Wetlands

The PPS also does not permit development and site alteration within the following natural heritage features in Ecoregion 6E (s. 2.1.5) unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions:

- Significant Woodlands
- Significant Valleylands
- Significant Wildlife Habitat
- Significant Areas of Natural and Scientific Interest
- Non-Significant Coastal Wetlands

Additionally, the PPS does not permit development and site alteration in fish habitat and habitat of endangered and threatened species except in accordance with provincial and federal requirements (s. 2.1.6 and s. 2.1.7).

Finally, in regards to activities on lands adjacent to significant natural heritage features, the PPS states in s. 2.1.8:

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

The Township and County OP's afford an equivalent level of protection to the above-noted natural heritage features as is provided by the PPS. Given this, we can conclude that the proposed development is consistent with the natural heritage provisions of the PPS (s. 2.1).

5.4 Grand River Conservation Authority Regulation 150/06, pursuant to the Conservation Authorities Act, R.S.O. 1990, c. C.27

GRCA regulates development and site alteration activities within and adjacent to wetlands, watercourses, shorelines, floodplains, and valleylands. Subsection 2(1) of O. Reg. 150/06 affords GRCA the authority to regulate development within 15 m from the maximum floodplain limit, 120 m from wetlands greater than 2 ha, and 30 m from wetlands less than 2 ha. In addition to acting as an approval authority, GRCA reviews and provides comments to its member municipalities related to the protection of natural heritage features within municipal policy documents and development applications.

GRCA's regulated area is present on the subject property within and adjacent to the Drainage Feature and its associated floodplain. A permit under GRCA's regulation (i.e., O. Reg. 150/06) may be required prior to the commencement of construction activities on the subject property.

5.5 Provincial Endangered Species Act, S.O. 2007, c. 6

The *Endangered Species Act, 2007* (ESA) protects designated endangered and threatened species in Ontario from being killed, harmed, or harassed (s. 9) or having their habitat damaged or destroyed (s. 10). The protection afforded to endangered and threatened species "habitat" is defined as follows (s. 2[1])

> *(a) with respect to a species of animal, plant or other organism for which a regulation made under clause 55 (1) (a) is in force, the area prescribed by that regulation as the habitat of the species, or*
>
> *(b) with respect to any other species of animal, plant or other organism, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding,*
>
> *and includes places in the area described in clause (a) or (b), whichever is applicable, that are used by members of the species as dens, nests, hibernacula or other residences; ("habitat").*

Appendix 6 lists the species protected under provisions of the ESA that have the potential to occur in the area of interest or on the adjoining lands. As detailed in **Section 3.6.1** and **Appendix 6**, no Endangered or Threatened species are expected to be negatively impacted by implementation of the proposed development plan.

5.6 Federal Fisheries Act, R.S.C. 1985, c. F-14

Recent regulatory changes to the *Fisheries Act, 1985* require under subsection 35(1) that project activities be reviewed to determine if they have the potential to result in serious harm to fish that are part of a commercial, recreational, or Aboriginal fishery, or to fish that support such a fishery. Based on guidance documents provided by DFO, serious harm to fish includes:

- **direct fish mortality**,

- the **permanent alteration of fish habitat** at a spatial scale, duration or intensity that negatively impacts habitat used to carry out one or more of their life processes (i.e., spawning, nursery, or rearing grounds, food supply areas, mitigation corridors, etc.), and
- **destruction of fish habitat** at a spatial scale, duration or intensity such that fish can no longer utilize habitats necessary to carry out one or more of their life processes (i.e., spawning, nursery, or rearing grounds, food supply areas, mitigation corridors, etc.).

The installation of new culverts is considered an activity for which DFO review is likely required as indicated on DFO's online *Self-assessment* guidance. Once culvert designs have been finalized, a formal DFO *Request for Review* is therefore advised given the potential impacts culvert installation and design may have on fish habitat and fish passage. Assuming that RiverStone's recommendations for protecting fish habitat (**Section 4.2.1**) are implemented in full, the implementation of the proposed development plan is unlikely to cause serious harm to fish.

5.7 Federal Migratory Birds Convention Act, S.C. 1994, c. 22

Section 6 of the Migratory Birds Regulations under the *Migratory Birds Convention Act, 1994* (MBCA) prohibits the disturbance or destruction of nests, eggs, or nest shelters of a migratory bird. The provincial *Fish and Wildlife Conservation Act, 1997* extends the protection of bird nests and eggs to species that are not listed under the Migratory Birds Regulations (such as Corvids). Clearing of vegetation should be restricted to times outside of the period April 15 to August 15(see **Section 4.2.3**). Should this not be feasible, a nest survey and follow-up mitigation prior to any construction activities should be completed to prevent contravention of regulations under this Act. The above recommendations will ensure conformance of the development plan with the MBCA.

6 CONCLUSIONS

In accordance with the requirements of the Township of Southgate's Official Plan and other relevant municipal, provincial, and federal environmental policies, the preceding report summarizes the results of RiverStone's *Environmental Impact Study*. Through completion of this EIS RiverStone has endeavoured to characterize the existing ecological conditions of the subject property and adjacent lands, identify significant natural features wherever present, describe the proposed development plan, and provide and overall assessment of whether the plan conforms with relevant environmental policies listed in **Section 2.4**

Based upon the findings presented in this report and contingent upon the implementation of the recommendations made herein, it is our conclusion that the proposed development plan conforms with all relevant environmental policies, including the 2014 Provincial Policy Statement. We advise that the recommendations in this report (listed in **Section 4.2**) be incorporated into any future subdivision agreement or draft plan conditions for the lands.

7 REFERENCES

Armstrong, D. K. and J. E. P. Dodge. 2007. Paleozoic Geology of Southern Ontario. Miscellaneous Release -Data 219,

Bird Studies Canada. 2009. (February, 2009). Marsh Monitoring Program Participant's Handbook for Surveying Amphibians. 13 pp.

Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature. 2001. Ontario breeding bird atlas: guide for participants.

Bruce-Grey Plant Committee. 2010. A Checklist of Vascular Plants for Bruce and Grey Counties, Ontario. Owen Sound Field Naturalists.

Cadman, M. D., D. A. Sutherland, G. G. Beck, D. Lepage, and A. R. Couturier. 2007. Atlas of the Breeding Birds of Ontario, 2001–2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, Ontario Nature, Toronto.

Chapman, L. and D. F. Putnam. 2007. Physiography of southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 228.

Dobbyn, J. 1994. Atlas of the Mammals of Ontario. Federation of Ontario Naturalists. Toronto.

Fisheries and Oceans Canada. 2013. Fisheries Protection Policy Statement. Fisheries and Oceans Canada.

Gillespie, J. E. and N. R. Richards. 1954. Soil Survey of Grey County.

Gwyn, Q. H. J. 1975. Quaternary Geology of the Dundalk Area, Southern Ontario. Open File Report 5132, 138 pp.

Henson, B. L. and K. E. Brodribb. 2005. Great lakes conservation blueprint for terrestrial biodiversity, volume 2: ecodistrict summaries. 344 pp.

Lee, H. T., W. D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig, and S. McMurray. 1998. Ecological land classification for Southern Ontario: first approximation and its application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch.

OMNR. 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch (Wildlife Section) and Science Development and Transfer Branch (Southcentral Sciences Section).

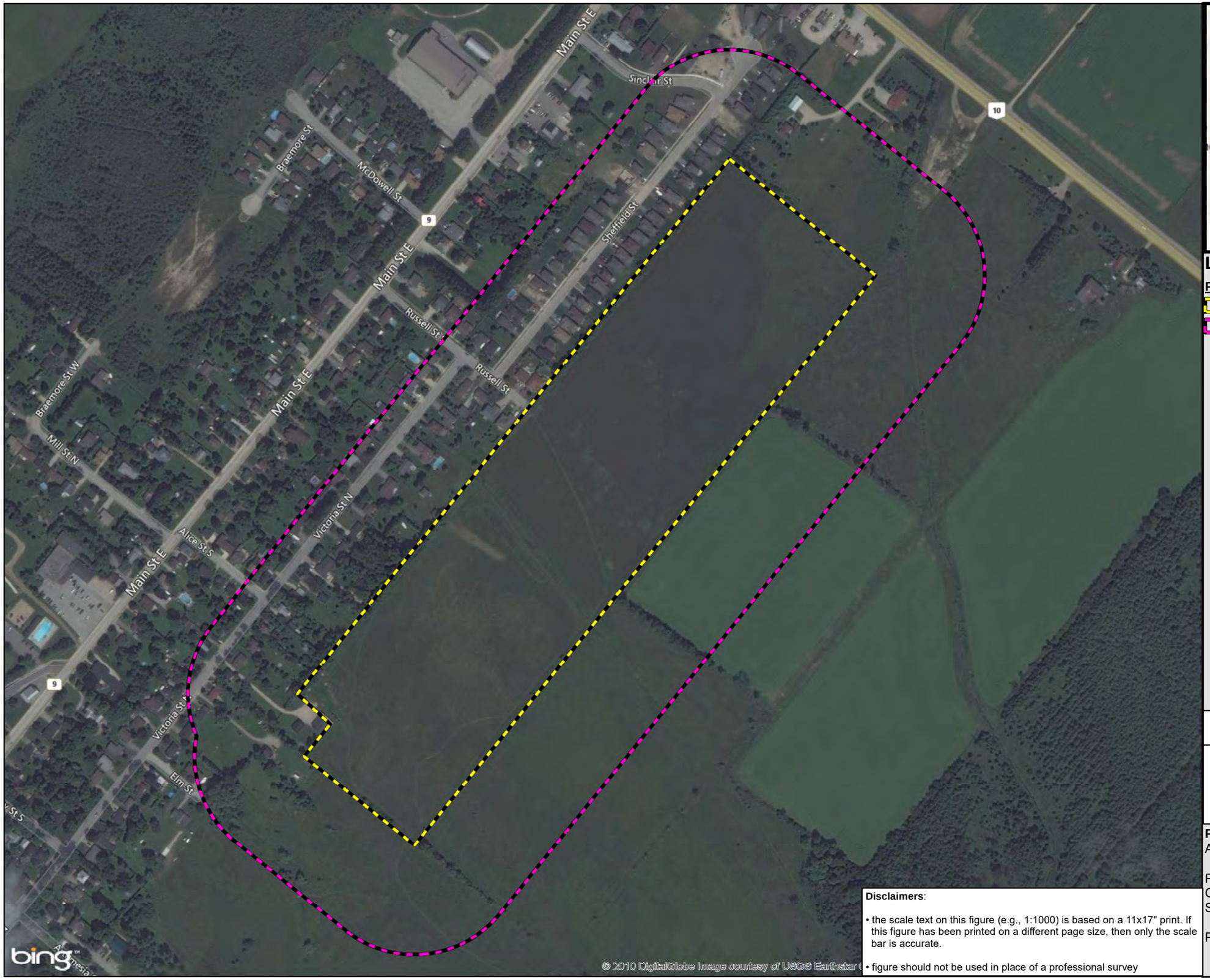
OMNR. 2010. Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second edition. Toronto: Queen's Printer for Ontario.

