



Natural Heritage Evaluation
Sandy Creek Estates (Phase 2)
969, 979 and 989 Maplevue Drive East
City of Barrie

Prepared for:
Sandy Creek Estates Inc.

Prepared by:
Azimuth Environmental
Consulting, Inc.

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AEC 20-243



Environmental Assessments & Approvals

December 17, 2024

AEC 20-243

Sandy Creek Estates Inc.
2031 James Street
Burlington ON
L7R 1H2

Re: **Natural Heritage Evaluation**
Phase 2 969, 979 and 989 Mapleview Drive East, City of Barrie

Azimuth Environmental Consulting, Inc. was retained to provide a Natural Heritage Evaluation for a proposed residential development at the location described above. The purpose of this report is to provide the City of Barrie and other review agencies with an understanding of natural environmental conditions and potential for impacts related to the proposed development on significant natural heritage features and functions of the property and adjacent lands. This report also documents the natural environmental features present within the property and adjacent lands with regard to Species at Risk and their habitats.

Should you have any questions or require additional information please do not hesitate to contact the undersigned.

Yours truly,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.



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1.0 INTRODUCTION

Azimuth Environmental Consulting, Inc. (Azimuth) was retained by Sandy Creek Estates Inc., to undertake a Natural Heritage Evaluation (NHE) for a proposed Phase 2 development at 969, 979 and 989 Maplevue Drive East, City of Barrie. It is our understanding that the City of Barrie has requested the NHE to be undertaken due to the presence of lands that are part of the Natural Heritage System according to the City of Barrie's Official Plan. The Study Area, including the proposed development parcel are mapped within the jurisdiction of the Lake Simcoe Region Conservation Authority (LSRCA), and therefore a permit issued under Ontario Regulation (O.Reg.) 41/24 is required to proceed within the proposed development within LSRCA regulated lands.

A NHE report for the Phase 1 lands was prepared by Azimuth in February 2022. This report has been reviewed by LSRCA and comments were received dated May 13, 2022. As a result, the NHE report was updated (October, 2022) and subsequently accepted by LSRCA. Furthermore, Azimuth coordinated with LSRCA to provide an acceptable Ecological Offsetting Strategy (EOS) to compensate for the loss of wetland habitat within the Phase 1 and 2 lands (note: Phase 2 is referred to as Phase 3 within the EOS as per the former Hewitt's Secondary Plan Area development phasing). The LSRCA approved EOS is dated September 19, 2022 and can be found within Appendix A.

The purpose of this NHE is to identify the candidate Key Natural Heritage Features (KNHF) present within the Study Area and to address potential impacts to these identified features. A review of background information in combination with a detailed field program was undertaken throughout the 2020/2021 field seasons to identify significant natural heritage features and functions. This report also examines potential for Species at Risk (SAR) protected under the *Endangered Species Act, 2007 (ESA)* within the Study Area. The potential for negative impacts to natural heritage features resulting from the proposed development is considered and recommendations for avoidance and mitigation are provided.

The property has been separated into a 6.28 hectare (ha) parcel immediately south of Maplevue Drive East (Phase 1 Lands) and a 13.42 ha parcel located south of a tributary of Sandy Cove Creek (Phase 2 Lands). The current assessment focuses on Phase 2 Lands. For the purposes of this NHE report, the Study Area includes the Phase 2 lands in addition to the adjacent lands within 120m. A map illustrating the limits of the Phase 2 lands and the overall Study Area are shown on Figure 1-3.



Our investigations included all three properties (Phase 1, Sandy Cover Creek corridor and Phase 2). Site assessment findings are presented within the Existing Conditions sections of this NHE. However, the identified KNHF and Impact Assessment is related to the Study Area only as identified on Figures 1-3.

2.0 PLANNING CONTEXT

2.1 Provincial Planning Statement (2024)

All Planning Act decisions must be consistent with the PPS. The PPS outlines policies related to natural heritage features (Section 4.1) and water resources (Section 4.2). Ontario's *Planning Act*, (1990) requires that planning decisions shall be consistent with the PPS. The study area is located entirely within **Ecoregion 6E**. According to the PPS development and site alteration shall not be permitted in:

- *Significant wetlands* in Ecoregions 5E, 6E and 7E; and,
- *Significant coastal wetlands*.

Similarly, Section 4.1.5 of the PPS states that, unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions, development and site alteration shall not be permitted within:

- a) *significant wetlands* in the Canadian Shield north of Ecoregions 5E, 6E; and 7E;
- b) *significant woodlands* in Ecoregions 6E; and 7E;
- c) *significant valleylands* in Ecoregions 6E; and 7E;
- d) *significant wildlife habitat*;
- e) *significant areas of natural and scientific interest*; and,
- f) *coastal wetlands* in Ecoregions 5E, 6E; and 7E that are not subject to policy 4.1.4(b)

It is ultimately the responsibility of the province and/or the municipality to designate areas identified within Section 4.1.4 and 4.1.5 of the PPS as “significant”.

Section 4.1.6 of the PPS states that development and site alteration is not permitted in fish habitat except in accordance with federal and provincial requirements.

Section 4.1.7 of the PPS states that development and site alteration shall not be permitted in habitat of Endangered and Threatened species, except in accordance with provincial and federal requirements.



Furthermore, under Section 4.1.8 of the PPS, no development and site alteration will be permitted on lands adjacent to natural heritage features and areas identified in policies 4.1.4, 4.1.5 and 4.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated there will be no negative impacts on the natural features and their ecological functions.

2.2 Endangered Species Act, 2007

Ontario's *ESA*, 2007 provides regulatory protection to Endangered and Threatened species prohibiting harassment, harm and/or killing of individuals and destruction of their habitats. Habitat is broadly characterized within the *ESA* as the area prescribed by a regulation as the habitat of the species or an area on which the species depends, directly or indirectly, to carry on its life processes including reproduction, rearing of young, hibernation, migration or feeding.

The various schedules of the *ESA* included under O. Reg. 230/08 identify SAR in Ontario. These include species listed as Extirpated, Endangered, Threatened and Special Concern. As noted above, only species listed as Endangered and Threatened receive protection from harm and destruction to habitat on which they depend.

2.3 Lake Simcoe Protection Plan

The Lake Simcoe Protection Plan (LSPP, 2009) was developed to protect and restore the ecological health of the Lake Simcoe watershed. The LSPP identifies Key Natural Heritage Features and Key Hydrologic Features within the natural heritage system. Key Natural Heritage Features include *wetlands*, *significant woodlands*, *significant valleylands*, and natural areas abutting Lake Simcoe. Key Hydrologic Features include *wetlands*, *permanent and intermittent streams*, and *lakes* other than Lake Simcoe. The NHE is required under the LSPP to assess the adequacy of the buffers approved by the OMB to protect the features and functions of the Natural Core Areas.

2.4 City of Barrie

According to the City of Barrie Official Plan (2024), the property is designated Neighbourhood Area, Greenspace and Natural Heritage System according to Map 2: Land Use Designations (Appendix B).

According to Map 3: Natural Heritage Protection Overlays within the City's Official Plan, High (S) Constraint Stream Corridor Area – Special abuts the Phase 2 lands to the north.



Natural Core and High Constraint Stream Corridor Area are included within the southern portion of the property (Appendix B).

Permitted uses within the Natural Heritage System generally includes environmental conservation, flood and erosion control, natural trails, low impact recreational facilities in addition to those uses listed within Section 2.6.6.1 of the City's Official Plan. Features that make up the Natural Heritage System include:

- Provincially significant wetlands;
- Other wetlands;
- Significant woodlands;
- Other woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Habitat of endangered or threatened species;
- Watercourses;
- Fish habitat;
- Natural areas abutting Lake Simcoe;
- Areas of Natural and Scientific Interest;
- Cultural thickets and meadows
- Natural areas of local significance, natural corridors and linkages.

Development on lands designated Natural Heritage System is not permitted except for listed uses in Section 2.6.6.2 (d) of the City's Official Plan.

The Natural Core overlay includes key natural heritage and hydrological features, together with required buffers and adjacent lands intended to protection the function of the features and ensure long-term sustainability (Section 5.4.3 (a) of City's Official Plan, 2024). As per Section 5.4.3 (b), a 30.0 metre (m) buffer from the edge of woodlands within the Lake Simcoe watershed, wetlands and watercourses within the natural core areas have been applied.

High Constraint Stream Corridor Area includes watercourses with associated riparian lands and includes buffers measured from the top-of-bank (Section 5.4.5 (a) of City's Official Plan, 2024). These High Constraint Stream Corridor Areas must be protected in their existing locations (5.4.5 (b)).



High (S) Constraint Stream Corridor Area – Special may be modified and/or relocated and consolidated with other watercourses as per the provisions of Section 5.4.5 (c) of the City’s Official Plan (2024).

2.5 Lake Simcoe Region Conservation Authority

The study area is located within the jurisdiction of the LSRCA. The study area includes lands subject to O. Reg. 41/24 – “Prohibited Activities, Exemptions and Permit” by the LSRCA (Appendix A). Under Regulation 41/24, the LSRCA may require that approvals be obtained for any proposed development or site alteration within areas regulated under the Conservation Authority’s jurisdiction.

2.6 Federal Fisheries Act

The *Fisheries Act* includes protections for fish and fish habitat in the form of standards, codes of practice, and guidelines for projects near water. The *Fisheries Act* provides protection against the “death of fish, other than by fishing”, (Section 34.4(1)) and the “harmful alteration, disruption or destruction of fish habitat”, (Section 35(1)), otherwise known as HADD. In cases where impacts to fish and fish habitat cannot be avoided, and the project does not fall within waterbodies where Fisheries and Oceans Canada (DFO) review is not required, proponents are asked to submit a request for review to their Fish and Fish Habitat Protection Program regional office to determine approval requirements. All projects are encouraged to avoid causing the death of fish and a HADD of fish habitat, using measures to protect fish and fish habitat that include standards and codes of practice for common works, undertakings and activities.

3.0 STUDY APPROACH

A combination of a background information and field data were used to fulfill the objectives of this NHE. Azimuth undertook the following activities for this study:

- Conducted field surveys to document existing natural heritage features, functions, and species. Surveys included:
 - Evaluated/mapped vegetation community types based on Ecological Land Classification methods (ELC; Ecological Land Classification for Southern Ontario: First Approximation and its Applications. SCSS Field Guide FG-02; Lee *et al.*, 1998; 2008) (summer 2020);
 - Conducted three evening calling amphibian surveys (April, May, June 2021) to determine the extent of amphibian habitat onsite;



- Conducted a detailed vascular plant inventory on the property during summer (2020);
 - Conducted three dawn breeding bird surveys in July 2020 and June 2021;
 - Conducted an aquatic habitat assessment of the aquatic features on the property (July 2020); and
 - Recorded all incidental wildlife observations during site visits.
- Completed a SAR habitat assessment using field data collected by Azimuth and other data available and/or provided by agencies to confirm environmental constraints, and approval requirements under the *ESA*;
- Prepared a catchment-based water balance as required to assess existing drainage conditions and moisture regimes supporting hydrologic features, and demonstrated how supporting these hydrologic inputs will be maintained post-development. Hydrogeological Assessment completed under a separate cover (Azimuth, 2024);
- Overlaid identified environmental features on aerial photography so that the relationship between the natural heritage features and functions can be assessed relative and an assessment of the sufficiency of the approved buffers can be undertaken;
- Assessed the potential direct, indirect and cumulative impacts of the proposed conceptual development plan on the sensitive or significant environmental features as described above;
- Recommended and developed an appropriate avoidance, mitigation and/or restoration strategy; and
- Demonstrated conformity with the applicable policies of the City, LSRCA and Province.

The above were provided to the LSRCA as a Terms of Reference (ToR) for the field program and impact assessment on July 6, 2020. A response was received on July 14, 2020 (Kate Lillie, Natural Heritage Ecologist) confirming that the scope of the program undertaken was acceptable (Appendix A). Through this correspondence, LSRCA indicated the following:

- Confirmation that the limits of features within the Natural Heritage System have been confirmed with LSRCA;
- Requested that wetland features (outside of the Natural Heritage System) will need to be confirmed with LSRCA;
- Complete three (3) dawn breeding bird surveys;
- Complete three (3) evening amphibian surveys;
- Additional SAR considerations may be required should SAR be identified;



- Screen for potential Significant Wildlife Habitat;
- Catchment-based water balance is required;
- Ecological Offsetting Strategy for any LSRCA approved loss of wetland; and
- Map the proposed development and limit of disturbance on current orthoimagery.

Azimuth is in agreement with the above additions to the ToR with the additional LSRCA requested information included within this NHE.

LSRCA background information for the property is included in Appendix A.

3.1 Background Data

A review of background documents provided information on site characteristics, habitat, wildlife, rare species and communities, and general cultural/historic aspects of the Study Area. This included a review of the following:

- Natural Heritage Evaluation Phase 1 969, 979 and 989 Mapleview Drive East, City of Barrie (Azimuth, February 2022 with October 2022 Update);
- Ministry of Natural Resources (MNR) Natural Heritage Information Centre (NHIC; MNR, 2024a);
- Atlas of the Breeding Birds of Ontario (OBBA; Cadman *et al.*, 2007);
- Ontario Ministry of Natural Resources (OMNR) Natural Heritage Reference Manual (OMNR, 2010);
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2020);
- MECP's Species at Risk Ontario list (MECP, 2024);
- iNaturalist (NHIC) Rare Species of Ontario (iNaturalist, 2024);
- Air photos available for the Project Area (Google, VuMap);
- Fisheries and Oceans Canada (DFO) aquatic species at risk mapping (DFO, 2024);
- MNR Geohub database: Aquatic resource area line segment (MNR, 2024b);
- Government of Canada's Species at Risk Public Registry; and,
- Atlas of the Mammals of Ontario (Dobbyn, 1994).

3.2 Feature Staking

3.2.1 City of Barrie's Natural Core Area

Through the development and creation of the Hewitt's Secondary Plan (City of Barrie, 2014), the Natural Heritage System was defined. The Natural Heritage System was identified within a Natural Heritage System report prepared by Natural Resource



Solutions Inc. (NRSI). Using a combination of field studies, the review of published background studies, and analysis of the applicable provincial natural heritage planning policies and guidelines (*i.e.*, PPS, LSPP, Natural Heritage Guidelines) NRSI developed their approach to defining the Natural Heritage System. Components of the Natural Heritage System, in general, are large contiguous tracts of natural features that contain a variety of key features including Significant Woodland, Significant Wetland, cultural meadow and thicket communities contiguous within the NHS and watercourses. The staking of the Natural Core Area took place in July 2015 for all the participating landowners in the Hewitt's Secondary Plan Area. The staking was undertaken with staff from the LSRCA, NRSI, City of Barrie, Azimuth, R.J. Burnside, The Jones Consulting Group and the affected landowners. The feature limits were defined, agreed to by all parties and staked. Each stake location was georeferenced and the final survey of the features was circulated to all participants. The buffer width as approved by the OMB was added to the feature limit to define the development limit for the preparation of the draft plans of subdivision. Therefore, our assessment will identify the significant features as approved by the province, City and LSRCA.

As per LSRCA correspondence (Appendix A), confirmation of the limits of features within the Natural Heritage System have already been confirmed with LSRCA as described above therefore; staking of the Natural Heritage System was not undertaken as per the LSRCA approved ToR for the Phase 1 lands.

3.2.2 Unevaluated Wetlands

The unevaluated wetlands located outside of the City's Natural Heritage System were staked in 2020 with LSRCA as discussed in Section 3.4 below.

3.3 Sandy Cove Creek Re-alignment

Since the time of the Phase 1 NHE, the Sandy Cove Creek Landowners Group have re-aligned a portion of Sandy Cove Creek. The works included the re-alignment of the existing feature in order to contain floodplain capacity within the corridor to allow for development on the adjacent lands, and to enhance the drainage and ecological functionality of the creek. The resulting corridor is approximately 60m in width and extends 1.6km south-west from the road crossing at the 20th Sideroad. Environmental investigations, assessment and agency approvals/permits were completed by others, and are not included within the scope of the NHE.



3.4 Vegetation Community Mapping and Surveys

Prior to undertaking the field studies, an initial classification of habitats was undertaken using recent air photo imagery for an area encompassing the Study Area. Vegetation boundaries were then checked in the field on July 8, 2020 during the growing season when the emergent ground cover vegetation layer was present. Vegetation community types were classified using ELC protocols.

The site visit was undertaken by a qualified ecologist with existing knowledge related to rare, Threatened, and Endangered plant species with potential to occur in the area. The site assessment was focused during ELC work to ensure that appropriate effort was made to detect any provincially designated species, notably SAR as identified by the provincial ESA.

A detailed survey including a screening for Butternut (Endangered) was also conducted on the property.

LSRCA attended the site on October 6, 2020 (Kate Lillie, Natural Heritage Ecologist) to confirm the limits of the wetland on the property. All wetland features were staked/flagged in the field with the exception of the wetland that is contained within the Natural Core Area of the City of Barrie's Natural Heritage System (Appendix A). Subsequent to this staking exercise, the wetland limits were surveyed by an Ontario Land Surveyor. This information was provided to LSRCA on March 24, 2021 (Appendix A).

A reconnaissance site visit occurred on November 27, 2024 to confirm current site conditions and to conduct a search for Black Ash (Endangered) that could be within 30m of the proposed development as documented within the Phase 1 NHE.

3.5 Wildlife Surveys

Wildlife species utilizing the property were identified from direct observation, auditory signs, and through interpretation of other signs (tracks, scats, vocalizations, *etc.*) as a matter of course while conducting field surveys.

3.5.1 Species at Risk

The SAR screening undertaken for the scope of this assignment includes an assessment of SAR with potential to occur in the overall planning area, compared with potential



habitat features identified within the Study Area. Habitat requirements and appropriate designations (Endangered, Threatened, or Special Concern) are outlined in Table 1.

A request for background information including SAR data was provided to MECP on April 29, 2021 (Appendix B). A response was received from MECP (Shamus Snell, Acting Management Biologist) on May 14, 2021 to indicate that all potential SAR have been considered (Appendix C).

LSRCA has indicated that terrestrial crayfish, Barn Swallow, Snapping Turtle have been documented within the area. They also indicated that there is a record for Blanding's Turtle within 1.5km of the property (Appendix A).

3.5.2 Breeding Birds

Three dawn bird surveys were conducted on the property on July 1 and July 8, 2020 and June 9, 2021 guided by point count methodology presented in Appendix D of the OBBA Guide for Participants (2001). All surveys were conducted no earlier than one half hour before sunrise and were completed prior to 10:00 a.m. Surveys were completed under suitable weather conditions (*i.e.* no precipitation and light winds (Beaufort wind scale ≤ 3)), with an observation period of 10 minutes carried out at the point count station shown on Figure 2.

3.5.3 Amphibian Breeding

Azimuth conducted three evening calling amphibian surveys on April 29, May 20 and June 15, 2021 to assess amphibian breeding within and adjacent to the development parcel in accordance with the Great Lakes Marsh Monitoring Program (Bird Studies Canada, 2008) protocol. In accordance with the protocol, amphibian surveys were completed during the period between 30 minutes after sunset and midnight, on evenings with winds Beaufort < 4 . Surveys occurred during early (April 15-30), middle (May 15-31), and late (June 15-30) spring periods on evenings with minimum temperatures of 5°C, 10°C, and 17°C respectively. The locations of survey stations are illustrated on Figure 2.

3.6 Aquatic Assessment

The watercourses in the project area were evaluated on July 28, 2020. The site evaluation was aimed at understanding the location of drainage occurrences noting channel features and size such as wetted width, water depths, flow, bank slopes and vegetation communities, channel bottom material and general morphometrics, and



observations of fish to determine characteristics of fish habitat and fish habitat sensitivity.

Background information pertaining to fish community data, known sensitivities, aquatic SAR, and fisheries timing windows were requested of the MNR on July 16, 2020, and a response was received on July 17, 2020 (Brent Shirley, Acting Management Biologist; Appendix C). The LSRCA was also contacted to request background fisheries information during submission of the Terms of Reference (July 6, 2020), and information was received from the LSRCA on July 23, 2020 (Kate Lillie, Natural Heritage Ecologist, Appendix A).

A reconnaissance site visit occurred on November 27, 2024 to confirm current site conditions, including the conditions of the re-aligned Sandy Cove Creek completed following preparation of our Phase 1 NHE.

4.0 EXISTING CONDITIONS

4.1 Land Use

At the time of the initial field investigations (2020/2021), the property was composed primarily of active agricultural lands. A rural residential parcel with a single detached dwelling existed within the northwest corner. Sandy Cove Creek traversed to the north of the Phase 2 lands. Sandy Cove Creek is an agricultural drain that has been straightened in the past and is void of mature vegetation. A treed hedgerow occurs along the perimeter of the property with woodland at the southernmost limit of the property.

Subsequent to the initial field investigations, the creek re-alignment works were implemented by others. The residential home has since been removed, and agricultural operations have ceased and active earthworks are underway within the Phase 2 lands (*i.e.* fill storage). For these reasons, the remaining areas of the Phase 2 lands are in an early successional state, composed of opportunistic vegetation field species.

Adjacent lands are largely in a natural and/or agricultural state. Of note, these adjacent lands are within the former Hewitt's Secondary Plan Area and are slated for future development. Active earthworks are currently underway on the lands immediately to the west of the property.



4.2 Terrestrial Resources

4.2.1 Vegetation

The limits of all ELC communities identified within the property during the 2020/2021 investigations (prior to channel re-alignment and earthworks) are illustrated in Figure 2. A complete list of vascular plant species identified on the property is presented in Table 2, and summary descriptions of vegetation communities within the development parcel are presented in Table 3.

A total of 190 vascular plant species were identified on the property, 115 of which (61%) are considered native to Ontario. This relatively low proportion of native species is reflective of the anthropogenic influences associated with the property.

None of the vegetation communities or species documented are of federal or provincial conservation concern (MNRa, 2024).

4.2.1.1 Rare and Uncommon Plants

There are no elements of occurrence (EO_ID) within the Study Area for provincially Endangered or Threatened, or provincially rare vegetation species according to the MNR NHIC database (MNRa, 2024).

Black Ash (Endangered) was identified on the property within the wetland within the Natural Heritage Core. The November 2024 field investigation revealed that all of the Black Ash are located within the SWDM2-2 community (Figure 2) and appear to be less than 8 centimetre (cm) diameter breast height. No other plant species considered Endangered or Threatened were identified during the site investigation, including Butternut trees. Further, no provincially rare (S1-S3) species were observed during the field program.

Three (3) LSRCA rare plants were documented within the Sandy Cove Creek riparian areas including Marsh Seed Box (*Ludwigia palustris*), Purple-veined Willowherb (*Epilobium coloratum*) and Torrey's Rush (*Juncis torreyi*) (See Linear Drainage Feature, Table 2 and Figure 2).

4.2.2 Wildlife

4.2.2.1 Mammals

Evidence of three mammalian species, Coyote (scat, calls), White-tailed Deer (tracks) and Eastern Chipmunk (direct observation) were observed on the property.



4.2.2.2 Reptiles and Amphibians (Herpetofauna)

A total of four amphibian species were identified during the evening calling amphibian surveys including American Toad (AMTO) and Green Frog (GRFR), Spring Peeper (SPPE), and Western Chorus Frog (CHFR) (Appendix D). All of the breeding amphibians were associated with Sandy Cove Creek and identified wetland areas. Detailed results of the amphibian breeding survey program are presented in the Amphibian Survey Results Map (Appendix D). Western Chorus Frog is listed as Threatened according to the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) however, calling was located on adjacent lands outside of the Study Area (Appendix D).

4.2.2.3 Birds

Thirty-nine (39) bird species were documented on or adjacent to the property. Birds documented on the property are listed in Table 4. A Barn Swallow (Special Concern) was observed foraging on adjacent lands to the west of the property. Apart of from the Barn Swallow, none of the species observed are of provincial conservation concern.

4.3 Species at Risk

The SAR Assessment (Table 1) fully considers SAR with the potential to occur within the general area, as confirmed through consultation with MECP (Appendix C). Based on this assessment in combination with vegetation communities and other environmental features observed during the site investigation, the following species are considered below in this report:

- **Threatened or Endangered:** Black Ash, Blanding's Turtle, Little Brown Myotis, Northern Myotis, Tri-colored Bat
- **Special Concern:** Barn Swallow, Snapping Turtle and Monarch Butterfly.

Only species designated Threatened or Endangered receive individual and habitat protection under Section 9 and Section 10 of the *ESA*. Special Concern species are further discussed in the context of Significant Wildlife Habitat (Special Concern and Rare Wildlife Species) below.

4.3.1 Black Ash

Black Ash were observed within the SWDM2-2 within the City's Natural Core Area (Figure 2 and 3).



4.3.2 Blanding's Turtle

Information obtained from LSRCA indicated that there is a record for Blanding's Turtle within 1.5km of the property. Based on previous correspondence from MNR, it is our understanding that the Blanding's Turtle was identified as utilizing wetland habitat to the north of Maplevue Drive, approximately 1.5km to the west of the property.

Blanding's Turtle is a highly aquatic species that lives in shallow water, usually in large wetlands and shallow lakes with lots of water plants. These turtles will hibernate in the mud at the bottom of permanent water bodies and can be found hundreds of metres from the nearest water body when in search for a mate or when travelling to a nesting site (MECP, 2021).

Based on our assessment of the property, there are no wetlands that would provide suitable habitat for Blanding's Turtle as they do not contain sufficient amounts of standing water throughout the year (standing water only present in early spring). Although there is potential (in the future) for Sandy Cove Creek to provide suitable habitat for turtles, there is no expectation that it is currently functioning as such as these works were recently completed and the channel is still isolated with sediment fencing. As per Azimuth's previous assessment related to the Phase 1 lands, there is no connectivity between the wetland with the Blanding's occurrence and the property due to the intervening land use (Maplevue Drive and residential development) and further, through sediment fencing. Based on this information, Blanding's Turtle will not be considered within the Impact Assessment portion of this report.

4.3.3 Little Brown Myotis, Northern Myotis and Tri-colored Bat

Little Brown Myotis, Northern Myotis, and Tri-colored Bat may utilize woodlands and other treed areas as maternity roost sites, preferring trees >25cm diameter at breast height with evidence of cracks, holes, splits, lifted bark, etc. (called "snags") to provide refuge for the rearing of young during the late spring and early summer months (approximately June). During the site investigation, potentially suitable snags were observed within the woodland communities of the Natural Core Areas (SWDM2-2 and FODM5-11; Figure 2) and may provide suitable roosting habitat for SAR bats.

Potential exists for SAR bats to utilize individual trees such as those located along the hedgerows for day roosting. Individual trees such as those found in hedgerows are less likely to provide high quality roosting habitat that could be provided within a wooded area – which is locally abundant.



4.4 Wetlands (Non-provincially Significant, Unevaluated)

Wetlands within the Study Area are not identified as provincially or locally significant. Unevaluated wetland has been mapped by the province within the Study Area and on adjacent lands (Appendix C).

Additional areas of “other” wetland were documented lands along the periphery of the property within the Phase 2 lands (Figure 2). Wetland habitat extends onto the adjacent lands to the east and west the property as observed during Azimuth’s field investigations.

LSRCA attended the site on October 6, 2020 (Kate Lillie, Natural Heritage Ecologist) to confirm the limits of the wetland on the property. All wetland features were staked/flagged in the field with the exception of the wetland that is contained within the Natural Core Area of the City of Barrie’s Natural Heritage System (Appendix A). Subsequent to this staking exercise, the wetland limits were surveyed by an Ontario Land Surveyor. This information was provided to LSRCA on March 24, 2021 (Appendix A).

The wetland features (MAMM1-2, MAMM3-1a, and b) are anthropogenically influenced wetland communities that appear to have been clear of vegetation as recently as 2018. As documented within Azimuth’s NHE, no provincially rare or LSRCA watershed-rare species were documented within any of the wetland communities. There are no potential Significant Wildlife Habitat functions associated with any of these wetland features – although potential Significant Wildlife Habitat functions were identified within the creek corridor.

4.5 Woodland

As per the LSPP, any woodland greater than 10ha in size within the North Area (*i.e.* north of Highway 89) is considered Significant. The woodland on the property and extending off-site is upwards of 30ha in size, therefore, meets the definition of Significant Woodland.

As indicated above, the limits of the Natural Core Areas, which includes woodland habitat, have been confirmed on site by LSRCA and have subsequently been surveyed (Figure 2). The limit of the Natural Core Area has been approved by the OMB.



The woodland on the property (extending into adjacent lands) is part of the City's Natural Core within the Natural Heritage System and are considered Significant Woodland.

4.6 Valleyland

Sandy Cove Creek has been identified as a High (S) Constraint Stream Corridor Area – Special according to the City (Appendix B) but has not been identified within the City of Barrie's Natural Core Area which includes Significant Valleylands among other natural heritage features (See Section 8.3.2.1 of the City of Barrie's Official Plan).

Therefore, no portion of the Study Area is identified as Significant Valleyland, nor assigned a similar designation according to City of Barrie (Appendix B).

There are no valleyland features located within the Study Area according standards presented in the Natural Heritage Reference Manual (NHRM; OMNR, 2010). No portion of the Study Area fulfills the well-defined valley morphology and landform prominence required to be considered Candidate Significant Valleyland.

4.7 Significant Wildlife Habitat

An assessment of the potential for Significant Wildlife Habitat within Study Area was conducted, using the criteria outlined within MNRF's Significant Wildlife Habitat Technical Guide (2000) and the accompanying the Ecoregion 6E Criteria Schedules (MNRF, 2015). An assessment of Candidate Significant Wildlife Habitat categories relative to documented vegetation communities and habitats within the development parcel is presented in Table 5. The following Candidate Significant Wildlife Habitat types were determined or have potential to be present within the Study Area based on the results of the field program, organized by habitat type below:

- Bat Maternity Colonies
- Terrestrial Crayfish; and,
- Special Concern and Rare Wildlife Species (Barn Swallow, Monarch and Snapping Turtle).

Terrestrial Crayfish

Crayfish 'burrows' with mud chimneys were historically observed throughout the Sandy Cove Creek corridor. During Azimuth's field investigations conducted in 2020/2021 at least 24 chimneys were observed with the potential for additional chimneys that may



have been obscured with vegetation thus not readily visible. There are three (3) species of crayfish in Ontario that are known for consistent burrowing and chimneys: Meadow Crayfish (*Cambarus diogenes*), Chimney Crayfish (*Fallicambarus fodiens*) and Calico Crayfish (*Orconectes immunis*). Although not confirmed, the observed species is likely the Chimney Crayfish due to its known range within Ontario, the fact that it is more widespread and an obligate burrower. Based on these assumptions, the presence of Chimney Crayfish (chimneys) would be considered Significant Wildlife Habitat.

Barn Swallow

Barn Swallow will nest on ledges and walls of man-made structures such as buildings, barns, boathouses, garages, culverts and bridges. The species also nests in caves, holes, crevices and cliff ledges (COSEWIC, 2011). There were no nests observed on the single detached dwelling located within the Study Area on Phase 1. Subsequent to Azimuth's initial field surveys, the dwelling has been removed. One (1) Barn Swallow was observed foraging over adjacent lands to the west of the property during one of Azimuth's breeding bird surveys (Table 4). Due to the lack of potentially suitable nesting habitat for the species, Barn Swallow will not be included in the Impact Assessment.

Monarch

Breeding habitat is confined to sites where milkweeds, the sole food of caterpillars, grow. Milkweeds grow in a variety of environments, including meadows in farmlands, along roadsides and in ditches, open wetlands, dry sandy areas, short and tall grass prairie, river banks, irrigation ditches, arid valleys, and south-facing hills (COSEWIC, 2010). Common Milkweed (*Asclepias syriaca*) was documented within the Meadow community (MEMM3, Figure 2 and Table 2) although not in abundance.