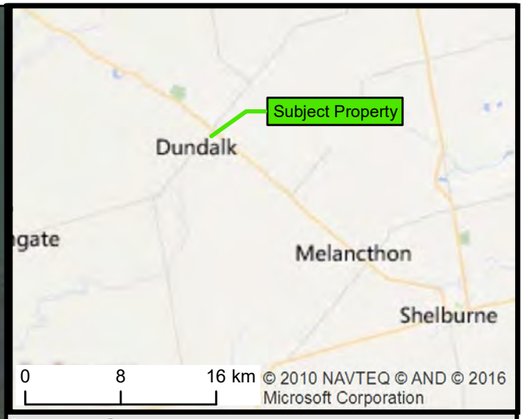
OMNRF. 2014. Significant Wildlife Habitat Mitigation Support Tool. Ontario Ministry of Natural Resources and Forestry. 533 pp.

OMNRF. 2015. Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E.

Phair, C., B. L. Henson, and K. E. Brodribb. 2005. Great lakes conservation blueprint for aquatic biodiversity: volume 2 - tertiary watershed summaries. 454 pp.

R. C. Guiasu, D. W. Barr, and D. W. Dunham. 1996. Distribution and Status of Crayfishes of the Genera Cambarus and Fallicambarus (Decapoda: Cambaridae) in Ontario, Canada. Journal of Crustacean Biology **16**.





Legend

Planning Boundaries

- Subject Property - Flato North
- Adjacent Lands - 120 m

N

Orthorectified aerial photo - August 2011

Scale	RS Project No.	Date Last Updated	By
1:4,000	2016-001	Aug 22, 2016	TK

0 60 120 Metres

RiverStone Environmental Solutions Inc

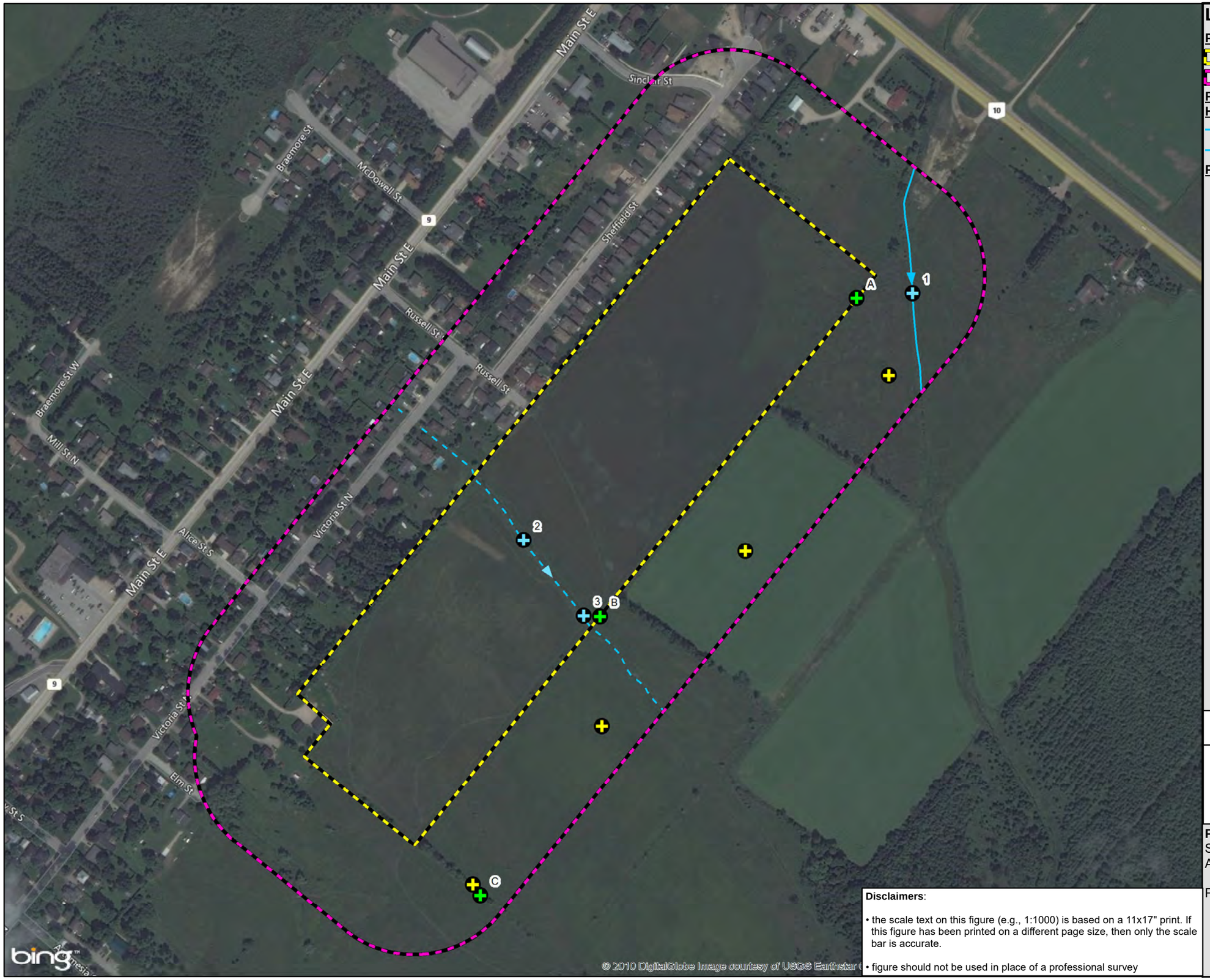
Figure 1. Location of the Subject Property and Adjacent Lands.

Part of Lot 232, Concession 1, S.W.T.S.R, Geographic Township of Proton, Township of Southgate, County of Grey.

Prepared for 2358737 Ontario Inc.

Disclaimers:

- the scale text on this figure (e.g., 1:1000) is based on a 11x17" print. If this figure has been printed on a different page size, then only the scale bar is accurate.
- figure should not be used in place of a professional survey



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Planning Boundaries

- Subject Property - Flato North
- Adjacent Lands - 120 m

Features with Recognized High Natural Heritage Value - Identified by RiverStone

- Drainage Feature
- James Foley Drain

Field Data Collection Sites

- Breeding Bird Monitoring Stations
- Anuran Monitoring Stations
- Aquatic Habitat Monitoring Stations

Orthorectified aerial photo - August 2011

Scale	RS Project No.	Date Last Updated	By
1:4,000	2016-001	Aug 22, 2016	TK

0 60 120 Metres

RiverStone Environmental Solutions Inc.

Figure 2. Locations of Breeding Bird Monitoring Stations, Anuran Calling Stations, and Aquatic Habitat Assessment Stations.

Prepared for 2358737 Ontario Inc.

Disclaimers:

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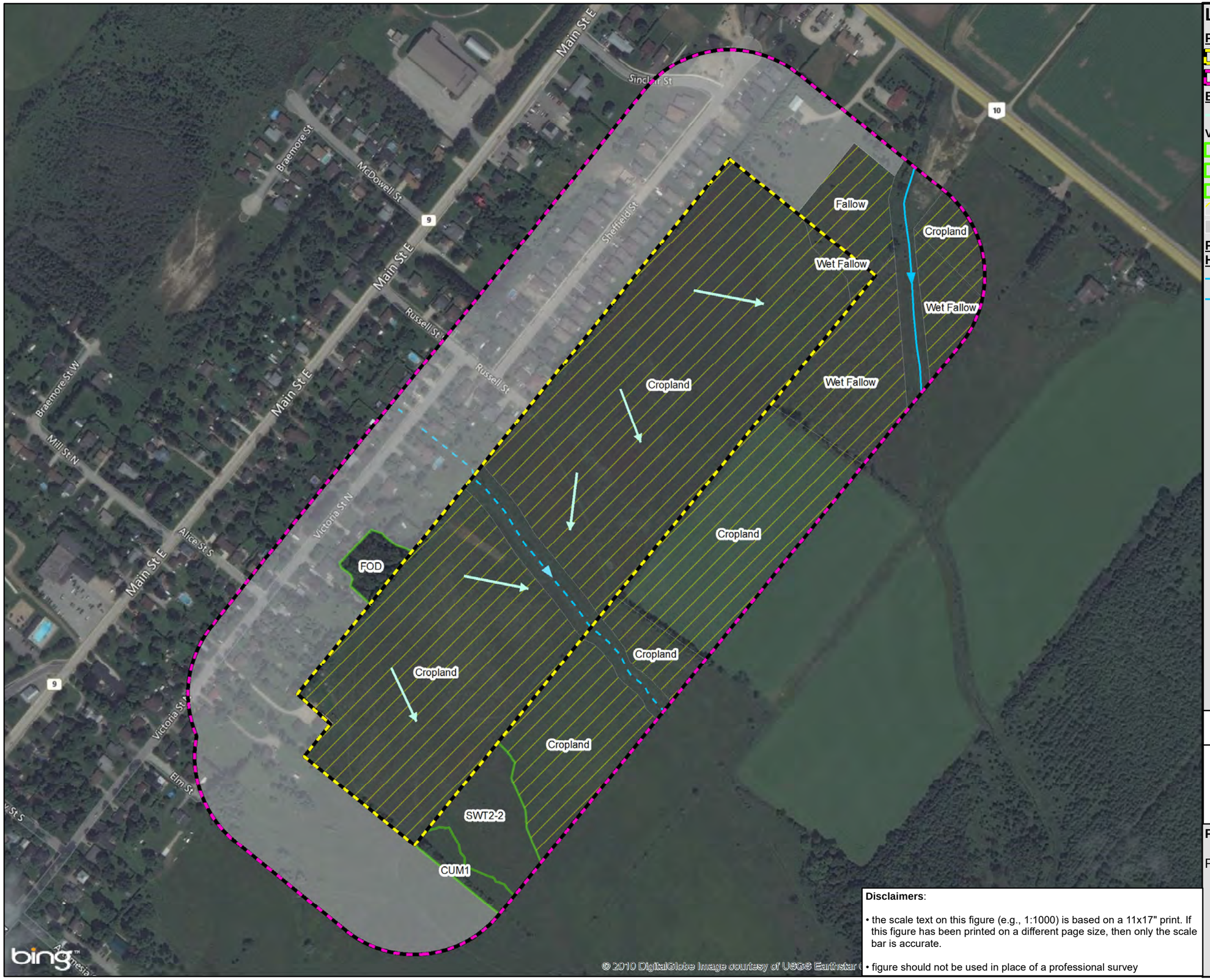