Snapping Turtle

Habitat is characterized by slow-moving water with a soft mud bottom and dense aquatic vegetation. Often located in ponds, sloughs, shallow bays or river edges and slow streams, or areas combining several of these wetland habitats (COSEWIC, 2008). Although not documented during Azimuth's field investigations, Snapping Turtle has been documented within the area according to LSRCA information and has been documented as nesting on adjacent lands (Roots, 2021). Wetlands within the Study Area do not contain sufficient amounts of standing water to provide potentially suitable habitat for turtles. Although some standing water is present in Late April, the wetlands were void of any standing water by mid-May. Sandy Cove Creek, in time, could provide suitable conditions for turtles but likely lacks the required habitat features (*i.e.* soft mud



bottom) that would develop over time. Sandy Cove Creek could act as a conduit for movement across the landscape.

4.8 Areas of Natural and Scientific Interest

There are no Areas of Natural and Scientific Interest located within the Study Area according to provincial mapping resources (Appendix C).

4.9 Fish and Fish Habitat

Two mapped watercourses within the Innisfil Creek Subwatershed flow across the property from west to east with ultimate discharge into Lake Simcoe. These watercourses are both tributaries within the Sandy Cove Creek subwatershed as named by the LSRCA. The watercourse on the north end, within the Study Area, is called Sandy Cove Creek as per LSRCA but is also referred to as Redfern Drain by the Ministry of Agriculture, Food and Rural Affairs (OMAFRA). The tributaries originate on the property to the west and flow east across the property, off-site and under the 20th Sideroad. The tributaries converge and are then joined by several other first and second order watercourses as it continues to make its way east to Lake Simcoe, outletting at Sandy Cove, Town of Innisfil.

A site investigation confirmed the tributaries on the property as shown on Figure 2 and is described as follows:

The tributary that is mapped as occurring at the southern end of the property within the Phase 2 lands has no defined channel or open water characteristic of a watercourse. A low-lying pocket with damp ground and Sensitive Fern (*Onoclea sensibilis*) was observed at the western edge of the woodland and likely functions as a seasonal vernal pool. At the eastern property limit within the woodland, seasonal drainage could follow a topographic low off property. Background information from the LSRCA has Brook Stickleback (*Culaea inconstans*) captured at site SANDY-E, downstream and just east of the 20th Sideroad (Appendix A). While there is no watercourse feature at this location, seasonal drainage is expected to contribute to downstream tributary features containing fish, therefore the reach is considered indirect fish habitat.

The scope of this NHE did not include the re-evaluation of the Tributary to the south of the Phase 1 lands, therefore the Tributary is described herein as referenced in the Phase 1 NHE report, prior to the reconstruction of the watercourse on the Phase 1 lands. At per the Phase 1 NHE, Sandy Cove Creek within the Study Area was a straight



homogenous channel that historically cleared of vegetation. Prior to the channel relocation, a farm crossing with a steel culvert is located roughly in the center of the property. At the western limit of the property the channel bottom was mucky and damp, no flow or open water was observed. Cattails (*Typha spp.*) occurred within the channel and dogwood (*Cornus spp.*), goldenrod (*Solidago spp.*) and grasses were present on the banks. Open water was present approximately 20m upstream from the farm crossing with abundant algae and Water Plantain (*Alisma spp.*). An inlet pool containing frogs was present with a water depth of 10cm at the time of our field investigation. Downstream of the crossing more standing water was observed. At the eastern property limit a depth of approximately 10cm and wetted width of 2m was observed along with abundant Watercress (*Nasturtium spp.*), no discernible flow was seen. Watercress is a species of plant most commonly found in areas of cold water, associated with areas of groundwater upwelling. The abundance of this plant in the channel indicates that the watercourse receives groundwater inputs, and would be considered coldwater.

Downstream the property, Sandy Cove Creek is conveyed under 20th Sideroad in proximity to Maplevue Drive East. Flow at the 20th Sideroad is considered permanent, and substrate consisted of cobble and gravel with good riparian cover consisting of poplar (*Populus spp.*), cedar (*Thuja spp.*), grapevine (*Vitis spp.*) and herbaceous vegetation. No fish were observed during the site investigation.

OMAFRA has mapped the Tributary on the property as a Type D municipal drain, identified as the 'Redfern Drain', (OMAFRA, 2024, Appendix C). Type D drains have permanent flow, spring and fall fish spawning periods, and contain sensitive species such as Brook Trout (*Salvelinus fontinalis*). MNR GeoHub mapping classifies the Tributary as having a coldwater thermal regime, and a fish community comprised of a variety of fish species including Brook Trout, Mottled Sculpin, Creek Chub, Central Mudminnow, Fathead Minnow, Bluntnose Minnow and Blacknose Dace (among others), (ARA Water Line Segment MH-0249-SAN, MNR, 2023). Background information from the LSRCA shows that Brook Trout have been caught within Sandy Cove Creek as far as site SCC01 (map in Appendix A).

There are no records of aquatic SAR within 1km of the property. At the time of the site visit for the original Phase 1 NHE, the Tributary had shallow and low to no flow present on the property, therefore as per the original NHE, Sandy Cove Creek is considered seasonal direct fish habitat, and is protected under the Federal *Fisheries Act*. Coldwater fisheries timing restrictions apply for any work occurring below the high waterline. The



restricted activity timing window for the protection of spawning fish and developing eggs and fry is from October 1 to July 15 (Appendix C).

5.0 NATURAL HERITAGE FEATURES AND FUNCTIONS

The results of Azimuth's field studies combined with review of background information indicate the potential for the following candidate KNHFs within the Phase 2 Lands:

- Habitat for Endangered and Threatened Species
 - Black Ash
 - SAR Bat species (Little Brown Myotis, Northern Myotis, Tri-colored Bat)
- "Other" Wetlands
- Significant Woodland
- Significant Wildlife Habitat (Habitat for Special Concern and Rare Wildlife Species [Monarch]).

The following candidate KNHF's have the potential to occur within the Sandy Cove Creek corridor:

- Wetlands;
- Significant Wildlife Habitat (Chimney Crayfish and Habitat for Special Concern and Rare Wildlife Species [Monarch and Snapping Turtle]); and,
- Sandy Cove Creek and Fish Habitat.

6.0 PROPOSED DEVELOPMENT

The proposed development of the Site includes the construction of 28 single detached units, 209 townhomes, 22 back-to-back townhomes, 69 condo townhomes, a park block, natural heritage open space, and municipal roads. The proposed Concept Plan is provided in Appendix E. The development will be accessed via Terry Fox Drive (north-south) and Fagan Boulevard (east-west).

The stormwater management strategy is to be in conformance with the requirements of the Subwatershed Impact Study (SIS), that was prepared by RJ Burnside in 2016 for all of the Hewitt's Secondary Plan developments.

It is proposed that all of the municipal roads, single-family lots, townhome blocks, condominium townhome block and the park block will drain internally through a storm drainage system consisting of storm sewers and overland flow routes through municipal



right-of-ways. A smaller component of the rear rooftops and backyards within the townhome blocks will sheet flow directly into Sandy Cove Creek. A small area at the southern portion of the site will remain undeveloped and continue to drain eastward to the wetland within the southern portion of the site.

Water quantity control will be achieved through the proposed stormwater management (SWM) facility within the Dorsay subdivision lands to the east (as per the SIS). Stream erosion controls will be part of the SWM design whereby the runoff from the 25 millimetre (mm) storm will be detained and released over a period of 24 hours. Quality control includes various controls along the 'treatment train' including lot level control (roof leaders), conveyance controls (infiltration-based centralized Low Impact Development [LID] facilities and end of pipe controls (SWM facility within Dorsay lands including a permanent pool and filtration cell). Quality controls will meet the 'Enhanced' level which equates to providing 80% total suspended solids removal. Additional details of the proposed SWM strategy can be found within WMI's Functional Servicing and Stormwater Management Report (December, 2024).

Sanitary servicing for the proposed development will be provided by a local-trunk sanitary sewer that will outlet to a pump station at Maplevue Drive East and 20th Sideroad (WMI, 2024).

Water servicing will be provided through local and local-trunk watermains within all municipal roads (WMI, 2024).

There are currently no trails proposed as part of the development.

7.0 IMPACT ASSESSMENT

This impact assessment is prepared with regards to the construction footprint of proposed development and associated grading limits of the Phase 2 lands, as described above and illustrated in Figure 3 and within Appendix E. Furthermore, the impact assessment is associated with the identified Study Area.

7.1 Habitat for Threatened or Endangered Species

Impacts with regards to the ESA and Habitat of Threatened or Endangered species are covered under Section 9 and 10 of the *ESA*. Section 9 deals directly with killing, harming, or harassing living members of a species while Section 10 covers destruction or damage to habitat of Threatened or Endangered species. The following Threatened or Endangered species have the potential to occur within the limits of the Study Area:



- Black Ash
- Little Brown Myotis, Northern Myotis and Tri-colored Bat

7.1.1 Black Ash

Black Ash trees were observed within the SWDM2-2 community. The November 2024 site investigation that all Black Ash on the property are confined to this community. Furthermore, the majority of the Black Ash observed appeared to be less than 8cm diameter breast height and therefore; may not be afforded protection according to Ontario's *ESA*. Regardless, the proposed development will not result in the direct removal of alteration of the woodland/wetland communities within the study area, or within the 30m setback to the woodland. As such, providing that conformance is demonstrated for environmental considerations and mitigation described in Section 9 below, there is no expectation that there will be any negative impact to Black Ash as a result of the proposed development.

7.1.2 Little Brown Myotis, Northern Myotis and Tri-colored Bat

The proposed development will not result in the direct removal or alteration of the woodlands communities in the Natural Core Areas, and as such, there will be no direct impacts to SAR bats associated with these features. A 30m setback from the Natural Core Areas will ensure no indirect impacts occur to SAR bats and the woodland communities they depend upon.

Day roosting may occur within suitable trees within the identified hedgerows. Male bats and non-reproductive females roost individually or in small groups as they move across the landscape. This function is inconsistent since bats will not necessarily return to the same roost on consecutive nights. Given low fidelity to individual trees by day roosting bats and local abundance of tree cover in the greater landscape, there is no expectation that removal of a small number of trees on the property would constitute an impact to potential day roosting function for SAR bats. Thus, the mitigation proposed is intended to avoid accidental contraventions of Section 9 of the *ESA* should day roosting occur within the hedgerows (or individual trees) within the Study Area.

Assuming that conformance is demonstrated for mitigation described below, the proposed clearing activities associated with the hedgerows are expected to have no negative effect upon Endangered bat species or the ability for these species to carry out their life processes and will thus, be compliant with the regulations of the *ESA*.



7.2 Wetlands

The proposed development will not result in the direct removal or alteration of the wetland within the Natural Core Area, and as such, there will be no direct impacts to wetland associated with these features. A 30m setback from the Natural Core Areas will ensure no indirect impacts occur to this wetland area post-development.

As per Azimuth's Hydrogeological Report (2024), catchment 2 flows towards the southern wetland features. Post-development, the runoff and infiltration will increase compared to the pre-development scenario. Runoff from this catchment will flow uncontrolled along the length of the feature and will be buffered by the rear yard and 30m setback to the Natural Core Area. Additional infiltration may also occur if downspouts are directed to landscaped grass along the rear of the structure.

Temporary dewatering is required to facilitate construction of the service corridors in the south portion of the site. Azimuth's Hydrogeological Report confirms that the most significant decline in ground water levels will be contained within approximately 65m from the dewatering area. The wetland within the Natural Core Area is located >65m from the most significant zone of influence (Azimuth, 2024).

The proposed development will result in the loss of three isolated wetland units (MAMM1-2, MAMM3-1a and b). An Ecological Offsetting Strategy for Sandy Creek Estates was prepared by Azimuth in September 2022 which can be found within Appendix A. Within the EOS, it was determined that compensation for the loss of wetlands within the Phase 2 lands (MAMM1-2, MAMM3-1a and b) would be provided through cash-in-lieu in the amount of **\$214, 294.49**. The EOS has been reviewed and accepted by LSRCA (Appendix A).

7.3 Candidate Significant Wildlife Habitat

According to the PPS development and site alteration are not permitted within Significant Wildlife Habitat located in Ecoregion 6E, unless it can be demonstrated there will be no negative impacts upon the feature and its ecological functions. For the purposes of this assessment, Candidate Significant Wildlife Habitat described below is treated as significant:

- Bat Maternity Colonies



- Chimney Crayfish; and,
- Special Concern and Rare Wildlife Species.
 - Monarch
 - Snapping Turtle

7.3.1 Bat Maternity Colonies

The proposed development will not result in the direct removal or alteration of the woodlands communities in the Natural Core Areas, and as such, there will be no direct impacts to potential bat maternity colonies associated with these features. A 30m setback from the Natural Core Areas will ensure no indirect impacts occur to SAR bats and the woodland communities they depend upon.

7.3.2 Chimney Crayfish

The proposed development will occur outside of the previously re-aligned 60m Sandy Cove Creek corridor. As a result, there are no anticipated direct impacts to the habitat of Chimney Crayfish resulting from the proposed development of the Phase 2 lands.

An impact assessment was prepared under a separate cover related to potential impacts associated with the creek re-alignment works (Geoprocess, 2021). As per Geoprocess's report, the Sandy Cove Creek re-alignment includes the creation of bottom lands within the creek corridor which will provide suitable habitat for burrowing crayfish post-construction. The protected corridor is larger than the originally occurring habitat areas therefore it is anticipated that local crayfish species will migrate to these areas once re-alignment works are complete (Geoprocess, 2021).

7.3.3 Special Concern and Rare Wildlife Species

Monarch

Monarch Butterfly depends upon its host plant, Milkweed), to carry out its life processes including nectaring and larval development. Only minimal Milkweed plants were documented on site; therefore, the Study Area is only providing marginal habitat function restricted to the Sandy Cove Creek riparian areas and the small remnant anthropogenic communities.

All proposed development is located outside of the Sandy Cove Creek corridor. The channel re-alignment works completed on the Phase 1 lands created a 60m wide corridor (Figure 3) to maintain flow conditions in the watercourse eastward in the Redfern Drain. Native plantings were incorporated into the design of the Sandy Cove



Creek corridor (Geoprocess, 2021), and an impact assessment was prepared under a separate cover related to potential impacts associated with the creek re-alignment works (Geoprocess, 2021). As per Geoprocess (2021), the restoration plan includes seeding and areas for continued milkweed growth within the corridor.

Given the abundance of much higher quality habitat for the species in large meadows and roadsides throughout the regional landscape and the fact that it is our understanding that milkweed has been incorporated into the restoration plan for the Sandy Cove Creek re-alignment, there is no expectation that removal of a marginally-suitable remnant anthropogenically influenced communities within the proposed footprint of development would represent a negative impact to the species.

There is no expectation that negative ecological impacts to the above potential Significant Wildlife Habitat function would result from the proposed development.

Snapping Turtle

The channel re-alignment works has resulted in a 60m wide corridor (Figure 3). All proposed development is located outside of the Sandy Cove Creek Corridor thus maintaining potential movement corridor post-development.

Provided the recommended mitigation measures are adhered to, there is no expectation that negative ecological impacts to the above potential Significant Wildlife Habitat function would result from the proposed development.

7.4 Sandy Cove Creek and Fish Habitat

As highlighted in Section 3.3, the tributary was re-aligned as part of the Phase 1 development, co-ordinated by others and reviewed by relevant review agencies. The development of the Phase 2 lands is to the south of the Tributary of Sandy Cove Creek (Redfern Class D Municipal Drain), therefore there are no direct impacts to the watercourse in Phase 2. Post-construction, the creek will be maintained and will continue to function as fish habitat post-development.

The creek re-alignment plan developed by others includes the restoration of a 30m riparian buffer consisting of native trees and shrubs throughout the corridor (Geoprocess, 2021). The reestablishment of a 30m buffer adjacent to the Tributary is expected to be sufficient to allow for natural processes to occur unimpeded by the Phase 2 development.



Water quality and quantity control of stormwater on Phase 2 lands will be achieved through the proposed SWM facility within the Dorsay subdivision lands to the east. Enhanced level water quality controls with 80% Total Suspended Solids (TSS) removal will be provided for the majority of the Phase 2 lands through the proposed 'treatment train' as described above. Design of the Dorsay SWM facility will include measures to mitigate the temperature of water discharging into Sandy Cove Creek which are to be determined at detailed design (WMI, 2024).

As per the Water Balance completed by Azimuth (2024), there will be an increase in infiltration and runoff post-development. Since site runoff will be directed downgradient of the site, these inputs will bypass a 400m section of Sandy Cove Creek. However, any potential impacts will be partially mitigated through the runoff surplus contributed to the feature immediately north of the Site within Phase I of the development. In addition, given the creek is considered a cold-water feature, a maintenance in ground water infiltration through the use of LIDs will reduce potential for impact to this feature. The increase in surface runoff will be mitigated by the SWMP which will buffer outflows mitigating short duration increases in surface flow into the creek (Azimuth, 2024). For these reasons, water quality and quantity in the receiving watercourse are not anticipated to be impacted by the proposed development presuming that the Functional Servicing Report for the development will comply with provincial and LSRCA SWM criteria.

Temporary dewatering will be required to facilitate construction of the service corridors in the south portion of the site. Azimuth's Hydrogeological Report confirms that the most significant decline in ground water levels will be contained within approximately 65m from the dewatering area. Both Sandy Cove Creek and the drainage area within the southern portion of the site are located >65m from the most significant zone of influence (Azimuth, 2024). Dewatering discharge is expected to be released into Sandy Cove Creek, which may sustain coldwater baseflow conditions.

The potential development impacts are principally limited to standard construction risk associated with dewatering, land grading and exposed soils which may be susceptible to runoff to the watercourse. Such impacts are fully mitigable using best management practices (BMP's) when working around water. Based on the above, there is no expectation that the proposed development will result in any impacts to the ecological form or function of the watercourse.

Providing that conformance is demonstrated for environmental considerations and mitigation described in Section 8 below, there is no expectation that the proposed development will result in a negative impact to fish or fish habitat under the Federal *Fisheries Act*.



8.0 RECOMMENDATIONS

8.1 Species at Risk

It should be noted that the absence of a protected species within the Study Area does not indicate that they will never occur within the area. Given the dynamic character of the natural environment, there is a constant variation in habitat use. Care should be taken in the interpretation of presence of species of concern including those listed under the ESA. Changes to policy, or the natural environment, could result in shifts, removal, or addition of new areas to the list of areas currently considered candidate KNHFs. This report is intended as a point in time assessment of the potential to impact SAR; not to provide long term “clearance” for SAR. While there is no expectation that the assessment should change significantly, it is the responsibility of the proponent to ensure that they are not in contravention of the ESA at the time that site works are undertaken. A review of the assessment provided in this report by a qualified person should be sufficient to provide appropriate advice at the time of the onset of future site works.

8.1.1 Worker Training

Worker training would assist the on-site workers in the identification of the SAR with potential to occur in the area. Workers should be instructed to stop work and contact the MECP and/or a qualified Environmental Consultant if any SAR are encountered within the work area. Individuals working on site should ensure that SAR are not harmed during construction or killed by heavy machinery, vehicles or other equipment.

The contractor should educate all site personnel to ensure that, if identified, the SAR are not wantonly injured or killed, and to ensure that damage to features which could constitute habitat is avoided. Information should be conveyed through a SAR expert and include:

- Species habitat and identification;
- Requirements under the ESA including avoidance of harm to the species and damage to relevant habitat;
- Appropriate action to take if the species is encountered;
- How to record sightings and encounters; and,
- That care should be taken when undertaking construction activities in order to avoid harming the species or damaging/destroying habitat.

The expert should be a qualified biologist who specializes in ecology/biology, or SAR.



8.1.2 Endangered Bats

Hedgerows

As highlighted in Section 8.2.2, future construction activities involving the removal of trees (particularly large trees >25 cm diameter at breast height in the early stages of decay) from occurring between April 1st to approximately September 30th to avoid impacting potential bat roosting habitat.

Where possible, we recommend retaining those cavity trees on-site that do not pose a falling hazard to future dwellings as a way of maintaining “wildlife cavity trees” in general as benefit to local wildlife.

8.2 Timing Restrictions for Vegetation Clearing

8.2.1 Birds

Construction activities involving the removal of vegetation should be restricted from occurring during the bird breeding season. Migratory birds, nests, and eggs are protected by the *Migratory Birds Convention Act*, and the *Fish and Wildlife Conservation Act*.

In nesting Zones C2 and C3, where the property is located, vegetation clearing should be avoided between April 1st and August 30th of any given year. If vegetation clearing is required between these dates, screening by an ecologist with knowledge of bird species present in the area could be undertaken to ensure that the vegetation has been confirmed to be free of nests prior to clearing.

8.2.2 Bats

Construction activities involving the removal of vegetation, in particular potential cavity trees (*i.e.* within hedgerows), should be restricted from occurring during the active season for bats from April 1st through to September 30th to avoid accidental contraventions of the ESA associated with incidental bat use of the Study Area.

8.3 Surface Water Runoff and Control

Runoff due to construction can contribute significant sediment loads to receiving watercourses if not properly mitigated. Thus, effective erosion and sediment controls will be required to mitigate impacts commonly associated with sediment and erosion leading to impacts to fish and fish habitat. The following best management practices



should be considered for the planning and design of all proposed development activities:

- Installation and maintenance of silt fencing around the perimeter of the development will be required and monitored for the duration of construction activities to prevent sediment migration, runoff off of the construction area, and erosion into on-site and adjacent natural heritage features during and post construction. Silt fencing should consist of page wire fencing and backing filter cloth that is properly toed into the ground. This fencing will also prevent the accidental intrusion of machinery operations into adjacent undisturbed natural areas.
- All siltation control devices should be installed prior to the commencement of construction and maintained on a regular basis until soils are stabilized and re-development is complete.
- Bare areas should be stabilized with topsoil and seed or sod as soon as possible following construction.

Timing of construction should coincide with drier periods to further minimize the potential for transport of sediment and other deleterious substances into the adjacent watercourse and natural features.

8.4 Fish Habitat

There are no site alteration activities proposed on the Tributary of Sandy Cove for the Phase 2 development, however construction activities in proximity to the watercourse have the potential to pose impacts that could impact fish and fish habitat if unmitigated. Standard mitigation measures for working near waterbodies should be employed during all stages of construction, and include the following:

- Install and maintain sediment and erosion controls prior to lot clearing and grading, and for the duration of construction;
- Monitoring of site conditions to ensure ESCs are functioning as intended, particularly following storm events. Any deficiencies should be identified and corrected expeditiously to protect the valley corridor;
- Monitor the watercourse and creek corridor vegetation during site development to ensure that ESC controls are functioning as intended;
- Delineate developable areas using barrier fencing to prevent accidental intrusions into the creek corridor, and provide ESC functions. At no time should machinery traverse the creek corridor beyond the delineation fencing, cross the



watercourse, or utilize the creek corridor for purposes of equipment or materials storage;

- Avoid clearing of riparian vegetation to the extent possible;
- Re-vegetate disturbed areas where possible with native species suitable for the site;
- Machinery refuelling and maintenance should occur $\geq 30\text{m}$ from the watercourse;
- Water taking from the watercourse, and water discharge to the watercourse is not permitted (*i.e.* for cleaning of equipment or materials).

Any future development plans such as roads, culverts and SWM ponds/outlets that have the potential to impact fish and fish habitat should be reviewed by a qualified Fisheries Ecologist.

8.5 Post-construction Monitoring

8.5.1 Post-Construction Monitoring

Monitoring is recommended in the Sandy Cove Creek corridor (including stormwater outlets) and in Sandy Cove Creek after construction. Obvious signs of erosion (rilling, lack of vegetative cover, bank/bed erosion/scour, *etc.*) should be noted and photographed, with appropriate mitigation measures developed and implemented by the proponent as soon as possible. At least one visit per year should be scheduled to occur within 24 hours of a large ($>25\text{mm}$) precipitation event.

8.6 Ecological Offsetting

As highlighted above, an Ecological Offsetting Plan has been accepted by LSRCA to compensate for the loss of wetlands located outside of the Natural Core Area (Appendix A).

9.0 CONCLUSIONS

Based upon our analysis, it is concluded that the environmental conditions are not limiting to the proposed development through incorporation of the environmental protection measures described in Section 8 of this report.

At this time, our findings are summarized as follows:



- The proposed development is consistent with the policies of the Provincial Planning Statement, *ESA*, City of Barrie Official Plan, LSPP, and LSRCA O. Reg. 41/24.
- Our impact assessment has given full consideration to the habitat requirements of all SAR assumed and documented to occur in the area and results indicate the proposed site development will not result in negative direct or indirect impacts to habitat of SAR providing conformance is demonstrated to mitigation measures described in Section 8.
- The proposed development will result in the loss of wetland (unevaluated, non-provincially significant). Ecological Offsetting in the form of cash-in-lieu is being provided to offset for the loss of these features (Appendix A).
- The proposed works are not expected to negatively impact the ecological functions of the associated with the potential and confirmed Significant Woodland or Significant Wildlife Habitat functions if the appropriate mitigation measures outlined in Section 8 are followed.
- The development does not propose alteration to fish habitat, the watercourse, or works within the associated 60m riparian corridor. Compliance with the MOE and LSRCA stormwater management criteria, in addition to the use of appropriate mitigation measures described in Section 8 with focus on sediment and erosion controls and protection of water quality and quantity, are expected avoid impacts to fish and fish habitat.



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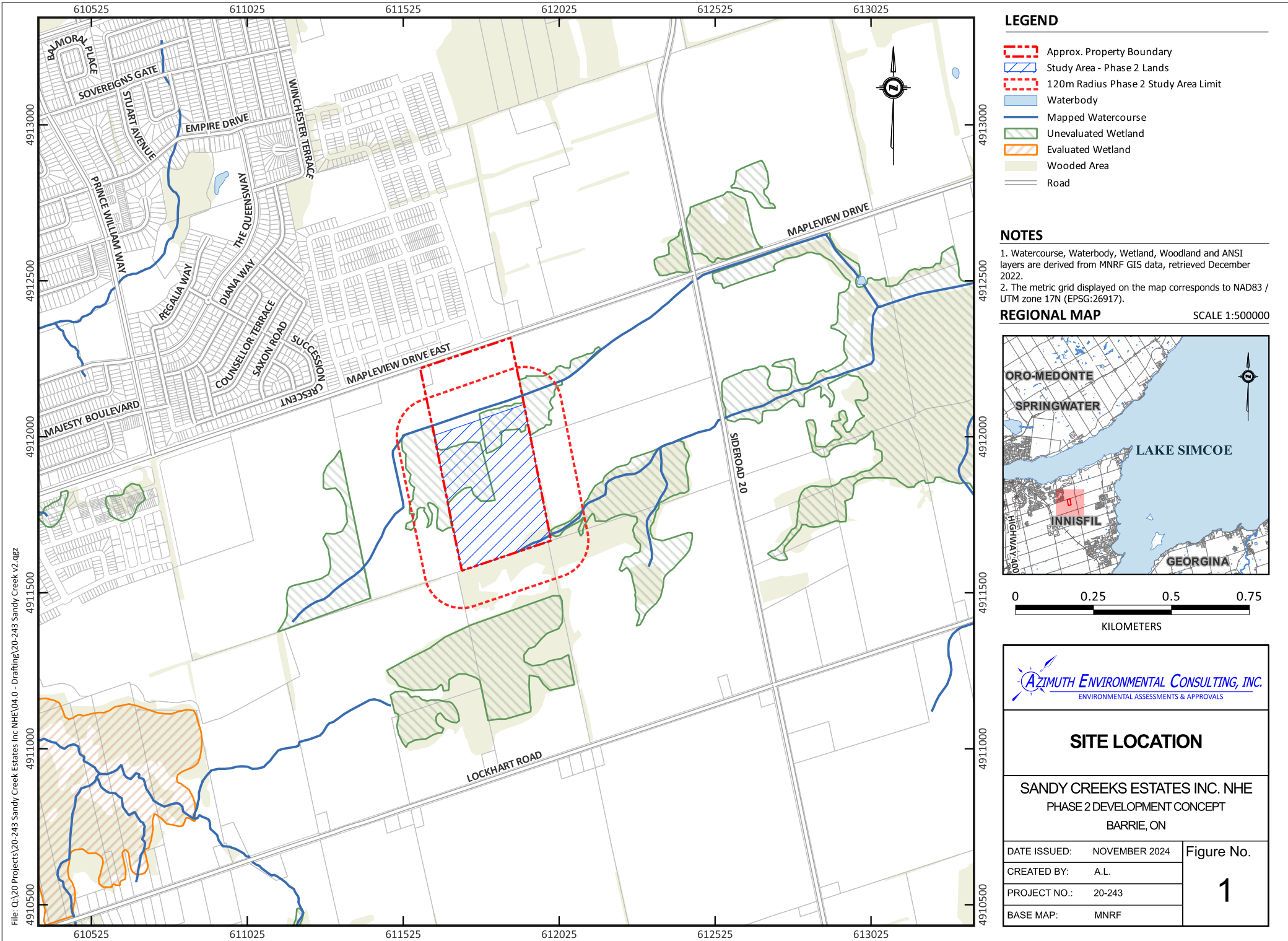
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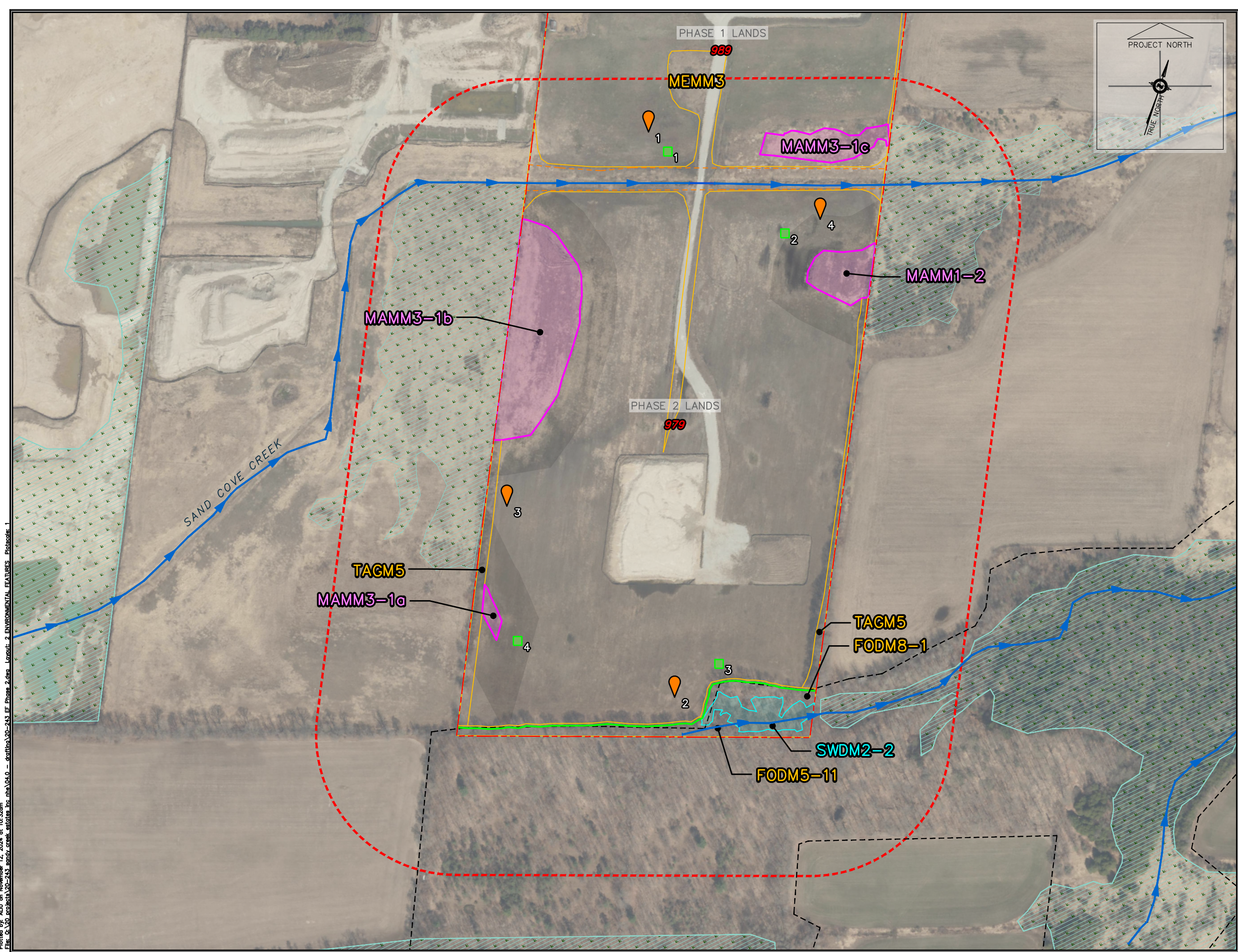