Legend

Planning Boundaries

- Subject Property - Flato North
- Adjacent Lands - 120 m

Biophysical Features+Functions-RiverStone

- Direction of Overland Drainage

Vegetation Communities

- FOD: Deciduous Forest
- CUM1: Mineral Cultural Meadow
- SWT2-2: Willow Mineral Thicket Swamp
- Agricultural Lands
- Residential Developments

Features with Recognized High Natural Heritage Value - Identified by RiverStone

- Drainage Feature
- James Foley Drain

N

Orthorectified aerial photo - August 2011

Scale	RS Project No.	Date Last Updated	By
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Figure 3. Biophysical Features and Functions.

Prepared for 2358737 Ontario Inc.

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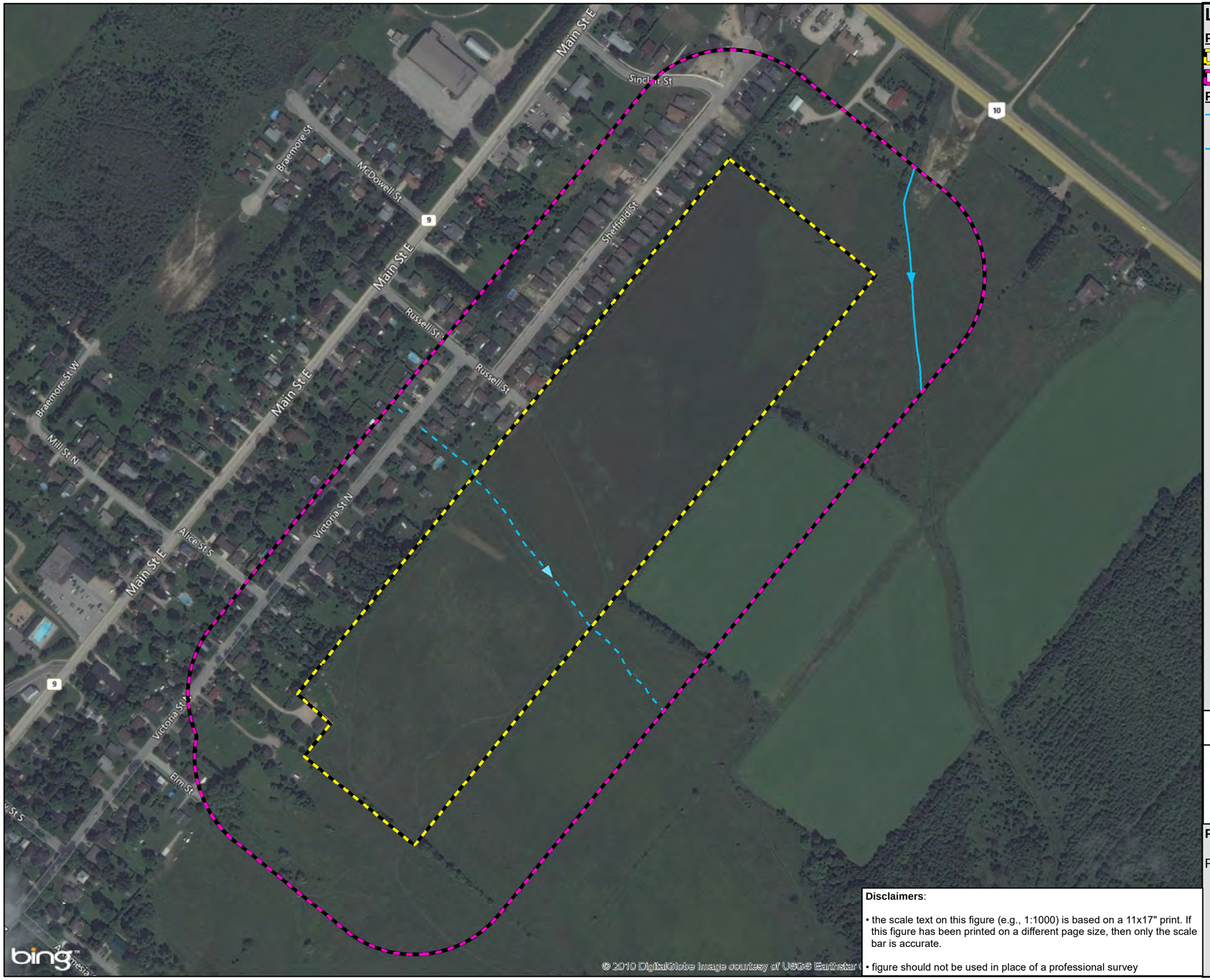

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Planning Boundaries

- Subject Property - Flato North
- Adjacent Lands - 120 m

Features of Conservation Interest

- Fish Habitat and Warmwater Stream - Drainage Feature
- Fish Habitat and Warmwater Stream - James Foley Drain

Orthorectified aerial photo - August 2011

Scale	RS Project No.	Date Last Updated	By
1:4,000	2016-001	Aug 22, 2016	TK

0 60 120 Metres

RiverStone Environmental Solutions Inc

Figure 4. Features of Conservation Interest.

Prepared for 2358737 Ontario Inc.

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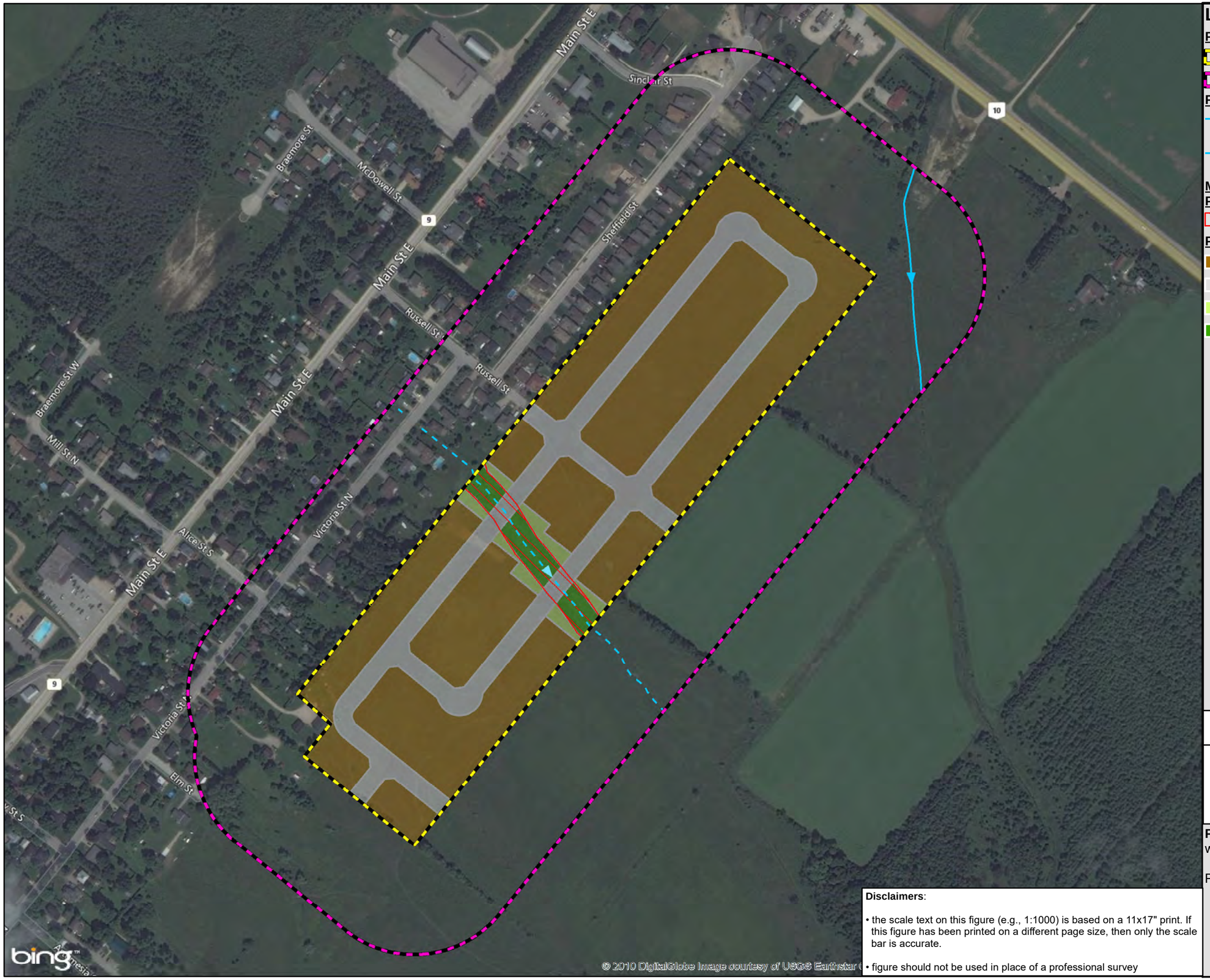