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LEGEND:

- APPROX. PROPERTY BOUNDARY
- 120m STUDY AREA LIMIT
- WOODLAND BOUNDARY
- WATERCOURSE
- TOP OF BANK
- 2015 SURVEY OF THE NHS

SURVEY STATIONS

- AMPHIBIAN SURVEY STATION
- BIRD SURVEY STATION

ELC VEGETATION COMMUNITIES:

- FODM5-11 DRY-FRESH SUGAR MAPLE-HARDWOOD DECIDUOUS FOREST
- FODM8-1 FRESH-MOIST POPLAR DECIDUOUS FOREST
- MEMM3 DRY-FRESH MIXED MEADOW
- TAGM5 TREED FENCEROW

AZIMUTH SURVEYED WETLANDS:

- SWDM2-2 GREEN ASH MINERAL DECIDUOUS SWAMP

LSRCA CONFIRMED/STAKED WETLANDS:

- MAMM1-2 CATTAIL GRAMINOID MINERAL MEADOW MARSH
- MAMM3-1 MIXED MINERAL MEADOW MARSH

LOCATION PLAN

0 75.00 150.0
HORIZONTAL SCALE 1:3000

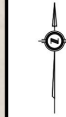
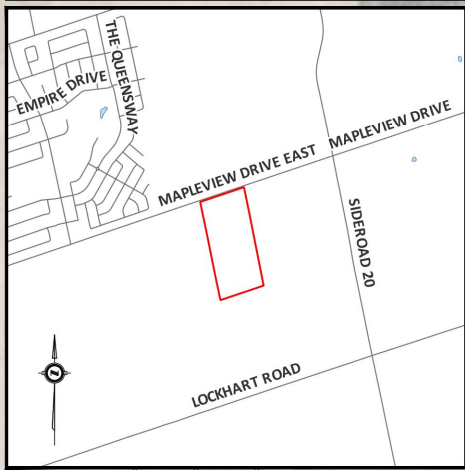
AZIMUTH ENVIRONMENTAL CONSULTING, INC.
ENVIRONMENTAL ASSESSMENTS & APPROVALS

ENVIRONMENTAL FEATURES

SANDY CREEK ESTATES INC. NHE
PHASE 2 DEVELOPMENT CONCEPT
BARRIE, ON

DATE ISSUED:	NOVEMBER 2024	Figure No.
CREATED BY:	A.L.	2
PROJECT NO.:	20-243	
REFERENCE:	SIMCOE COUNTY	

LOCATION PLAN



PROPOSED SWM POND
LOCATION

MIXED-USE

PHASE 1 LANDS

MIXED-USE

PROJECT NORTH



MEDIUM
DENSITY

TOWNS
TOWNS
TOWNS
TOWNS

TOWNS
TOWNS

MAMM3-1b

MEMM3

MAMM3-1c

NATURAL HERITAGE
SYSTEM

NATURAL HERITAGE
SYSTEM

PHASE 1
PHASE 2

STREET 'A' (18m ROW)

FUTURE ROW

TERRY FOX DR (27m ROW)

MAMM1-2
DEVELOPMENT

PHASE 2 LANDS

FAGAN BLVD (24m ROW)

PARK
0.5ha (1.24ac)

FUTURE
DEVELOPMENT

SAND COVE CREEK

TAGM5

MAMM3-1a

TAGM5
FODM8-1

NATURAL HERITAGE
SYSTEM

SWDM2-2
FODM5-11

NATURAL HERITAGE
SYSTEM

NATURAL HERITAGE
SYSTEM

FUTURE
DEVELOPMENT

LEGEND:

- APPROX. PROPERTY BOUNDARY
- 120m STUDY AREA LIMIT
- STUDY AREA - PHASE 2 LANDS
- WOODLAND BOUNDARY
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- TOP OF BANK
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- FODM8-1 FRESH-MOIST POPLAR DECIDUOUS FOREST
- MEMM3 TAGM5 DRY-FRESH MIXED MEADOW TREED FENCEROW



AZIMUTH SURVEYED WETLANDS:

- SWDM2-2 GREEN ASH MINERAL DECIDUOUS SWAMP



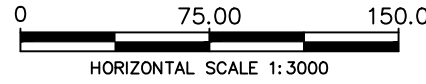
LSRCA CONFIRMED/STAKED WETLANDS:

- MAMM1-2 CATTAIL GRAMINOID MINERAL MEADOW MARSH
- MAMM3-1 MIXED MINERAL MEADOW MARSH

SANDY COVE CREEK REALIGNMENT CENTRELINE

SANDY COVE CREEK REALIGNMENT MEANDER

60m WIDE CHANNEL RELOCATION CORRIDOR



PROPOSED DEVELOPMENT

SANDY CREEK ESTATES INC. NHE
PHASE 2 DEVELOPMENT CONCEPT
BARRIE, ON

DATE ISSUED:	NOVEMBER 2024	Figure No.
CREATED BY:	A.L.	3
PROJECT NO.:	20-243	
REFERENCE:	SIMCOE COUNTY	

Plotted by: ALU on November 12, 2024 at 10:35am
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Table 1: Species at Risk Assessment, NHE Sandy Creek Estates (Phase 2), City of Barrie

Taxa	Common Name ¹	ESA Status ²	Habitat Requirements ³	Habitat on or Adjacent to Phase 1 Lands?	Observed?	Issue Related to Proposed Development?
Bird	Bank Swallow	THR	Nest in burrows it constructs in sand banks associated with valleylands and in fill piles/gravel pits having near vertical faces.	No suitable habitat within Study Area.	No	No
Bird	Bobolink	THR	Large grasslands and hayfields.	No suitable habitat within the study area as there is no grassland habitat. Fallow field on site would be considered mixed meadow composed of a large proportion of weedy forb species which are considered unsuitable for the species. Active earthworks is currently underway within the lands to the west and lands to the east are actively farmed and/or composed of thicket habitat. Not documented during Azimuth's breeding bird surveys or during surveys completed by others on adjacent lands (Geoprocess, 2021 and Geoprocess, 2024).	No	No
Bird	Eastern Meadowlark	THR	Moderately tall grasslands, such as pastures and hayfields, but are also found in alfalfa fields, weedy borders of croplands, roadsides, orchards, airports, shrubby overgrown fields, or other open areas. Small trees, shrubs or fence posts are used as elevated song perches.	No suitable habitat within the study area as there is no grassland habitat. Fallow field on site would be considered mixed meadow composed of a large proportion of weedy forb species which are considered unsuitable for the species. Active earthworks is currently underway within the lands to the west and lands to the east are actively farmed and/or composed of thicket habitat. Not documented during Azimuth's breeding bird surveys or during surveys completed by others on adjacent lands (Geoprocess, 2021 and Geoprocess, 2024).	No.	No
Bird	Red-headed Woodpecker	END	Open woodland and woodland edges and is often found in parks, golf courses and cemeteries.	No potentially suitable habitat for the species. Not documented during Azimuth's breeding bird surveys.	No	No
Mammal	Little Brown Myotis	END	Mature woodlands (snag/cavity trees) and buildings (churches, older homes with attics, <i>etc.</i>)	The woodland within the study area has the potential to provide habtiat for Little Brown Myotis.	N/A	No. Discussed further in Impact Assessment.
Mammal	Northern Myotis	END	Mature woodlands where it roosts under loose bark and in the cavities.	The woodland within the study area has the potential to provide habtiat for Northern Myotis.	N/A	No. Discussed further in Impact Assessment.
Mammal	Tri-colored Bat	END	Mature woodlands (snag/cavity trees) and occasionally in barns or other buildings	The woodland within the study area has the potential to provide habtiat for Tri-colored Bat.	N/A	No. Discussed further in Impact Assessment.

Taxa	Common Name ¹	ESA Status ²	Habitat Requirements ³	Habitat on or Adjacent to Phase 1 Lands?	Observed?	Issue Related to Proposed Development?
Plant	Black Ash	END	Facultative wetland tree species frequently found in floodplain forests, swamps, seepage areas, shoreline margins and fens.	Yes, Black Ash were identified within the wetland (SWDM2-2, Figure 2) within the Phase 2 lands.	Yes	No. Discussed further in Impact Assessment.
Plant	Butternut	END	Butternut is usually associated with deciduous forests, establishing under canopy openings or along forest edges. It is also found in treed fence lines.	Yes, hedgerows can provide potentially suitable habtiat for the species. No Butternut were observed during Azimuth's field investigations.	No	No
Reptile	Blanding's Turtle	THR	Shallow water, usually in large wetlands and shallow lakes with lots of water plants.	Prior to the channel re-alignment, the wetlands within the study area did not contain sufficient amounts of standing water to provide potentially suitable habitat for turtles. Although some standing water is present in late April, the wetlands on the property were void of any standing water by mid-May. Sandy Cove Creek did not provide suitable conditions for turtles but could have acted as a conduit for movement across the landscape. The current conditions of the re-aligned channel have the potential to provide suitable habtiat for turtles, although there is no expectation that Blanding's Turtle has migrated to this recently created channel due to lack of connectivity.	No	No
Bird	Barn Swallow	SC	Build nests in manmade structures like sheds, barns, etc. and under bridges/in culverts, <i>etc.</i>	Currently, there is likely no suitable habtiat for the species within the Study Area. There are no structures located within the Study Area.	Yes	No
Bird	Canada Warbler	SC	Deciduous and coniferous, usually wet forest types, all with a well-developed, dense shrub layer.	Potentially suitable habitat could be associated with the deciduous swamp community (SWDM2-2, Figure 2). No Canada Warbler were observed during Azimuth's breeding bird surveys.	No	No
Bird	Common Nighthawk	SC	Open areas with little to no ground vegetation, such as logged or burned-over areas, forest clearings, rock barrens, peat bogs, lakeshores, and mine tailings. Although the species also nests in cultivated fields, orchards, urban parks, mine tailings and along gravel roads and railways, they tend to occupy natural sites.	No potentially suitable natural habitat within the study area. Open (disturbed) areas within the property and on adjacent lands are active work areas that contains fill that is not composed of gravel. There is no expectation that Common Nighthawk are utilizing the areas where active earthworks are currently occuring.	No	No
Bird	Eastern Wood-Pewee	SC	Mid-canopy layer of forest clearings and edges of deciduous and mixed forests.	The woodland within the study area offers potentially suitable habitat for the species (FODM5-11 and SWDM2-2, Figure 2). Eastern Wood-Pewee was not documented during Azimuth's dawn breeding bird surveys nor was breeding confirmed (probable) through studies completed on adjacent lands (Geoprocess, 2024).	No	No
Bird	Golden-winged Warbler	SC	Habitats wtih shrubs surrounded by mature forest – locations that have recently been disturbed, such as field edges, hydro or utility right-of-ways, or logged areas.	Potentially suitable habitat within thicket swamp communities located to the east of the property. Golden-winged Warbler was not documented during Azimuth's dawn breeding bird surveys nor was breeding confirmed (probable) through studies completed on adjacent lands (Geoprocess, 2024).	No	N/A

Taxa	Common Name ¹	ESA Status ²	Habitat Requirements ³	Habitat on or Adjacent to Phase 1 Lands?	Observed?	Issue Related to Proposed Development?
Bird	Wood Thrush	SC	Mature deciduous and mixed (conifer-deciduous) forests.	The woodland within the study area offers potentially suitable habitat for the species (FODM5-11 and SWDM2-2, Figure 2). Wood Thrush was not documented during Azimuth's dawn breeding bird surveys or through studies completed on adjacent lands (Geoprocess, 2024).	No	N/A
Insect	Monarch	SC	Meadows with milkweed plants.	Only marginally suitable habitat confined to Sandy Creek corridor. No areas of extensive Common Milkweed documented.	Yes	N/A
Reptile	Snapping Turtle	SC	Wetlands with permanent standing water/lakes/slow moving rivers	Mapped wetlands within the Phase 2 lands do not contain sufficient amounts of standing water to provide potentially suitable habitat for turtles. Although some standing water is present in Late April, the wetlands on the property were void of any standing water by mid-May. The re-aligned Sandy Cove Creek currently provides suitable conditions for turtles and could act as a conduit for movement across the landscape.	No	N/A

¹List compiled based on background review of species documented to occur within the general area.

² Protection status under Ontario's *Endangered Species Act*, 2007 (ESA). Endangered (END), Threatened (THR), Special Concern (SC)

³Habitat description as per Ministry of Environment, Conservation and Parks (MECP) Species at Risk website 2024. <https://www.ontario.ca/page/species-risk>

Table 2: Vascular Plant Species List, NHE Sandy Creek Estates (Phase 2), City of Barrie

Family	¹ Scientific Name	¹ Common Name	² ELC Code - Corresponding to Figure 2										¹ Conservation Rank Information				
			MEMM3	TAGM5	FODM5-11	FODM8-1	MAMM1-2	MAMM3-1a	MAMM3-1b	MAMM3-1c	SWDM2-2	Linear Drainage Feature	S-Rank	G-Rank	³ LSRCA	SARO	Tracked by MNRF
Aceraceae	<i>Acer negundo</i>	Manitoba Maple				x							S5	G5	+		N
Aceraceae	<i>Acer rubrum</i>	Red Maple			x				x		x		S5	G5			N
Aceraceae	<i>Acer saccharum</i>	Sugar Maple		x	x	x					x		S5	G5			N
Alismataceae	<i>Alisma</i> sp. (formerly <i>Alisma plantago-aquatica</i> ¹)	Water-plantain species										x	-	-		-	-
Amaranthaceae	<i>Amaranthus retroflexus</i>	Redroot Amaranth	x										SNA	G5	+		N
Anacardiaceae	<i>Rhus typhina</i>	Staghorn Sumac	x	x									S5	G5			N
Anacardiaceae	<i>Toxicodendron radicans</i> var. <i>rydbergii</i>	Western Poison Ivy			x								S5	G--T5			N
Apiaceae	<i>Cicuta bulbifera</i>	Bulbous Water-hemlock										x	S5	G5			N
Apiaceae	<i>Daucus carota</i>	Wild Carrot	x	x			x		x	x			SNA	GNR	+		N
Apocynaceae	<i>Apocynum androsaemifolium</i>	Spreading Dogbane			x								S5	G5			N
Apocynaceae	<i>Asclepias incarnata</i>	Swamp Milkweed					x		x	x			S5	G5			N
Apocynaceae	<i>Asclepias syriaca</i>	Common Milkweed	x										S5	G5			N
Apocynaceae	<i>Vincetoxicum rossicum</i>	European Swallowwort	x										SNA	GNR	+		N
Araceae	<i>Arisaema triphyllum</i>	Jack-in-the-pulpit				x					x		S5	G5			N
Araliaceae	<i>Aralia nudicaulis</i>	Wild Sarsaparilla				x							S5	G5			N
Asteraceae	<i>Achillea millefolium</i>	Common Yarrow		x									SNA	G5	+		N
Asteraceae	<i>Ambrosia artemisiifolia</i>	Common Ragweed	x							x			S5	G5	(+)		N
Asteraceae	<i>Arctium minus</i>	Common Burdock	x									x	SNA	GNR	+		N
Asteraceae	<i>Carduus nutans</i>	Nodding Thistle	x										SNA	GNR	+		N
Asteraceae	<i>Centaurea nigrescens</i>	Short-fringed Knapweed	x										SNA	GNR			N
Asteraceae	<i>Cirsium arvense</i>	Canada Thistle	x		x				x				SNA	G5	+		N
Asteraceae	<i>Cirsium vulgare</i>	Bull Thistle	x						x	x			SNA	GNR	+		N
Asteraceae	<i>Erigeron annuus</i>	Annual Fleabane	x	x	x		x	x	x				S5	G5			N
Asteraceae	<i>Erigeron philadelphicus</i>	Philadelphia Fleabane			x								S5	G5			P
Asteraceae	<i>Eupatorium perfoliatum</i>	Common Boneset						x	x	x		x	S5	G5			N
Asteraceae	<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	x				x	x	x	x		x	S5	G5			N
Asteraceae	<i>Eutrochium maculatum</i>	Spotted Joe Pye Weed							x	x		x	S5	G5			N
Asteraceae	<i>Lactuca serriola</i>	Prickly Lettuce	x										SNA	GNR	+		N
Asteraceae	<i>Leucanthemum vulgare</i>	Oxeye Daisy	x	x	x								SNA	GNR	+		N
Asteraceae	<i>Pilosella caespitosa</i>	Meadow Hawkweed	x	x		x							SNA	GNR	+		N
Asteraceae	<i>Solidago altissima</i>	Tall Goldenrod	x	x	x	x	x	x		x			S5	G5			P
Asteraceae	<i>Solidago canadensis</i>	Canada Goldenrod	x	x									S5	G5			N
Asteraceae	<i>Solidago gigantea</i>	Giant Goldenrod				x							S5	G5			P
Asteraceae	<i>Solidago rugosa</i>	Rough-stemmed Goldenrod	x					x					S5	G5			N
Asteraceae	<i>Sonchus arvensis</i>	Field Sow-thistle	x					x	x	x			SNA	GNR	+		N
Asteraceae	<i>Symphyotrichum lanceolatum</i>	Panicled Aster	x				x	x	x	x	x	x	S5	G5			P
Asteraceae	<i>Symphyotrichum lateriflorum</i>	Calico Aster		x							x		S5	G5			P
Asteraceae	<i>Symphyotrichum puniceum</i>	Purple-stemmed Aster						x	x				S5	G5			N
Asteraceae	<i>Taraxacum officinale</i>	Common Dandelion	x	x					x				SNA	G5	+		N
Asteraceae	<i>Taraxacum palustre</i>	Marsh Dandelion							x				SNA	GNR	+		N
Asteraceae	<i>Tragopogon dubius</i>	Yellow Goatsbeard	x										SNA	GNR	+		N
Asteraceae	<i>Tussilago farfara</i>	Coltsfoot										x	SNA	GNR	+		N
Balsaminaceae	<i>Impatiens</i> sp.	Jewelweed species									x		-	-		-	-