Legend

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Planning Boundaries

- Subject Property - Flato North
- Adjacent Lands - 120 m

Features of Conservation Interest

- Fish Habitat and Warmwater Stream - Drainage Feature
- Fish Habitat and Warmwater Stream - James Foley Drain

Measures Recommended by RiverStone to Prevent and/or Reduce Impacts

- 15 m Setback - Drainage Feature

Proposed Draft Plan of Subdivision

- Residential Lots
- Roads
- Park
- Open Space

Orthorectified aerial photo - August 2011

Scale	RS Project No.	Date Last Updated	By
1:4,000	2016-001	Aug 22, 2016	TK

0 60 120 Metres

RiverStone Environmental Solutions Inc.

Disclaimers:

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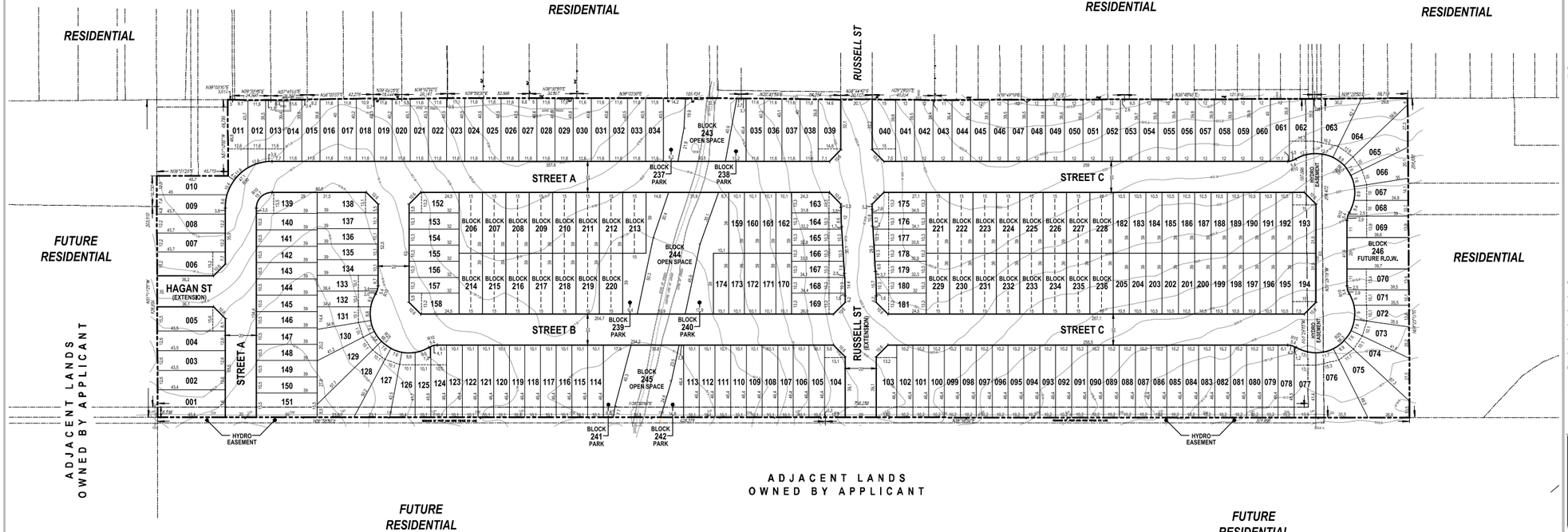
- figure should not be used in place of a professional survey

Figure 5. Proposed Draft Plan of Subdivision overlaid with Measures Recommended by RiverStone.

Prepared for 2358737 Ontario Inc.

Appendix 1. Proposed Draft Plan of Subdivision.



LAND USE SUMMARY

LAND USE	LOTS / BLOCKS	UNITS	AREA
SINGLE DETACHED - 10.0m LOTS	065-074, 077-205	139	6.17 ha
SINGLE DETACHED - 11.6m LOTS	001-064, 075, 076	66	3.46 ha
SEMI DETACHED - 15.0m BLOCKS	206-236	62	1.81 ha
PARK	237-242		0.37 ha
OPEN SPACE	243-245		0.52 ha
FUTURE RIGHT OF WAY	246		0.08 ha
RIGHT OF WAY			3.78 ha
TOTALS		267	16.19 ha

LEGAL DESCRIPTION

PART OF LOT 232, CONCESSION 1
SOUTHWEST OF THE TORONTO AND SYDENHAM ROAD
GEOGRAPHIC TOWNSHIP OF PROTON
TOWNSHIP OF SOUTHGATE
COUNTY OF GREY

OWNER'S CERTIFICATE

I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: AUGUST 11, 2016

SHAKIR REHMATULLAH - PRESIDENT
FLATO DUNDALK MEADOWS INC.

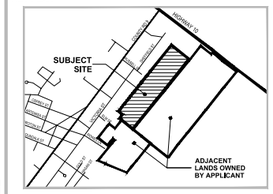
SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: AUGUST 11, 2016

DAN DZALDOV, O.L.S., O.L.I.P.
SCHAEFFER DZALDOV BENNETT LTD.
416-987-0101

KEY PLAN



LEGEND

- BOUNDARY LINE
- RIGHT OF WAY LINE
- BLOCK LINE
- LOT LINE
- UNIT LINE
- LEGAL FABRIC
- EASEMENT
- OVERHEAD HYDRO
- FENCE
- CREEK
- WOODED AREA

No.	DATE	ISSUED FOR REVIEW	BY
1	AUG, 11, 2016	ISSUED FOR REVIEW	M.M.

REVISION No.	DATE	ISSUED / REVISION	BY

ADDTIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT R.S.O. 1990 C.P.13 AS AMENDED

- A. AS SHOWN
- B. AS SHOWN
- C. AS SHOWN
- D. RESIDENTIAL
- E. AS SHOWN
- F. AS SHOWN
- G. AS SHOWN
- H. MUNICIPAL WATER SUPPLY
- I. SILT LOAM
- J. AS SHOWN
- K. MUNICIPAL WATER AND SANITARY SERVICES. ALL MUNICIPAL SERVICES AS REQUIRED.
- L. AS SHOWN

113 COLLIER STREET
BARRIE, ON, L4M 1H2
P: 705 728 0045 F: 705 728 2010
WWW.MHBCPLAN.COM

PLANNING
URBAN DESIGN
& LANDSCAPE
ARCHITECTURE
MHBC PLANNING

STAMP

DATE	AUGUST 11, 2016
FILE No.	15184C
SCALE	1:1,400 (ARCH D)
DRAWN BY	M.M.
CHECKED BY	K.M.
OTHER	

PROJECT

FLATO NORTH

FLATO GROUP INC.
3621 HIGHWAY 7 EAST, SUITE 503
MARKHAM, ON L3R 0G6
P:(905) 479-9292 F:(905) 429-9165
WWW.FLATOGROUP.COM

NORTH

FILE NAME

DRAFT PLAN OF SUBDIVISION

DWG No. 1 of 1

SCALE BAR

0 10 20 30 40 50 75 100 150

MEASUREMENTS SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

N:\Southgate\Flato North – 15184C\Drawings\Draft Plan\CAD\15184C_DraftPlan_2016-08-11.dwg

Appendix 2. Representative Site Photographs.

Photo 1. Northern boundary of the subject property looking west (June 7, 2016).

Photo 2. Cultivated fields in the southwest corner of the subject property, looking north (June 7, 2016).

Photo 3. Treed area in the northeastern corner of the subject property, looking north (Jun 7, 2016).

Photo 4. Northern boundary of the subject property looking west (Jun 7, 2016).

Photo 5. Drainage Feature as it enters the subject property, looking north (Jun 7, 2016).

Photo 6. Drainage Feature near the northern property boundary, looking south (Jun 7, 2016).

Photo 7. Drainage Feature near the southern property boundary, looking north (Jun 7, 2016).

Photo 8. Minimal standing water within the Drainage Feature (Jun 7, 2016).

Photo 9. Chimney Crayfish burrow (Jun 7, 2016).

Photo 10. Growth of soybeans on the subject property by mid-summer (July 12, 2016).

Appendix 3. Vascular Plant Species Recorded.