Table 2: Vascular Plant Species List, NHE Sandy Creek Estates (Phase 2), City of Barrie

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			MEMM3	TAGM5	FODM5-11	FODM8-1	MAMM1-2	MAMM3-1a	MAMM3-1b	MAMM3-1c	SWDM2-2	Linear Drainage Feature	S-Rank	G-Rank	³ LSRCA	SARO	Tracked by MNRF
Berberidaceae	<i>Caulophyllum giganteum</i>	Giant Blue Cohosh			x								S5	G4G5			N
Betulaceae	<i>Betula alleghaniensis</i>	Yellow Birch				x					x		S5	G5			N
Betulaceae	<i>Betula papyrifera</i>	Paper Birch				x							S5	G5			N
Betulaceae	<i>Ostrya virginiana</i>	Eastern Hop-hornbeam		x	x	x							S5	G5			N
Boraginaceae	<i>Echium vulgare</i>	Common Viper's Bugloss	x										SNA	GNR	+		N
Brassicaceae	<i>Nasturtium officinale</i>	Watercress										x	SNA	GNR			N
Brassicaceae	<i>Thlaspi arvense</i>	Field Pennycress	x										SNA	GNR	+		N
Caprifoliaceae	<i>Lonicera tatarica</i>	Tatarian Honeysuckle		x									SNA	GNR	+		N
Caprifoliaceae	<i>Lonicera x bella</i>	(<i>Lonicera morrowii</i> X <i>Lonicera tatarica</i>)			x								SNA	GNA	+		N
Caprifoliaceae	<i>Sambucus canadensis</i>	Common Elderberry							x				S5	G5			N
Caprifoliaceae	<i>Viburnum lentago</i>	Nannyberry		x									S5	G5			N
Caprifoliaceae	<i>Viburnum opulus ssp. opulus</i>	Cranberry Viburnum	x										SNA	G5TNR			N
Caryophyllaceae	<i>Cerastium fontanum</i>	Common Mouse-ear Chickweed	x			x							SNA	GNR	+		N
Caryophyllaceae	<i>Silene vulgaris</i>	Bladder Campion		x									SNA	GNR	+		N
Chenopodiaceae	<i>Chenopodium album</i>	Common Lamb's-quarters	x										SNA	G5	+		N
Clusiaceae	<i>Hypericum perforatum</i>	Common St. John's-wort	x	x	x		x						SNA	GNR	+		N
Cornaceae	<i>Cornus alternifolia</i>	Alternate-leaved Dogwood		x	x	x					x		S5	G5			N
Cornaceae	<i>Cornus sericea</i>	Red-osier Dogwood	x	x		x			x	x	x	x	S5	G5			N
Cupressaceae	<i>Juniperus virginiana</i>	Eastern Red Cedar		x									S5	G5			N
Cupressaceae	<i>Thuja occidentalis</i>	Eastern White Cedar				x							S5	G5			N
Cyperaceae	<i>Carex bebbii</i>	Bebb's Sedge						x		x			S5	G5			N
Cyperaceae	<i>Carex cristatella</i>	Crested Sedge									x		S5	G5			N
Cyperaceae	<i>Carex flava</i>	Yellow Sedge										x	S5	G5			N
Cyperaceae	<i>Carex gracillima</i>	Graceful Sedge				x							S5	G5			N
Cyperaceae	<i>Carex granularis</i>	Limestone Meadow Sedge	x					x					S5	G5			N
Cyperaceae	<i>Carex hystericina</i>	Porcupine Sedge						x	x			x	S5	G5			N
Cyperaceae	<i>Carex intumescens</i>	Bladder Sedge			x								S5	G5			N
Cyperaceae	<i>Carex retrorsa</i>	Retorse Sedge										x	S5	G5			N
Cyperaceae	<i>Carex rosea</i>	Rosy Sedge			x								S5	G5			N
Cyperaceae	<i>Carex stipata</i>	Awl-fruited Sedge							x	x		x	S5	G5			N
Cyperaceae	<i>Carex vulpinoidea</i>	Fox Sedge	x				x	x	x	x	x	x	S5	G5			N
Cyperaceae	<i>Eleocharis erythropoda</i>	Red-stemmed Spikerush					x		x			x	S5	G5			N
Cyperaceae	<i>Schoenoplectus tabernaemontani</i>	Soft-stemmed Bulrush					x		x	x		x	S5	G5			N
Cyperaceae	<i>Scirpus atrovirens</i>	Dark-green Bulrush					x	x		x		x	S5	G5			N
Dipsacaceae	<i>Dipsacus fullonum</i>	Common Teasel		x			x		x				SNA	GNR	+		N
Dryopteridaceae	<i>Dryopteris carthusiana</i>	Spinulose Wood Fern			x								S5	G5			N
Dryopteridaceae	<i>Matteuccia struthiopteris</i>	Ostrich Fern									x		S5	G5			N
Dryopteridaceae	<i>Onoclea sensibilis</i>	Sensitive Fern			x	x					x		S5	G5			N
Equisetaceae	<i>Equisetum arvense</i>	Field Horsetail	x	x	x	x		x		x	x		S5	G5			N
Equisetaceae	<i>Equisetum fluviatile</i>	Water Horsetail										x	S5	G5			N
Equisetaceae	<i>Equisetum hyemale</i>	Common Scouring-rush		x				x		x			S5	G5			N
Equisetaceae	<i>Equisetum variegatum</i>	Variegated Scouring-rush						x		x		x	S5	G5			N
Fabaceae	<i>Lotus corniculatus</i>	Garden Bird's-foot Trefoil	x	x						x			SNA	GNR	+		N

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Family	¹ Scientific Name	¹ Common Name	² ELC Code - Corresponding to Figure 2										¹ Conservation Rank Information				
			MEMM3	TAGM5	FODM5-11	FODM8-1	MAMM1-2	MAMM3-1a	MAMM3-1b	MAMM3-1c	SWDM2-2	Linear Drainage Feature	S-Rank	G-Rank	³ LSRCA	SARO	Tracked by MNRF
Fabaceae	<i>Medicago lupulina</i>	Black Medick	x										SNA	GNR	+		N
Fabaceae	<i>Melilotus albus</i>	White Sweet-clover	x										SNA	G5	+		N
Fabaceae	<i>Trifolium hybridum</i>	Alsike Clover	x					x					SNA	GNR	+		N
Fabaceae	<i>Trifolium pratense</i>	Red Clover	x		x								SNA	GNR	+		N
Fabaceae	<i>Trifolium repens</i>	White Clover	x	x	x					x			SNA	GNR	+		N
Fabaceae	<i>Vicia cracca</i>	Tufted Vetch	x										SNA	GNR	+		N
Fagaceae	<i>Fagus grandifolia</i>	American Beech		x	x	x							S4	G5			N
Geraniaceae	<i>Geranium robertianum</i>	Herb-Robert				x							S5	G5	+		N
Grossulariaceae	<i>Ribes cynosbati</i>	Eastern Prickly Gooseberry		x	x	x							S5	G5			N
Juncaceae	<i>Juncus articulatus</i>	Jointed Rush							x	x		x	S5	G5			N
Juncaceae	<i>Juncus dudleyi</i>	Dudley's Rush	x				x	x	x	x			S5	G5			N
Juncaceae	<i>Juncus effusus</i>	Soft Rush								x			S5	G5			N
Juncaceae	<i>Juncus nodosus</i>	Knotted Rush					x		x	x		x	S5	G5			N
Juncaceae	<i>Juncus torreyi</i>	Torrey's Rush										x	S5	G5	W		N
Lamiaceae	<i>Leonurus cardiaca</i>	Common Motherwort	x										SNA	GNR	+		N
Lamiaceae	<i>Lycopus americanus</i>	American Water-horehound							x			x	S5	G5			N
Lamiaceae	<i>Lycopus uniflorus</i>	Northern Water-horehound					x			x			S5	G5			N
Lamiaceae	<i>Nepeta cataria</i>	Catnip	x										SNA	GNR	+		N
Lemnaceae	<i>Lemna minor</i>	Small Duckweed										x	S5?	G5			N
Liliaceae	<i>Convallaria majalis</i>	European Lily-of-the-valley			x								SNA	G5	+		N
Liliaceae	<i>Maianthemum canadense</i>	Wild Lily-of-the-valley		x	x								S5	G5			N
Lythraceae	<i>Lythrum salicaria</i>	Purple Loosestrife							x				SNA	G5	+		N
Malvaceae	<i>Malva neglecta</i>	Common Mallow	x										SNA	GNR	+		N
Oleaceae	<i>Fraxinus americana</i>	White Ash		x	x	x							S4	G5			N
Oleaceae	<i>Fraxinus nigra</i>	Black Ash									x		S3	G5			Y
Oleaceae	<i>Fraxinus pennsylvanica</i>	Red Ash (formerly Green Ash ¹)				x					x		S4	G5			N
Onagraceae	<i>Circaea canadensis</i>	Broad-leaved Enchanter's Nightshade			x	x					x		S5	G5			N
Onagraceae	<i>Epilobium coloratum</i>	Purple-veined Willowherb										x	S5	G5	W		N
Onagraceae	<i>Epilobium parviflorum</i>	Small-flowered Hairy Willowherb						x		x			SNA	GNR	+		N
Onagraceae	<i>Ludwigia palustris</i>	Marsh Seedbox										x	S5	G5	W		N
Onagraceae	<i>Oenothera biennis</i>	Common Evening-primrose	x	x			x		x	x			S5	G5			N
Orchidaceae	<i>Epipactis helleborine</i>	Broad-leaved Helleborine		x									SNA	GNR	+		N
Osmundaceae	<i>Osmunda regalis</i>	Royal Fern									x		S5	G5			N
Pinaceae	<i>Pinus sylvestris</i>	Scots Pine		x									SNA	GNR	+		N
Plantaginaceae	<i>Plantago major</i>	Common Plantain								x			SNA	G5	+		N
Poaceae	<i>Agrostis gigantea</i>	Redtop	x				x	x	x	x		x	SNA	G4G5	+		N
Poaceae	<i>Agrostis stolonifera</i>	Creeping Bentgrass	x				x			x		x	SNA	G5	+		N
Poaceae	<i>Bromus inermis</i>	Smooth Brome	x	x									SNA	G5	+		N
Poaceae	<i>Bromus japonicus</i>	Japanese Brome					x						SNA	GNR			N
Poaceae	<i>Bromus tectorum</i>	Downy Brome	x										SNA	GNR	+		N
Poaceae	<i>Dactylis glomerata</i>	Orchard Grass	x	x		x							SNA	GNR	+		N
Poaceae	<i>Digitaria sanguinalis</i>	Hairy Crabgrass	x										SNA	G5	+		N

Table 2: Vascular Plant Species List, NHE Sandy Creek Estates (Phase 2), City of Barrie

Family	¹ Scientific Name	¹ Common Name	² ELC Code - Corresponding to Figure 2										¹ Conservation Rank Information				
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Poaceae	<i>Echinochloa crus-galli</i>	Large Barnyard Grass					x						SNA	GNR	+		N
Poaceae	<i>Elymus repens</i>	Quackgrass	x	x									SNA	GNR	+		N
Poaceae	<i>Eragrostis minor</i>	Little Lovegrass	x										SNA	GNR	+		N
Poaceae	<i>Festuca rubra</i>	Red Fescue	x										S5	G5	+		P
Poaceae	<i>Glyceria striata</i>	Fowl Mannagrass							x		x	x	S5	G5			N
Poaceae	<i>Leersia oryzoides</i>	Rice Cutgrass									x	x	S5	G5			N
Poaceae	<i>Lolium arundinaceum</i>	Tall Ryegrass	x	x									SNA	GNR	+		N
Poaceae	<i>Lolium perenne</i>	Perennial Ryegrass		x									SNA	GNR	+		N
Poaceae	<i>Phalaris arundinacea</i>	Reed Canarygrass	x	x			x		x	x	x	x	S5	G5	(+)		N
Poaceae	<i>Phleum pratense</i>	Common Timothy	x		x								SNA	GNR	+		N
Poaceae	<i>Phragmites australis</i>	Common Reed								x		x	S4?	G5	+		N
Poaceae	<i>Poa compressa</i>	Canada Bluegrass	x			x	x	x					SNA	GNR	(+)		N
Poaceae	<i>Poa pratensis</i>	Kentucky Bluegrass	x			x		x					S5	G5	+		P
Polygonaceae	<i>Persicaria maculosa</i>	Spotted Lady's-thumb					x		x				SNA	G3G5	+		N
Polygonaceae	<i>Rumex crispus</i>	Curled Dock	x	x	x			x		x			SNA	GNR	+		N
Potamogetonaceae	<i>Potamogeton</i> sp.	Pondweed species										x	-	-		-	-
Pyrolaceae	<i>Pyrola elliptica</i>	Shinleaf				x							S5	G5			N
Ranunculaceae	<i>Actaea pachypoda</i>	White Baneberry			x								S5	G5			N
Ranunculaceae	<i>Ranunculus sceleratus</i>	Cursed Buttercup							x				S5	G5			N
Rhamnaceae	<i>Rhamnus cathartica</i>	European Buckthorn	x	x									SNA	GNR	+		N
Rosaceae	<i>Crataegus</i> sp.	Hawthorn species		x									-	-		-	-
Rosaceae	<i>Fragaria virginiana</i>	Wild Strawberry	x	x	x	x							S5	G5			N
Rosaceae	<i>Geum aleppicum</i>	Yellow Avens	x	x						x			S5	G5			N
Rosaceae	<i>Malus pumila</i>	Common Apple		x		x							SNA	G5			N
Rosaceae	<i>Potentilla norvegica</i>	Rough Cinquefoil	x						x				S5	G5			N
Rosaceae	<i>Potentilla recta</i>	Sulphur Cinquefoil	x	x									SNA	GNR			N
Rosaceae	<i>Prunus pensylvanica</i>	Pin Cherry	x										S5	G5			N
Rosaceae	<i>Prunus serotina</i>	Black Cherry	x	x	x	x							S5	G5			N
Rosaceae	<i>Prunus virginiana</i>	Chokecherry	x	x	x	x					x		S5	G5			N
Rosaceae	<i>Pyrus communis</i>	Common Pear		x									SNA	G5			N
Rosaceae	<i>Rosa rugosa</i>	Rugosa Rose		x									SNA	GNR			N
Rosaceae	<i>Rubus allegheniensis</i>	Allegheny Blackberry		x	x	x							S5	G5			N
Rosaceae	<i>Rubus idaeus ssp. strigosus</i>	North American Red Raspberry	x		x	x							S5	G5T5			N
Rosaceae	<i>Rubus occidentalis</i>	Black Raspberry	x	x	x	x					x		S5	G5			N
Rosaceae	<i>Sorbus aucuparia</i>	European Mountain-ash		x									SNA	G5			N
Rosaceae	<i>Spiraea alba</i>	White Meadowsweet							x				S5	G5			N
Rubiaceae	<i>Galium mollugo</i>	Smooth Bedstraw		x									SNA	GNR	+		N
Rubiaceae	<i>Galium palustre</i>	Common Marsh Bedstraw										x	S5	G5			N
Salicaceae	<i>Populus balsamifera</i>	Balsam Poplar		x		x					x	x	S5	G5			N
Salicaceae	<i>Populus tremuloides</i>	Trembling Aspen	x		x	x			x		x		S5	G5			N
Salicaceae	<i>Populus x canadensis</i>	(<i>Populus deltoides</i> X <i>Populus nigra</i>)					x						SNA	GNA	+		N
Salicaceae	<i>Salix bebbiana</i>	Bebb's Willow		x				x	x	x		x	S5	G5			N
Salicaceae	<i>Salix discolor</i>	Pussy Willow		x			x			x		x	S5	G5			N