Scientific Name	English Common Name	Family	S-Rank	Exotic Status
Acer negundo	Manitoba Maple	Aceraceae	S5	
Acer platanoides	Norway Maple	Aceraceae	SNA	SE5
Acer saccharum	Sugar Maple	Aceraceae	S5	
Achillea millefolium	Common Yarrow	Asteraceae	SNA	SE
Aegopodium podagraria	Goutweed	Apiaceae	SNA	SE5
Agrimonia gryposepala	Hooked Agrimony	Rosaceae	S5	
Alisma triviale	Northern Water-plantain	Alismataceae	S5	
Asclepias syriaca	Common Milkweed	Asclepiadaceae	S5	
Barbarea vulgaris	Bitter Wintercress	Brassicaceae	SNA	SE5
Bromus inermis	Awnless Brome	Poaceae	SNA	SE5
Carex bebbii	Bebb's Sedge	Cyperaceae	S5	
Carex flava	Yellow Sedge	Cyperaceae	S5	
Carex gracillima	Graceful Sedge	Cyperaceae	S5	
Carex granularis	Meadow Sedge	Cyperaceae	S5	
Carex hystericina	Porcupine Sedge	Cyperaceae	S5	
Carex pseudocyperus	Cyperus-like Sedge	Cyperaceae	S5	
Carex stipata	Awl-fruited Sedge	Cyperaceae	S5	
Carex vulpinoidea	Fox Sedge	Cyperaceae	S5	
Cirsium arvense	Canada Thistle	Asteraceae	SNA	SE5
Cornus stolonifera	Red-osier Dogwood	Cornaceae	S5	
Dactylis glomerata	Orchard Grass	Poaceae	SNA	SE5
Epilobium hirsutum	Hairy Willowherb	Onagraceae	SNA	SE5
Equisetum arvense	Field Horsetail	Equisetaceae	S5	
Erigeron philadelphicus	Philadelphia Fleabane	Asteraceae	S5	
Eutrochium maculatum var. maculatum	Spotted Joe Pye Weed	Asteraceae	S5	
Fragaria virginiana	Wild Strawberry	Rosaceae	S5	
Fraxinus pennsylvanica	Green Ash	Oleaceae	S4	
Galium mollugo	Smooth Bedstraw	Rubiaceae	SNA	SE5
Glechoma hederacea	Ground Ivy	Lamiaceae	SNA	SE5
Glyceria striata	Fowl Mannagrass	Poaceae	S5	
Hesperis matronalis	Dame's Rocket	Brassicaceae	SNA	SE5
Inula helenium	Elecampane	Asteraceae	SNA	SE5
Juncus articulatus	Jointed Rush	Juncaceae	S5	

Scientific Name	English Common Name	Family	S-Rank	Exotic Status
Juncus dudleyi	Dudley's Rush	Juncaceae	S5	
Lonicera tatarica	Tartarian Honeysuckle	Caprifoliaceae	SNA	SE5
Lotus corniculatus	Garden Bird's-foot Trefoil	Fabaceae	SNA	SE5
Lysimachia ciliata	Fringed Loosestrife	Primulaceae	S5	
Malus pumila	Common Apple	Rosaceae	SNA	SE4
Medicago lupulina	Black Medic	Fabaceae	SNA	SE5
Medicago sativa	Alfalfa	Fabaceae	SNA	SE5
Myosotis scorpioides	True Forget-me-not	Boraginaceae	SNA	SE5
Nasturtium officinale	Watercress	Brassicaceae	SNA	SE
Oenothera biennis	Common Evening Primrose	Onagraceae	S5	
Parthenocissus quinquefolia	Virginia Creeper	Vitaceae	S4?	
Pastinaca sativa	Wild Parsnip	Apiaceae	SNA	SE5
Phalaris arundinacea	Reed Canary Grass	Poaceae	S5	
Phleum pratense	Common Timothy	Poaceae	SNA	SE5
Pilosella caespitosa	Meadow Hawkweed	Asteraceae	SNA	SE5
Pinus strobus	Eastern White Pine	Pinaceae	S5	
Pinus sylvestris	Scotch Pine	Pinaceae	SNA	SE5
Plantago lanceolata	English Plantain	Plantaginaceae	SNA	SE5
Platanthera aquilonis	Tall Northern Green Orchid	Orchidaceae	S5	
Poa palustris	Fowl Bluegrass	Poaceae	S5	
Poa pratensis ssp. pratensis	Kentucky Bluegrass	Poaceae	S5	
Prunus serotina	Wild Black Cherry	Rosaceae	S5	
Prunus virginiana	Choke Cherry	Rosaceae	S5	
Ranunculus acris	Tall Buttercup	Ranunculaceae	SNA	SE5
Rubus allegheniensis	Alleghany Blackberry	Rosaceae	S5	
Rubus idaeus ssp. strigosus	Wild Red Raspberry	Rosaceae	S5	
Rumex crispus	Curly Dock	Polygonaceae	SNA	SE5
Salix bebbiana	Bebb's Willow	Salicaceae	S5	
Salix discolor	Pussy Willow	Salicaceae	S5	
Salix petiolaris	Meadow Willow	Salicaceae	S5	
Salix petiolaris	Meadow Willow	Salicaceae	S5	
Salix purpurea	Basket Willow	Salicaceae	SNA	SE4
Schoenoplectus tabernaemontani	Soft-stemmed Bulrush	Cyperaceae	S5	

Appendix 3. List of Vascular Plants Observed by RiverStone on the Flato North Subject Property in 2016.

Scientific Name	English Common Name	Family	S-Rank	Exotic Status
Solidago altissima ssp. altissima	Eastern Late Goldenrod	Asteraceae	S5	
Solidago rugosa var. rugosa	Northern Rough-leaved Goldenroc	Asteraceae	S5	
Sorbus aucuparia	European Mountain-ash	Rosaceae	SNA	SE4
Symphyotrichum lanceolatum ssp. lanceolatum	Panicled Aster	Asteraceae	S5	
Symphyotrichum novae-angliae	New England Aster	Asteraceae	S5	
Syringa vulgaris	Common Lilac	Oleaceae	SNA	SE5
Taraxacum officinale	Common Dandelion	Asteraceae	SNA	SE5
Tragopogon pratensis	Meadow Goat's-beard	Asteraceae	SNA	SE5
Trifolium repens	White Clover	Fabaceae	SNA	SE5
Typha angustifolia	Narrow-leaved Cattail	Typhaceae	SNA	SE5
Typha latifolia	Broad-leaved Cattail	Typhaceae	S5	
Ulmus americana	American Elm	Ulmaceae	S5	
Viburnum nudum	Smooth Witherod	Caprifoliaceae	S5	
Vicia cracca	Tufted Vetch	Fabaceae	SNA	SE5

Appendix 4. Bird Species Recorded on the Subject Property and Adjacent Lands.

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Appendix 4. Bird Species Recorded on Adjacent Lands to the south of the Subject Property in 2015 ("Flato East") and incidentally in 2016.

Common Name	Scientific Name	Location of Observation	Recognized Status in Ontario
Alder Flycatcher	*Empidonax alnorum*	Adjacent lands	
American Bittern	*Botaurus lentiginosus*	Adjacent lands	Indicator of Marsh Bird Breeding Habitat
American Goldfinch	*Carduelis tristis*	Adjacent lands	
American Redstart	*Setophaga ruticilla*	Subject Property	
American Robin	*Turdus migratorius*	Adjacent lands	
American Woodcock	*Scolopax minor*	Adjacent lands	
Black-capped Chickadee	*Poecile atricapillus*	Adjacent lands	
Blue Jay	*Cyanocitta cristata*	Adjacent lands	
Bobolink	*Dolichonyx oryzivorus*	Adjacent lands	Threatened Species
Cedar Waxwing	*Bombycilla cedrorum*	Subject Property	
Chipping Sparrow	*Spizella passerina*	Subject Property and Adjacent lands	
Common Crow	*Corvus brachyrhynchos*	Adjacent lands	
Common Grackle	*Quiscalus quiscula*	Subject Property and Adjacent lands	
Common Nighthawk	*Chordeiles minor*	Adjacent lands	Special Concern Species
Common Snipe	*Gallinago gallinago*	Adjacent lands	
Common Yellowthroat	*Geothlypis trichas*	Subject Property and Adjacent lands	
Eastern Kingbird	*Tyrannus tyrannus*	Adjacent lands	
Eastern Meadowlark	*Sturnella magna*	Adjacent lands	Threatened Species
European Starling	*Sturnus vulgaris*	Subject Property and Adjacent lands	
Field Sparrow	*Spizella pusilla*	Adjacent lands	Indicator of Open Country Bird Breeding Habitat
Grasshopper Sparrow	*Ammodramus savannarum*	Adjacent lands	Special Concern Species; Indicator of Open Country Bird Breeding Habitat
Mallard	*Anas platyrhynchos*	Adjacent lands	
Mourning Dove	*Zenaida macroura*	Subject Property and Adjacent lands	
Northern Flicker	*Colaptes auratus*	Adjacent lands	
Red-eyed Vireo	*Vireo olivaceus*	Adjacent lands	
Red-winged Blackbird	*Agelaius phoeniceus*	Adjacent lands	

Appendix 4. Bird Species Recorded on Adjacent Lands to the south of the Subject Property in 2015 ("Flato East") and incidentally in 2016.

Common Name	Scientific Name	Location of Observation	Recognized Status in Ontario
Ring-billed Gull	*Larus delawarensis*	Adjacent lands	
Rough-winged Swallow	*Stelgidopteryx serripennis*	Adjacent lands	
Savannah Sparrow	*Passerculus sandwichensis*	Subject Property and Adjacent lands	Indicator of Open Country Bird Breeding Habitat
Song Sparrow	*Melospiza melodia*	Subject Property and Adjacent lands	
Tree Swallow	*Spizella arborea*	Subject Property and Adjacent lands	
Vesper Sparrow	*Pooecetes gramineus*	Adjacent lands	Indicator of Open Country Bird Breeding Habitat
Yellow Warbler	*Setophaga petechia*	Adjacent lands	

Appendix 5. MNRF Information Requests.

Tristan Knight

From: Dodge, Kathy (MNRF) <kathy.dodge@ontario.ca>
Sent: Wednesday, November 4, 2015 9:19 AM
To: Tristan Knight
Cc: Scheifley, Jody (MNRF); Bev Wicks
Subject: RE: Information Request

Categories: 2015-103 Dundalk Flato Developments 2

Hi Tristan-

I have checked our records and we do not have any additional SAR information specific to that site.

As you have indicated, Bobolink and Eastern Meadowlark are potential species to be present on site. Also consider,

Henslow Sparrow
Monarch Butterfly
Milksnake

If you have any questions, please feel free to give me a call.
Kathy

Kathy Dodge
Management Biologist
Ministry of Natural Resources and Forestry
Owen Sound Field Office
519-371-8422

From: Tristan Knight [mailto:tristan@rsenviro.ca]
Sent: Monday, November 02, 2015 10:46 AM
To: Dodge, Kathy (MNRF)
Cc: Scheifley, Jody (MNRF); Bev Wicks
Subject: FW: Information Request

Hi Kathy,

Thanks for responding to my call this morning. See the information request for SAR records at the Dundalk study site below; a study area map is also attached.

Cheers,
T.

Tristan Knight M.Sc.
Ecologist | Botanist
RiverStone Environmental Solutions Inc.

Appendix 6. Assessment of Habitat and Potential Impacts to Species of Conservation Interest.

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Habitat-based Approach

Properly assessing whether an area is likely to contain species of conservation interest for the purposes of determining whether a proposed development is likely to have a negative impact is becoming more difficult as the number of listed species increases. Approaches that depend solely on documenting the presence of individuals of a species in an area almost always underrepresent the biodiversity actually present because of the difficulty of observing species that are usually rare and well camouflaged. Given these difficulties, and the importance of protecting habitats of SAR, fish, and other species of conservation interest, RiverStone's primary approach to site assessment is habitat-based. This means that our field investigations focus on *evaluating the potential for features within an area of interest to function as habitat for species considered potentially present*, *rather than searching for live specimens*. An area is considered potential habitat if it satisfies a number of criteria, usually specific to a species, but occasionally characteristic of a broader group (e.g., several turtles of conservation interest use sandy shorelines for nesting, numerous fish species use areas of aquatic vegetation for nursery habitat). Physical attributes of a site that can be used as indicators of its potential to function as habitat for a species include structural characteristics (e.g., physical dimensions of rock fragments or trees, water depth), ecological community (e.g., meadow marsh, rock barren, coldwater stream), and structural connectivity to other habitat features required by the species. Species-specific habitat preferences and/or affinities are determined from status reports produced by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), Cadman et al. (2007), published and unpublished documents, and direct experience.

Table 1 provides RiverStone's desktop screening and on-site assessment for species- and ecological communities of conservation interest. RiverStone measures species- and feature-specific distances from the boundaries of proposed lots or development area(s)—rather than from the boundary of the significant natural heritage feature—and refers to this area as *adjoining lands* (AL). Evaluating the likelihood of species' presence and the potential for negative impacts using this approach ensures that the Adjacent Lands test of the PPS will be met.

For the purposes of RiverStone's assessment, the *subject property* as shown in **Figure 1** is referred to as the Area of Interest (AOI) and the adjoining lands (AL) extents were measured from the boundaries of the AOI.

Table 2 provides RiverStone's recommended mitigation measures, and a determination of whether the likelihood or risk of negative impacts is acceptable after considering all relevant factors (e.g., conservation status of species or habitat, sensitivity to disturbance).

Common Name[1]	Scientific Name	Step 1 (Desktop): Rationale for considering	Step 2 (Desktop): Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from aerial photography and other information sources indicate that potential habitat or communities might be present? Area of Interest (AOI)	Step 2 (Desktop): Adjoining Lands (AL)	Step 3 (On Site): Potential and/or confirmed habitat documented during on-site assessment Area of Interest (AOI)	Step 3 (On Site): Adjoining Lands (AL)	Step 4: Is there potential for the species, its habitat, or ecological community to be negatively impacted by the activities that would be permissible within the AOI?
Endangered & Threatened (Provincially): status from Species at Risk in Ontario List (O Reg 230/08); updated July 2016							
Bobolink	*Dolichonyx oryzivorus*	NHIC Database, OBBA	YES, suitable grassland or agricultural communities may be present.	YES, suitable grassland or agricultural communities may be present.	NO, open communities on the subject property consist exclusively of soybean fields.	NO, open communities on adjacent lands are mostly cropped (south) or currently being developed (west).	NO, see step 3.
Chimney Swift	*Chaetura pelagica*	Range Map	YES, dark sheltered hollow vertical structures (e.g., chimneys, large trees with cavities, snags, etc.) suitable for nesting or roosting may be present.	YES, dark sheltered hollow vertical structures (e.g., chimneys, large trees with cavities, snags, etc.) suitable for nesting or roosting may be present.	NO, the subject property lacks features that could support nesting or roosting by this species. The limited woody vegetation that may need to be cleared along existing hedgerows consists mostly of trees < 25 cm DBH.	YES, dark sheltered hollow vertical structures (e.g., chimneys, large trees with cavities, snags, etc.) suitable for nesting or roosting may be present.	NO, the subject property lacks features that could support nesting or roosting by this species. The limited woody vegetation that may need to be cleared along existing hedgerows consists mostly of trees < 25 cm DBH.
Barn Swallow	*Hirundo rustica*	OBBA	YES, man-made or natural structures suitable for nesting may be present.	YES, man-made or natural structures suitable for nesting may be present.	NO, although a small structure near the northwest corner of the subject property is present, birds do not have access into the interior of this structure and no Barn Swallow nests were observed. No Barn Swallows were observed incidentally on the subject property in 2016 or on adjacent lands in 2015.	NO, man-made or natural structures suitable for nesting are absent.	NO, see step 3.
Eastern Meadowlark	*Sturnella magna*	OBBA	YES, suitable grassland or agricultural communities may be present.	YES, suitable grassland or agricultural communities may be present.	NO, open communities on the subject property consist exclusively of soybean fields.	NO, open communities on adjacent lands are mostly cropped (south) or currently being developed (west).	NO, see step 3.
Henslow's Sparrow	*Ammodramus henslowii*	MNRF Information Request	YES, suitable grassland or agricultural communities may be present.	YES, suitable grassland or agricultural communities may be present.	NO, open communities on the subject property consist exclusively of soybean fields.	NO, open communities on adjacent lands are mostly cropped (south) or currently being developed (west).	NO, see step 3.
Bank Swallow	*Riparia riparia*	OBBA	YES, man-made or natural structures suitable for nesting may be present.	YES, man-made or natural structures suitable for nesting may be present.	NO, man-made or natural structures suitable for nesting are absent.	NO, man-made or natural structures suitable for nesting are absent.	NO, see step 3.
Little Brown Bat	*Myotis lucifugus*	Range Map, Habitat Features Present	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting may be present.	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting may be present.	NO, the subject property lacks features that could support gestating or roosting by this species. The limited woody vegetation that may need to be cleared along existing hedgerows consists mostly of trees < 25 cm DBH.	NO, dark sheltered hollow vertical structures (large trees with cavities) suitable for nesting or roosting are absent.	NO, see step 3.
Eastern Small-footed Myotis	*Myotis leibii*	Range Map, Habitat Features Present	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting may be present.	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting may be present.	NO, the subject property lacks features that could support gestating or roosting by this species. The limited woody vegetation that may need to be cleared along existing hedgerows consists mostly of trees < 25 cm DBH.	NO, dark sheltered hollow vertical structures (large trees with cavities) suitable for nesting or roosting are absent.	NO, see step 3.
Northern Long-eared Bat	*Myotis septentrionalis*	Range Map, Habitat Features Present	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting may be present.	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting may be present.	NO, the subject property lacks features that could support gestating or roosting by this species. The limited woody vegetation that may need to be cleared along existing hedgerows consists mostly of trees < 25 cm DBH.	NO, dark sheltered hollow vertical structures (large trees with cavities) suitable for nesting or roosting are absent.	NO, see step 3.

[1]Shaded rows denote species or communities for which negative impacts have been deemed possible.