Table 2: Vascular Plant Species List, NHE Sandy Creek Estates (Phase 2), City of Barrie

			² ELC Code - Corresponding to Figure 2										¹ Conservation Rank Information				
Family	¹ Scientific Name	¹ Common Name	MEMM3	TAGM5	FODM5-11	FODM8-1	MAMM1-2	MAMM3-1a	MAMM3-1b	MAMM3-1c	SWDM2-2	Linear Drainage Feature	S-Rank	G-Rank	³ LSRCA	SARO	Tracked by MNRF
Salicaceae	<i>Salix eriocephala</i>	Cottony Willow		x			x	x	x	x	x	x	S5	G5	+		N
Salicaceae	<i>Salix petiolaris</i>	Meadow Willow		x					x	x		x	S5	G5			N
Salicaceae	<i>Salix purpurea</i>	Purple Willow		x				x					SNA	G5	+		N
Salicaceae	<i>Salix</i> sp.	Willow species	x	x			x	x		x			-	-		-	-
Scrophulariaceae	<i>Linaria vulgaris</i>	Butter-and-eggs	x										SNA	GNR			N
Scrophulariaceae	<i>Mimulus ringens</i>	Square-stemmed Monkeyflower					x		x	x			S5	G5			N
Scrophulariaceae	<i>Verbascum thapsus</i>	Common Mullein	x	x									SNA	GNR			N
Scrophulariaceae	<i>Veronica officinalis</i>	Common Speedwell			x								SNA	G5	+		N
Smilacaceae	<i>Smilax herbacea</i>	Herbaceous Carrionflower		x									S4?	G5			N
Solanaceae	<i>Solanum dulcamara</i>	Bittersweet Nightshade									x	x	SNA	GNR			N
Sparganiaceae	<i>Sparganium</i> sp.	Burreed species										x	-	-		-	-
Tiliaceae	<i>Tilia americana</i>	Basswood		x	x						x		S5	G5			N
Typhaceae	<i>Typha angustifolia</i>	Narrow-leaved Cattail								x		x	SNA	G5	(+)		N
Typhaceae	<i>Typha latifolia</i>	Broad-leaved Cattail					x		x	x			S5	G5			N
Typhaceae	<i>Typha x glauca</i>	(<i>Typha angustifolia</i> X <i>Typha latifolia</i>)								x			SNA	GNA			N
Ulmaceae	<i>Ulmus americana</i>	White Elm		x							x		S5	G4			N
Urticaceae	<i>Boehmeria cylindrica</i>	Small-spike False Nettle									x		S5	G5			N
Urticaceae	<i>Urtica dioica</i>	Stinging Nettle	x										S5	G5	+		N
Vitaceae	<i>Parthenocissus vitacea</i>	Thicket Creeper	x	x	x	x							S5	G5			N
Vitaceae	<i>Vitis riparia</i>	Riverbank Grape	x	x	x				x		x	x	S5	G5			N
¹ Nomenclature and Conservation Rankings based on Ministry of Natural Resources (MNR) Natural Heritage Information Centre (NHIC, 2024)																	
² ELC Codes based on Ecological Land Classification for Southern Ontario manual (Lee et al. 1998, and 2008 update)																	
³ Lake Simcoe Region Conservation Authority. 2003. State of the Lake Simcoe Watershed. Lake Simcoe Environment Management Strategy.																	

Table 3: Ecological Land Classification, NHE Sandy Creek Estates (Phase 2), City of Barrie

Ecological Land Classification ¹			Description	
System	Community Class	Vegetation Type	Community Composition	Ground Cover
Terrestrial	Meadow	MEMM3, Dry - Fresh Mixed Meadow	This community covers the upland areas where farming (active crop agriculture and tilling) were not observed, where common meadow vegetation has established. This polygon includes the open property edges, the high banks of the drainage feature in the north half of the property, as well as the old overgrown patch of land north of the drainage feature which used to have accessory farm structures on it². All of these areas, generally, exhibit dry-fresh conditions. It is important to note that the banks of the drainage feature exhibit an upland plant assemblage as well, being quite elevated above the drainage feature and relatively steep, likely a result of historical efforts to drain the farmland efficiently. Wetland plants were found to exclusively occupy the middle of the drainage trench, and this linear feature is described separately in the 'Linear Drainage Feature' noted at the bottom of this table. Canopy generally absent, with subcanopy very scattered and mostly open, containing minor elements of Trembling Aspen, Staghorn Sumac, Black Cherry, and others depending on location.	Ground cover variable depending on location. Understory dense in most areas, composed variably of Tall Goldenrod, Wild Carrot, Smooth Brome, White Sweet Clover, Panicked Aster, Thicket Creeper, Reed Canarygrass, Stinging Nettle, Knapweed and others. Ground layer dense, composed of elements including grasses, Garden Bird's-foot Trefoil, Thicket Creeper, Common Burdock, Black Medic and an assortment of other common, early-successional species typical of agricultural margins.
Terrestrial	Cultural	TAGM5, Treed Fencerow	This community follows the east and west treed property boundaries of the southern half of the property, south of where they are interrupted by wetland. Polygons are composed generally of deciduous trees, and may result from intentional planting, natural regeneration or both. Canopy on the east edge moderately dense, composed largely of Ash, Sugar Maple, Basswood and Eastern Hop-hornbeam, with the moderately dense subcanopy composed of variable elements of Chokecherry, Sugar Maple, Ash, Hawthorn, Thicket Creeper and Wild Grape. Canopy of the west edge similar, somewhat sparse, composed largely of Sugar Maple, Black Cherry, Ash and White Elm, with the relatively dense subcanopy composed largely of Ash, Wild Grape and some Willows.	Ground cover disturbed and typical of farm hedgerows adjacent to forest, composed of a combination of open field and partial shade species. Understory moderately dense, composed variably of elements of Chokecherry, Tall Goldenrod, Wild Grape, Smooth Brome, Thicket Creeper, Sugar Maple and others. Ground layer composed of similar species, including grasses, Thicket Creeper, Ash, and in shaded areas including some Wild Lily-of-the-valley.
Terrestrial	Forest	FODM8-1, Fresh – Moist Poplar Deciduous Forest	This community largely represents a relatively early-successional, fresh-moist Poplar-dominated forest fringe element, which continues along the forest edge on the property to the east. The subcanopy is densely establishing with later-successional species from the adjacent forest, which will likely dominate this polygon in the future. This polygon surrounds the SWDM2-2 polygon and grades into swamp where they share a border. Canopy is relatively dense, composed largely of Trembling Aspen with elements of Paper Birch, Sugar Maple and Ash. Subcanopy is quite dense, dominated by Sugar Maple and Ash, with some minor elements of Paper Birch.	Understory is somewhat dense, largely composed of Ash and Sugar Maple. Ground layer is also relatively dense, including a large Ash component with elements of Sensitive Fern, Broad-leaved Enchanter's Nightshade and others.

Ecological Land Classification ¹			Description	
System	Community Class	Vegetation Type	Community Composition	Ground Cover
Terrestrial	Forest	FODM5-11, Dry – Fresh Sugar Maple – Hardwood Deciduous Forest	This community is, overall, a relatively young second-growth Sugar Maple - Hardwood forest, with mature elements/older trees along the property boundary persisting from an older historical hedgerow. County of Simcoe mapping indicates the majority of this forest polygon south of the subject property was a farm field in the 1950's³. Canopy dense, composed largely of Ash, Sugar Maple, Trembling Aspen, Basswood and Black Cherry. Subcanopy is also relatively dense, composed primarily of young Sugar Maple and Ash, with some Eastern Hop-hornbeam.	Ground cover somewhat variable, reflective of secondary growth and including young saplings of trees in the canopy and subcanopy. Understory somewhat sparse, composed largely of Trembling Aspen, Ash, Chokecherry and Sugar Maple. Ground Layer somewhat dense, composed of Thicket Creeper, Ash, Sugar Maple, Broad-leaved Enchanter's Nightshade and <i>Carex</i> sedges. Occasional remnant forest species are present, including White Baneberry and Giant Blue Cohosh. These may have been harbored by the historical hedgerow.
Wetland	Marsh	MAMM1-2, Cattail Graminoid Mineral Meadow Marsh	This community is an early-successional Cattail-dominated wetland occupying low ground near the east edge of the farm field. County of Simcoe aerial images suggest that this feature was clear of vegetation as recently as 2018³. However, based on the positioning of the low ground in this area, and the alignment of the downstream areas of the drainage feature to the northeast, it is reasonable to suspect that this low area may have occupied the original path of the drainage feature before it was trenched straight through the north third of the property. Canopy and subcanopy elements are absent from this feature due to its young age. This feature abuts a thicket swamp and fresh-moist thicket complex on adjacent lands to the east, which is largely composed of shrub Willows, Red-osier Dogwood and Reed Canarygrass. It is anticipated that these conditions would spread to this polygon if given time.	Understory is dense, composed of Broad-leaved Cattail, Grass-leaved Goldenrod, Square-stemmed Monkeyflower, Soft-stemmed Bulrush, Panicked Aster and Redtop. Ground layer is also dense, composed largely of Grasses, Rushes, Spikerushes and <i>Carex</i> sedges.
Wetland	Marsh	MAMM3-1a, Mixed Mineral Meadow Marsh	This community is an early-successional, marginal wetland community occupying a low area at the southwest edge of the farm field. County of Simcoe aerial images suggest that this feature was clear of vegetation as recently as 2018³. Vegetation includes significant elements of moist meadow species, but with the balance tending towards wetland-dominance. Canopy and subcanopy elements are absent from this feature due to its young age.	Understory is moderately dense, composed of Goldenrods, shrub Willows, Redtop and Dark-green Bulrush. Ground layer is dense, composed largely of Field Horsetail, <i>Carex</i> sedges, Variegated Scouring-rush and Dudley's Rush.

Ecological Land Classification ¹			Description	
System	Community Class	Vegetation Type	Community Composition	Ground Cover
Wetland	Marsh	MAMM3-1b, Mixed Mineral Meadow Marsh	This community is the largest of the wetland communities on the property. This community is an early-successional mixed meadow marsh occupying low ground near the west edge of the farm field. County of Simcoe aerial images suggest that this feature was clear of vegetation as recently as 2012, and partially clear in 2018³. However, based on the positioning of the low ground in this area, and the alignment of the downstream areas of the drainage feature to the northeast, it is reasonable to suspect that this low area may have occupied the original path of the drainage feature before it was trenched straight through the north third of the property. Canopy and subcanopy elements are absent from this feature due to its young age. This feature abuts a larger meadow marsh on adjacent lands to the west. It is anticipated that these conditions would spread to this polygon if given time, and this connectivity likely accounts for the species diversity present in this polygon.	Ground cover somewhat diverse. Understory dense, composed of an even distribution of several species, including Reed Canarygrass, Grass-leaved Goldenrod and other Goldenrods, Panicle Aster, Common Boneset, Swamp Milkweed, Annual Fleabane and others. Ground layer composed of a variety of species including Dudley's Rush, <i>Carex</i> sedges, Red-stemmed Spikerush, Jointed Rush, Fowl Mannagrass and other grasses.
Wetland	Marsh	MAMM3-1c, Mixed Mineral Meadow Marsh	This community is an early-successional wetland occupying the base of a gentle slope in the northeast portion of the property, just north of the trenched drainage corridor. It is unclear whether the water in this area derives from landscape drainage or a generally high water table at this location. However, County of Simcoe aerial images suggest that this feature has the longest history of any of the marsh polygons, being continuously vegetated (at least in its centre) since at least 1997³. However, the lack of shrub cover suggests periodic cutting may have occurred. Canopy and subcanopy layers are absent from this polygon.	Understory is dense, dominated primarily by Reed Canarygrass, but including numerous other species including Panicle Aster, Grass-leaved Goldenrod, Common Boneset, shrub Willows, and Cattails. Ground layer also dense and relatively diverse, dominated by Rushes, Horsetails, Grasses, <i>Carex</i> sedges, Garden Bird's-foot Trefoil and many other species.
Wetland	Swamp	SWDM2-2, Green Ash Mineral Deciduous Swamp	This community is an Ash-dominated swamp intermixed with poplars, occupying a low-lying depression within the forest at the southeast end of the property. Upper canopy is experiencing Ash die-back and decline, likely due to Emerald Ash Borer. Upper canopy somewhat sparse, composed of Red Ash and Trembling Aspen. Subcanopy somewhat dense, composed of White Elm, Ash, Trembling Aspen, and Red Maple, with some Sugar Maple towards the fringes.	Ground coverage relatively dense overall, likely in part due to increased light availability from declining canopy. Understory somewhat sparse, composed of Ash, Trembling Aspen, Bittersweet Nightshade and Red-osier Dogwood. Ground layer variable but dense, dominated by Sensitive Fern, with elements of Fowl Mannagrass, Bittersweet Nightshade, Jewelweed (likely Spotted Jewelweed) and Field Horsetail.
Drainage Feature	-	Linear Drainage Feature	This drainage feature is located in the north half of the property, crossing the property in an east-west direction. This feature is surrounded by the MEMM3 polygon (discussed separately above), which defines the steep/well-defined banks of the drainage feature. The drainage feature itself is highly linear and trenched, with wetland plant species occupying only the low centre of this trench (typically narrow, with a width of only ~1-3m). The flora of this feature are discussed here as a separate feature due to being notably different than the surrounding polygon. Canopy absent. Sparse elements of Willows and Balsam Poplar occupy the subcanopy height level.	Understory layer densely dominated by Narrow-leaved Cattail and Reed Canarygrass, with elements of Panicle Aster and Water Horsetail evenly distributed along the corridor. Ground layer also very dense, typically composed of Rice Cutgrass, Creeping Bentgrass, Jointed Rush and Fowl Mannagrass. A small area west of the central path crossing the drainage feature contains localized shallow water conditions, and includes occurrences of Burreed, Pondweed, Duckweed and similar species.