Common Name[1]	Scientific Name	Step 1 (Desktop): Rationale for considering	Step 2 (Desktop): Do site-specific attributes (e.g., ecological system and landscape configuration) assessed from aerial photography and other information sources indicate that potential habitat or communities might be present? Area of Interest (AOI)	Step 2 (Desktop): Adjoining Lands (AL)	Step 3 (On Site): Potential and/or confirmed habitat documented during on-site assessment Area of Interest (AOI)	Step 3 (On Site): Adjoining Lands (AL)	Step 4: Is there potential for the species, its habitat, or ecological community to be negatively impacted by the activities that would be permissible within the AOI?
Tri-colored Bat	*Perimyotis subflavus*	Range Map, Habitat Features Present	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting may be present.	YES, dark sheltered hollow vertical structures (e.g., large trees with cavities or rock crevices) suitable for gestating or roosting may be present.	NO, the subject property lacks features that could support gestating or roosting by this species. The limited woody vegetation that may need to be cleared along existing hedgerows consists mostly of trees < 25 cm DBH.	NO, dark sheltered hollow vertical structures (large trees with cavities) suitable for nesting or roosting are absent.	NO, see step 3.
Butternut	*Juglans cinerea*	Range Map, Habitat Features Present	YES, difficult to rule out without on-site assessment.	YES, difficult to rule out without on-site assessment.	NO, species was not observed during any vascular plant survey or during any field activities carried out in 2015 on adjacent lands.	POSSIBLE, difficult to rule out without on-site assessment.	NO, see step 3.
Special Concern (Provincially): status from Species at Risk in Ontario List (O Reg 230/08); updated July 2016							
Snapping Turtle	*Chelydra serpentina*	Ontario Reptile and Amphibian Atlas	YES, suitable wetland communities may be present.	YES, suitable wetland communities may be present.	NO, open water wetland communities that could provide suitable feeding and basking habitat are absent from the subject property.	YES, suitable wetland communities may be present.	NO, open water wetland communities that could provide suitable feeding and basking habitat are absent from the subject property.
Eastern Ribbonsnake	*Thamnophis sauritus*	Ontario Reptile and Amphibian Atlas	YES, open-canopy areas adjacent to wetlands and/or aquatic communities may be present.	YES, open-canopy areas adjacent to wetlands and/or aquatic communities may be present.	YES, open-canopy areas adjacent to wetlands and/or aquatic communities are present.	YES, open-canopy areas adjacent to wetlands and/or aquatic communities are absent.	NO, species unlikely to be present on the subject property due to the extent of agricultural activities. Narrow strip of vegetation along the Drainage Feature unlikely to be of a sufficient size to support this species, and adjacent upland areas are under cultivation.
Grasshopper Sparrow	*Ammodramus savannarum*	OBBA	YES, suitable grassland or agricultural communities may be present.	YES, suitable grassland or agricultural communities may be present.	NO, open communities on the subject property consist exclusively of soybean fields.	NO, open communities on adjacent lands are mostly cropped (south) or currently being developed (west).	NO, see step 3.
Canada Warbler	*Cardellina canadensis*	OBBA	NO, moist thickets and other shrubby habitats adjacent to forests may be present.	NO, moist thickets and other shrubby habitats adjacent to forests may be present.	NO, moist thickets and other shrubby habitats adjacent to forests may be present.	NO, moist thickets and other shrubby habitats adjacent to forests may be present.	NO, see steps 2 and 3.
Common Nighthawk	*Chordeiles minor*	Range Map, Habitat Features Present	YES, both natural and anthropogenic openings in canopy and open areas could provide suitable breeding and foraging habitat.	YES, both natural and anthropogenic openings in canopy and open areas could provide suitable breeding and foraging habitat.	NO, subject property consists predominately of soybean field.	YES, this species was recorded flying over adjacent lands during site investigations in 2015.	NO, subject property consists predominately of soybean field.
Eastern Wood Pewee	*Contopus virens*	Range Map, Habitat Features Present	YES, mixed or deciduous forests or forest edges may be present.	YES, mixed or deciduous forests or forest edges may be present.	NO, mixed or deciduous forests or forest edges may be present.	NO, mixed or deciduous forests or forest edges may be present.	NO, see step 3.
Short-eared Owl	*Asio flammeus*	Range Map, Habitat Features Present	YES, suitably sized open areas (e.g., meadow, etc.) may be present.	YES, suitably sized open areas (e.g., meadow, etc.) may be present.	NO, subject property consists predominately of soybean field.	YES, suitably sized open areas (e.g., meadow, etc.) may be present.	NO, subject property consists predominately of soybean field.
Monarch	*Danaus plexippus*	Range Map, MNRF Information Request	YES, suitable grassland, mixed meadow, or agricultural communities may be present.	YES, suitable grassland, mixed meadow, or agricultural communities may be present.	YES, Common Milkweed (*Asclepias syriaca*) was observed during the vascular plant inventory.	YES, suitable grassland, mixed meadow, or agricultural communities may be present.	YES, development and site alteration has the potential to damage habitat (e.g., meadows with Milkweed).

[1]Shaded rows denote species or communities for which negative impacts have been deemed possible.

Common Name	Scientific Name	Step 5: Recommended Mitigation Measures	Step 6: Is the likelihood of adverse effects (negative impacts) acceptable when all the relevant factors are considered?
Monarch	*Danaus plexippus*	• None (see Step 6).	YES, although suitable oviposition sites (i.e., Common Milkweed) are present on the subject property, habitat for this species is restricted to the narrow (i.e., < 5 m wide) hedgerow along the southern boundary of the subject property. The remainder of the subject property is soybean field. The loss of a few stems of Milkweed during implementation of the development plan is not expected to adversely affect the suitability of the wider landscape to support this species. Protection of the Drainage Feature and a 15 m buffer ensures that potential habitat for Common Milkweed as well as Swamp Milkweed (along the margin of the watercourse) remains present on the subject property.

Appendix 7. Assessment of Significant Wildlife Habitat.

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Approach to Identifying Significant Wildlife Habitat

Guidance on identifying Significant Wildlife Habitat is provided by the Natural Heritage Reference Manual (OMNR 2010b), Significant Wildlife Habitat Technical Guide (OMNR 2000b), and Significant Wildlife Habitat Ecoregion Criterion Schedule for Ecoregion 6E (OMNRF 2015). The assessment that follows is carried out in accordance with these documents.

According to the SWH Technical Guide (OMNR 2000), use of a landscape approach that considers natural heritage features across a variety of scales results in a more comprehensive assessment of significance. An understanding of ecological features representation at a variety of scales across the landscape is key to determining the significance of individual features; this approach recognizes the importance of identifying significance based on representation at larger scales (OMNR 2000).

The process for identifying SWH is outlined in s. 9.2.3 of the Natural Heritage Reference Manual (OMNR 2010b). Step 1 considers the nature of the development application proposed and involves the assembly of background ecological information for the subject property and adjacent lands. This information is compiled through a review of the data available from the Natural Heritage Information Centre (NHIC), information requests from MNRF, and local planning documents (e.g., Official Plan Schedules, etc.). If an application triggers a need to protect SWH (e.g., change in land-use that requires approval under the *Planning Act*, etc.), a more thorough investigation of potential SWH features on the subject property or adjacent lands must occur. Any confirmed SWH for the subject property and adjacent lands as identified in relevant planning documents or by the MNRF should be noted at this stage.

Where a need to protect SWH is triggered, step 2 involves undertaking a more thorough analysis of features, functions, and habitats on the subject property via Ecological Land Classification. The list of ELC Ecosite codes generated for the subject property is compared to those codes considered candidate SWH in the relevant Ecoregion Criterion Schedule (i.e., 5E, 6E, or 7E) in step 3. Where a positive match between an ELC Ecosite and candidate SWH exists, the area is considered candidate SWH. In step 4 two options are available for candidate or confirmed SWH: a) the area may be protected without further study, or b) the area may be evaluated to ascertain the status of the candidate or confirmed SWH. Evaluation may involve reviewing available information pertaining to features within a landscape context (e.g., aerial photography), generating more detailed maps of vegetation cover, or conducting surveys of the wildlife population within the candidate SWH including reproductive, feeding, and movement patterns. If the area is confirmed SWH, the final step (5) in the process is the completion of an impact assessment to demonstrate that no negative impacts to the SWH feature or its function will occur at the scale of the planning authority. The impact assessment process is assisted by the SWH Mitigation Support Tool (OMNRF 2014b) and the Significant Wildlife Technical Guide (OMNRF 2000).

Ecoregion 6E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes assessed from available information sources and the site investigations indicate that candidate SWH may be present on the subject property or adjacent lands?
Seasonal Concentration Areas of Animals			
Waterfowl Stopover and Staging Areas (Terrestrial)	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 waterflow, these are not considered SWH unless they have spring sheet water available.	CUM1 , CUT1 Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.	**NO.** Although agricultural fields (e.g., soybean) are present, no evidence of sufficient sheet water that could support migrating waterfowl was observed in these areas during the site investigations in late winter and spring.
Waterfowl Stopover and Staging Areas (Aquatic)	Ponds, marshes, lakes, bays, coastal inlest, and watercourses used during migration. Sewage treatment Ponds and storm water Ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. These habitats have an abundance food supply (mostly aquatic invertebrates and vegetation in shallow water)	MAS1 , MAS2, MAS3, SAS1, SAM1, SAF1 , SWD1 , SWD2, SWD3, SWD4, SWD5, SWD6, SWD7	**NO.** Migrating waterfowl utilize open-water wetlands adjacent to large bodies of water to rest and feed. The on-site Meadow Marsh would not contain open water pockets of sufficient size to function as a waterfowl stopover or staging area. No open water features are present on the subject property.
Shorebird Migratory Stopover Areas	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated 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.	BBO1, BBO2, BBS1, BBS2, BBT1, BBT2, SDO1, SDS2, SDT1, MAM1 , MAM2, MAM3, MAM4, MAM5	**NO.** Shorebird migratory stopover areas tend to be restricted to large mudflats along large bodies of water such as the Great Lakes. No such areas occur on the subject property.
Raptor Wintering Areas	The habitat provides a combination of fields and woodlands that provide roosting, 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.	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC. Upland: CUM; CUT; CUS; CUW. Bald Eagle: 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).	**NO.** Large open fields support populations of small mammals that are relied upon by raptors during winter. Although the subject property contains large, contiguous agricultural fields roughly 16 ha in size, their use as cropland (rather than hayfield) would significant reduce populations of small mammals. This reduces the likelihood that the subject property acts as a congregation area for wintering raptors.
Bat Hibernacula	Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. Active mine sites are not SWH. The locations of bat hibernacula are relatively poorly known.	Bat Hibernacula may be found in these ecosites: CCR1, CCR2, CCA1, CCA2. (Note: buildings are not considered to be SWH).	**NO.** Caves, abandoned mines, and/or steep talus slopes are absent from the subject property.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (January 2015)

Ecoregion 6E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes assessed from available information sources and the site investigations indicate that candidate SWH may be present on the subject property or adjacent lands?
Bat Maternity Colonies	Maternity colonies can be found in tree cavities, vegetation and often in buildlings (buildings are not considered to be SWH). Maternity roosts are not found in caves and mines in Ontario Maternity colonies located in Mature (dominant trees > 80yrs old) deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees Female Bats prefer wildlife trees (snags) in early stages of decay, class 1-3 . 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.	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD, FOM, SWD, SWM.	**NO.** The subject property lacks snags of sufficent size (e.g., > 25 cm DBH) to support gestating and roosting habits of bat maternity colonies.
Turtle Wintering Areas	For most turtles, wintering areas are in the same general area as their core habitat. Water has to 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 Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH.	Snapping and Midland Painted Turtles; ELC Community Classes; SW, MA, OA and SA, ELC Community Series; FEO and BOO. Northern Map Turtle; Open Water areas such as deeper rivers or streams and lakes with current can also be used as overwintering habitat.	**NO.** Features that would support overwintering turtles (open water wetlands, water features with soft mud substrates that do not freeze to the bottom) are absent from the subject property.
Reptile Hibernaculum	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 sedge hummock ground cover. Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures.	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice and 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, FOC3.	**YES.** The subject property contains potential feeding areas for snakes (i.e., open/meadow habitats that contain small mammals), although cultivation activities likely restrict use by snakes. Small mammal burrows and other features within the hedgerows along the margins of the subject property may provide suitable hibernacula for snakes if they extend below the frost line. See **Section 4.2** for a detailed discussion of potential impacts to hibernating snakes associated with implementation of the development plan.
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)	Any site or areas with exposed soil banks, sandy hills, borrow pits, steep slopes, and sand piles that are 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.	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.	**NO.** Features that would support colonially-nesting bank and cliff species (e.g., exposed, eroding soil banks, cliff faces, etc.) are absent.
Colonially - Nesting Bird Breeding Habitat Breeding Habitat (Tree/Shrubs)	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.	SWM2, SWM3, SWM5, SWM6, SWD1, SWD2, SWD3, SWD4, SWD5, SWD6, SWD7, FET1.	**NO.** Open bodies of water are absent from the subject property, and no stick nests were identified during on site investigations.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (January 2015)

Ecoregion 6E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes assessed from available information sources and the site investigations indicate that candidate SWH may be present on the subject property or adjacent lands?
Colonially - Nesting Bird Breeding Habitat (Ground)	Nesting colonies of gulls and terns are on islands or peninsulas (natural or artificial) associated with open water, marshy areas, lake or large river (two-lined on a 1;50,000 NTS map). Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands.	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	**NO.** Features that would support ground-nesting colonial birds (e.g., open water areas with islands and peninsulas) are absent.
Migratory Butterfly Stopover Areas	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 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.	Combination of ELC Community Series; need to have present one Community Series from each landclass: <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.	**NO.** The subject property is > 5 km from Lake Ontario and generally lacks abundant nectaring plants. Large congregations of migratory butterflies are unlikely to utilize the subject property during migration.
Landbird Migratory Stopover Areas	Woodlots need to be > 10 ha in size and within 5 km of Lake Ontario. If multiple woodlands are located along the shoreline of 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 location along the shore and located within 5 km of Lake Ontario are Candidate SWH.	All Ecosites associated with these ELC Community Series; FOC, FOM, FOD, SWC, SWM, SWD.	**NO.** The subject property is > 5 km from Lake Ontario and would not support large congregations of migratory landbirds.
Deer Yarding Areas	Deer wintering 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 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 Stratum II 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%. OMNRF 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.	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include; FOM, FOC, SWM and SWC. Or these ELC Ecosites; CUP2, CUP3, FOD3, CUT	**NO.** Deer yards have not been previously identified on the subject property, and no features that could support deer yarding are present.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (January 2015)

Ecoregion 6E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes assessed from available information sources and the site investigations indicate that candidate SWH may be present on the subject property or adjacent lands?
Deer Winter Congregation Areas	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 dder 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.	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.	**NO.** Deer yards have not been previously identified on the subject property, and no features that could support deer yarding are present. Deer are likely constrained by snow depths in this part of Ontario.
Rare Vegetation Communities			
Cliffs and Talus Slopes	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris	Any ELC Ecosite within Community Series: TAO, TAS, TAT, CLO, CLS, CLT	**NO.** Cliffs and talus slopes are absent from the subject property based on the site investigation.
Sand Barren	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. 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%.	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%.	**NO.** Flora characteristic of sand barrens are absent based on the three-season vascular plant inventory.
Alvar	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 may be 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 plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover.	ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2 Five Alvar Indicator Species: 1) Carex crawei, 2) Panicum philadelphicum, 3) Eleocharis compressa, 4) Scutellaria parvula, 5) Trichostema brachiatum These indicator species are very specific to Alvars within Ecoregion 6E	**NO.** Flora characteristic of alvars are absent based on the three-season vascular plant inventory.
Old Growth Forest	Old Growth forests are characterized by exhibiting the greatest number of old-growth characteristics, such as mature forest with large trees that has been undisturbed. Heavy mortality or turnover of overstorey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Forest Community Series: FOD, FOC, FOM, SWD, SWC, SWM	**NO.** Forests with old-growth characteristics are absent from the subject property.
Savannah	A Savannah is a tallgrass prairie habitat that has tree cover between 25–60%.	TPS1, TPS2, TPW1, TPW2, CUS2	**NO.** Flora characteristic of savannahs are absent based on the three-season vascular plant inventory.
Tallgrass Prairie	Tallgrass Prairie is an open vegetation with less than < 25% tree cover, and dominated by prairie species, including grasses.	TPO1, TPO2	**NO.** Flora characteristic of tallgrass prairies are absent based on the three-season vascular plant inventory.

*as per Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (January 2015)

Ecoregion 6E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes assessed from available information sources and the site investigations indicate that candidate SWH may be present on the subject property or adjacent lands?
Other Rare Vegetation Community	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in Appendix M. The OMNRF/NHIC will have up to date listing for rare vegetation communities.	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.	**NO.** Rare vegetation communities were not documented during the site investigation.
Specialized Habitats for Wildlife			
Waterfowl Nesting Area	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) 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, Bufflehead, Common Goldeneye and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites.	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	**NO.** Open water wetlands that could provide nesting habitat for waterfowl are absent from the subject property and adjacent lands.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	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. Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms).	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands.	**NO.** Stick nests were not documented on the subject property during the site investigation. Hydrologic features with abundant open water (e.g., lakes, ponds, large rivers, etc.) are absent from the subject property and adjacent lands.
Woodland Raptor Nesting Habitat	All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat. Interior habitat determined with a 200m buffer. In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3.	**NO.** Stick nests were not documented during site investigations. Trees with cavities suitable to function as nesting habitat for owls were also not documented in the Significant Woodland.
Turtle Nesting Areas	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.	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites: MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, BOO1	**NO.** The subject property does not contain features that are suitable to function as nesting habitat for turtles (e.g., exposed coarse mineral soil or gravel).

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Ecoregion 6E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes assessed from available information sources and the site investigations indicate that candidate SWH may be present on the subject property or adjacent lands?
Seeps and 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.	Seeps/Springs are areas where groundwater 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.	**NO.** Although Watercress was observed within the Drainage Feature, nested piezometers instrumented by Soil Engineers Ltd. to reveal the verticality of groundwater movements showed that groundwater moved downward (between March 22 and May 11, 2016). In addition, the Drainage Feature lacks surrounding forest, which is a requirement for identifying seeps and springs as candidate SWH.
Amphibian Breeding Habitat (Woodland)	Presence of a wetland or pond >500 m^2 (about 25 m diameter) within or adjacent (within 120m) to a woodland (no minimum size). The wetland, lake or pond and surrounding forest, would be the Candidate SWH. 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.	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.	**NO.** Woodlands containing vernal pools are absent from the subject property.
Amphibian Breeding Habitat (Wetlands)	Wetlands and pools (including vernal pools) >500 m^2 (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.	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.	**NO.** Anuran calling surveys confirmed that no amphibian breeding is occurring in wetlands or aquatic features on the subject property.
Woodland Area-Sensitive Bird Breeding Habitat	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.	All Ecosites associated with these ELC Community Series; FOC, FOM, FOD, SWC, SWM, SWD.	**NO.** Forests/woodlands of sufficient size to support area-sensitive breeding birds are absent from the subject property.
Habitat for Species of Conservation Concern (not including Endangered or Threatened Species)			
Marsh Bird Breeding Habitat	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.	MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SAS1, SAM1, SAF1, FEO1, BOO1. For Green Heron: All SW, MA and CUM1 sites.	**NO.** Although American Bittern *(Botaurus lentiginosus*) was observed on adjacent lands during breeding bird surveys in 2015, suitable habitat for marsh breeding birds is absent from the subject property.
Open Country Bird Breeding Habitat	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). 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.	CUM1, CUM2	**NO.** Although bird species that are indicators of open country breeding bird habitat were observed on the subject property (e.g., Savannah Sparrow), such habitats are under cultivation and are thus exempted from designation as candidate significant wildlife habitat.

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Ecoregion 6E	Candidate Significant Wildlife Habitat*	ELC Ecosites	Do site-specific attributes assessed from available information sources and the site investigations indicate that candidate SWH may be present on the subject property or adjacent lands?
Shrub/Early Successional Bird Breeding Habitat	Large field areas succeeding to shrub and thicket habitats >30 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 livestock 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 lightly grazed pasturelands.	CUT1, CUT2, CUS1, CUS2, CUW1, CUW2. Patches of shrub ecosites can be complexed into a larger habitat for some bird species.	**NO.** Indicators of shrub/early successional bird breeding habitat were not observed on the subject property during breeding bird surveys.
Terrestrial Crayfish	Wet meadow and edges of shallow marshes (no minimum size) 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.	MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, MAS1, MAS2, MAS3, SWD, SWT, SWM, CUM1 with inclusions of above meadow marsh or swamp ecosites can be used by terrestrial crayfish.	**YES.** "Chimneys" associated with terrestrial crayfish were observed on-site adjacent to the Drainage Feature. See **Section 4.2** for a detailed discussion of potential impacts to this species associated with implementation of the development plan.
Special Concern and Rare Wildlife Species	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	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. 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.	**YES.** See **Appendix 8**.
Animal Movement Corridors			
Amphibian Movement Corridors	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.	Corridors may be found in all ecosites associated with water. Corridors will be determined based on identifying the significant breeding habitat for these species (see above).	**NO.** Amphbian breeding habitat is absent from on the subject property. In addition, the subject property does not appear to bisect amphibian breeding habitats, and therefore is not expected to act as a movement corridor.
Deer Movement Corridors	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 (see above). A deer wintering habitat identified by the OMNRF as SWH will have corridors that the deer use during fall migration and spring dispersion. Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges).	**NO.** The subject property is not located between any identified or potential deer yarding areas or winter deer concentration areas. Given this, deer movement corridors are absent from the subject property.

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