Ecological Land Classification ¹			Description	
System	Community Class	Vegetation Type	Community Composition	Ground Cover
¹ Lee H., W. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998, update 2008. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch.SCSS Field Guide FG-02. 225pp. ² Historical aerial imagery available through the County of Simcoe at https://maps.simcoe.ca/public/				

Table 4: Breeding Bird Summary, NHE Sandy Creek Estates (Phase 2), City of Barrie

			Breeding Bird Survey Data (2020/2021)								Conservation Ranks ^H		
			Point Count Stations ^{B,C,D}				Adjacent Lands ^{B,C,D}	Incidental ^E	Breeding Expected on Property? ^F	Area-sensitive? ^G	S-Rank	G-Rank	SARO Status
Family	^A Scientific Name	^A Common Name	1	2	3	4							
Accipitridae	<i>Buteo jamaicensis</i>	Red-tailed Hawk		H	H		H (S)	H	Po		S5	G5	
Alaudidae	<i>Eremophila alpestris</i>	Horned Lark						X	No		S4	G5	
Bombycillidae	<i>Bombycilla cedrorum</i>	Cedar Waxwing		H		H			Po		S5	G5	
Cardinalidae	<i>Cardinalis cardinalis</i>	Northern Cardinal			S		S (SE)		Po		S5	G5	
Cardinalidae	<i>Passerina cyanea</i>	Indigo Bunting		H,S	S	S	S (SE)		Po		S5B	G5	
Charadriidae	<i>Charadrius vociferus</i>	Killdeer	S	H	S	H	H (E and W),		Po		S4B	G5	
Columbidae	<i>Zenaida macroura</i>	Mourning Dove	FO		H	H	S (E)		Po		S5	G5	
Corvidae	<i>Corvus brachyrhynchos</i>	American Crow	X	X			H (SE, S, E)		No		S5	G5	
Fringillidae	<i>Spinus tristis</i>	American Goldfinch	H,	T	H	T			Po		S5	G5	
Icteridae	<i>Agelaius phoeniceus</i>	Red-winged Blackbird	T		P	S	A (E and W)		Pr		S5	G5	
Icteridae	<i>Icterus galbula</i>	Baltimore Oriole						X	No		S4B	G5	
Icteridae	<i>Molothrus ater</i>	Brown-headed Cowbird	S		S				Po		S5	G5	
Mimidae	<i>Dumetella carolinensis</i>	Gray Catbird			S	H		H	Po		S5B, S3N	G5	
Paridae	<i>Poecile atricapillus</i>	Black-capped Chickadee		S		S			Po		S5	G5	
Parulidae	<i>Geothlypis trichas</i>	Common Yellowthroat			T	T	S (E and W)		Pr		S5B, S3N	G5	
Parulidae	<i>Setophaga petechia</i>	Yellow Warbler					S(E)		No		S5B	G5	
Passerellidae	<i>Melospiza georgiana</i>	Swamp Sparrow					S (SW)		No		S5B, S4N	G5	
Passerellidae	<i>Melospiza melodia</i>	Song Sparrow	T	T	T	T	T (W)		Pr		S5	G5	
Passerellidae	<i>Passerculus sandwichensis</i>	Savannah Sparrow	T	S	T	S	S (E)		Pr	x	S5B, S3N	G5	
Passerellidae	<i>Poocetes gramineus</i>	Vesper Sparrow					T (W)		No		S4B	G5	
Passerellidae	<i>Spizella passerina</i>	Chipping Sparrow					S(E)	X	No		S5B, S3N	G5	
Phasianidae	<i>Meleagris gallopavo</i>	Wild Turkey	H,					H	Po		S5	G5	
Picidae	<i>Colaptes auratus</i>	Northern Flicker		H				H	Po		S5	G5	
Picidae	<i>Melanerpes carolinus</i>	Red-bellied Woodpecker		S					Po		S5	G5	
Picidae	<i>Picoides pubescens</i>	Downy Woodpecker						H	No		S5	G5	
Picidae	<i>Picoides villosus</i>	Hairy Woodpecker		H					Po	x	S5	G5	
Scolopacidae	<i>Bartramia longicauda</i>	Upland Sandpiper					S (W),		No	x	S2B	G5	
Scolopacidae	<i>Gallinago delicata</i>	Wilson's Snipe						X	No		S5B	G5	
Sittidae	<i>Sitta carolinensis</i>	White-breasted Nuthatch						H	No	x	S5	G5	
Sturnidae	<i>Sturnus vulgaris</i>	European Starling				FO			No		SNA	G5	
Troglodytidae	<i>Troglodytes aedon</i>	House Wren			T	S			Pr		S5B	G5	
Turdidae	<i>Turdus migratorius</i>	American Robin	S			H		H	Po		S5	G5	
Tyrannidae	<i>Empidonax traillii</i>	Willow Flycatcher					S (E),		No		S4B	G5	
Tyrannidae	<i>Myiarchus crinitus</i>	Great Crested Flycatcher		H					Po		S5B	G5	
Vireonidae	<i>Vireo olivaceus</i>	Red-eyed Vireo		T			,S (SE)		Pr		S5B	G5	
Icteridae	<i>Quiscalus quiscula</i>	Common Grackle	H	H		H			Ps		S5	G5	
Cuculidae	<i>Coccyzus erythrophthalmus</i>	Black-billed Cuckoo			S				Po		S4S5B	G5	
Hirundinidae	<i>Hirundo rustica</i>	Barn Swallow					„FO (W)		No		S4B	G5	SC
Parulidae	<i>Setophaga ruticilla</i>	American Redstart		S					Po		S5B	G5	

^ANomenclature based on Ministry of Natural Resources (MNR), Natural Heritage Information Centre (NHIC) database, 2024 - <https://www.ontario.ca/page/get-natural-heritage-information>

^BSurvey Conditions:July 1, 2020; Time 06:42-08:49; Temperature 19°C; Wind B0/B1; Cloud Cover 0%; Precipitation: none; Observer L. Moran, July 8, 2020; Time 05:49-06:52; Temperature 19°C ; Wind B0; Cloud Cover 10%; Precipitation: none, humid; Observer D. d'Entremont, June 9, 2021; Time 07:54-08:53; Temperature 21°C; Wind B2; Cloud Cover 0%; Precipitation: none; Observer L.Moran

^CBreeding Evidence Codes: Entry examples **S,X** - Singing Male detected during first survey, species observed on second survey; **S**, Singing male detected during first survey only; **,S** Singing male detected during second survey only

For Adjacent Lands, direction is indicated in parentheses by North (N), South (S), East (E), West (W).

^DOBBA Breeding Evidence Codes: OBSERVED (FO - Fly Over, X - Species observed in its breeding season (no breeding evidence), POSSIBLE (H - Species observed in its breedin gseason in suitable nesting habitat, S - Singing male present, or breeding calls heard, in suitable nesting habitat in nesting season), PROBABLE (P- Pair observed in suitable nesting habtiat in nesting season, T - Permanent territory presumed through registration of territorial behaviour (e.g. song) on at least two days, a week or more apart, at the same place).

^ESpecies detected outside of formal breeding bird surveys.

^FBreeding Assessment: Y - Breeding confirmed within study area, Pr - Probably breeding within study area, Po - Possibly breeding within study area, No - Species observed but no evidence of breeding within study area

^GAccording to Appendix G of Significant Wildlife Habitat Technical Guide (2000)

^HConservation Rankings: Ministry of Natural Resources (MNR), Natural Heritage Information Centre (NHIC) database, 2024 - <https://www.ontario.ca/page/get-natural-heritage-information>

Table 5: Significant Wildlife Habitat Assessment, NHE Sandy Creek Estates (Phase 2), City of Barrie

Seasonal Concentrations of Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Waterfowl Stopover and Staging Areas (Terrestrial) Rationale: Habitat important to migrating waterfowl.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	CUM1 CUT1 Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.	Fields with sheet water during Spring (mid-March to May). - Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. - Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available. <u>Information Sources</u> - Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. - Reports and other information available from Conservation Authorities - Sites documented through waterfowl planning processes (e.g. EHJV implementation plan) - Field Naturalist Clubs - Ducks Unlimited Canada - Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” - Any mixed species aggregations of 100 or more individuals required. - The flooded field ecosite habitat plus a 100-300m radius area, dependant on local site conditions and adjacent land use is the significant wildlife habitat. - Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). - SWHMiST Index #7 provides development effects and mitigation measures.	No suitable habitat present within the study area. Flooding extends into some of the agricultural lands (early spring) but no sufficient amounts to provide potentially suitable habitat for waterfowl. No potential SWH function.
Waterfowl Stopover and Staging Areas (Aquatic) Rationale: Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	- Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and 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 abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). <u>Information Sources</u> - Environment Canada - Naturalist clubs often are aware of staging/stopover areas - OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. - Sites documented through waterfowl planning processes (e.g. EHJV implementation plan) - Ducks Unlimited projects - Element occurrence specification by Nature Serve: http://www.natureserve.org - Natural Heritage Information Centre (NHIC) Waterfowl Concentration Areas	Studies carried out and verified presence of: - Aggregations of 100 or more of listed species for 7 days, results in > 700 waterfowl use days. - Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH. - The combined area of the ELC ecosites and a 100m radius area is the SWH. - Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). - SWHMiST Index #7 provides development effects and mitigation measures.	Although wetland habitat is present within the study area and adjacent lands, the wetland features do not offer potentially suitable habitat for waterfowl stopover/staging. No potential SWH function.

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Shorebird Migratory Stopover Area Rationale: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird’s Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	- Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and 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. <u>Information Sources</u> - Western hemisphere shorebird reserve network - Canadian Wildlife Service (CWS) Ontario Shorebird Survey - Bird Studies Canada - Ontario Nature - Local birders and naturalist clubs - Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: - Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) - Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. - The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #8 provides development effects and mitigation measures.	Study area not located along a shoreline of a lake, river or wetland. No suitable habitat present within the study area. No potential SWH function.
Raptor Wintering Area Rationale: Sites used by multiple species of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl Special Concern: Short-eared Owl Bald Eagle	<u>Hawks/Owls:</u> 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. <u>Bald Eagle:</u> Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	- 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 windswept with limited snow depth or accumulation. - Eagle sites have open water, large trees and snags available for roosting. <u>Information Sources:</u> - OMNRF Ecologist or Biologist Field Naturalist Clubs - Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area - Data from Bird Studies Canada - Results of Christmas Bird Counts Reports and other information available from Conservation Authorities.	Studies confirm the use of these habitats by: - One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species. - To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. - The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #10 and #11 provides development effects and mitigation measures.	Study area does not provide the combination of field/woodland habitat to provide raptor wintering function. No suitable habitat present within the study area. No potential SWH function.

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Bat Hibernacula Rationale: Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	- Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. - Active mine sites should not be considered as SWH - The locations of bat hibernacula are relatively poorly known. <u>Information Sources</u> - OMNRF for possible locations and contact for local experts - Natural Heritage Information Center (NHIC) Bat Hibernaculum Ministry of Northern - Development and Mines for location of mine shafts. - Clubs that explore caves (e.g. Sierra Club) - University Biology Departments with bat experts.	- All sites with confirmed hibernating bats are SWH. - The habitat area includes a 200m radius around the entrance of the hibernaculum, for most development types and 1000m for wind farms - Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects. - SWHMiST Index #1 provides development effects and mitigation measures.	No caves, mine shafts, underground foundations and karsts. No suitable habitat within study area. No potential SWH function.
Bat Maternity Colonies Rationale: Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	- Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). - Maternity roosts are not found in caves and mines in Ontario. - Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees. - Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. - Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred. <u>Information Sources</u> - OMNRF for possible locations and contact for local experts - University Biology Departments with bat experts.	- Maternity Colonies with confirmed use by; >10 Big Brown Bats >5 Adult Female Silver-haired Bats - The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. - Evaluation methods for maternity colonies should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #12 provides development effects and mitigation measures.	Deciduous forest communities (FOD/SWD) are present within the study area. Although specific snag density surveys were not undertaken, it has been assumed that the forested area likely contain >10 large diameter wildlife trees/ha. Therefore, the forested lands have the potential to provide this SWH function.
Turtle Wintering Areas Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	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 over-wintering habitat.	- 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. <u>Information Sources</u> - EIS studies carried out by Conservation Authorities. - Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. - OMNRF Ecologist or Biologist - Field Naturalist clubs - Natural Heritage Information Center (NHIC)	- Presence of 5 over-wintering Midland Painted Turtles is significant. - One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. - The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. - Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May) - Congregation of turtles is more common where wintering areas are limited and therefore significant - SWHMiST Index #28 provides development effects and mitigation measures for turtle wintering habitat.	Although wetland is present within the study area, this anthropogenic wetland it does not appear to be suitable habitat for overwintering turtles. It is not a permanent water body, large wetland, bog or fen. Standing water was documented within the early spring only. It is not expected that the newly constructed channel (Sandy Cove Creek) would have conditions conducive to this potential SWH function nor are anthropogenic features considered SWH.

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Reptile Hibernaculum Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Special Concern: Milksnake Eastern Ribbonsnake Lizard: Special Concern (Southern Shield population): Five-lined Skink	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3	- For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. - Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. - Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. - Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures. <u>Information Sources</u> - In spring, local residents or landowners may have observed the emergence of snakes on their property (<i>e.g.</i> old dug wells). - Reports and other information available from Conservation Authorities. - Field Naturalists clubs - University herpetologists - Natural Heritage Information Center (NHIC) - OMNRF ecologist or biologist may be aware of locations of wintering skinks	Studies confirming: - Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. - Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (<i>e.g.</i> foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct) <u>Note:</u> If there are Special Concern Species present, then site is SWH <u>Note:</u> Sites for hibernation possess specific habitat parameters (<i>e.g.</i> temperature, humidity, <i>etc.</i>) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (<i>e.g.</i> mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30 m radius area is the SWH. - SWHMiST Index #13 provides development effects and mitigation measures for snake hibernacula. - Presence of any active hibernaculum for skink is significant. - SWHMiST Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	No features were identified on the study area that could provide suitable reptile hibernaculum. No suitable habitat within study area. No potential SWH function.
Colonially -Nesting Bird Breeding Habitat (Bank and Cliff) Rationale: Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles. Cliff faces, bridge abutments, silos, barns. Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	- Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. - Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. - Does not include a licensed/permitted Mineral Aggregate Operation. <u>Information Sources</u> - Reports and other information available from Conservation Authorities. - Ontario Breeding Bird Atlas - Bird Studies Canada; <i>NatureCounts</i> http://www.birdscanada.org/birdmon/ - Field Naturalist Clubs.	Studies confirming: - Presence of 1 or more nesting sites with 8or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. - A colony identified as SWH will include a 50m radius habitat area from the peripheral nests. - Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #4 provides development effects and mitigation measures.	No exposed/eroding soil banks associated with re-aligned Sandy Cove Creek. No suitable habitat within the study area. No potential SWH function.

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Colonially-Nesting Bird Breeding Habitat (Tree/Shrubs) Rationale: Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	- Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. - Most nests in trees are 11 to 15 m from ground, near the top of the tree. <u>Information Sources</u> - Ontario Breeding Bird Atlas, colonial nest records. - Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). - Natural Heritage Information Center (NHIC) Mixed Wader Nesting Colony - Aerial photographs can help identify large heronries. - Reports and other information available from CAs. - MNRF District Offices - Local naturalist clubs	Studies confirming: - Presence of 5 or more active nests of Great Blue Heron or other listed species. - The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH. - Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells. - SWHMiST Index #5 provides development effects and mitigation measures.	Although deciduous swamp (SWD) community is present within the study area, no heron or egret nests were observed during Azimuth’s field investigations. No suitable habitat within study area. No potential SWH function.
Colonially-Nesting Bird Breeding Habitat (Ground) Rationale: Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer’s Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer’s Blackbird) MAM1 – 6; MAS1 – 3; CUM CUT CUS	- Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. - Brewers Blackbird colonies are found loosely on the ground in low bushes in close proximity to streams and irrigation ditches within farmlands. <u>Information Sources</u> - Ontario Breeding Bird Atlas , rare/colonial species records. - Canadian Wildlife Service - Reports and other information available from CAs. - Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area - MNRF District Offices - Field Naturalist clubs	Studies confirming: - Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. - Presence of 5 or more pairs for Brewer’s Blackbird. - Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. - The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH. - Studies would be done during May/June when actively nesting. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #6 provides development effects and mitigation measures.	Not a rocky island/peninsula or on a lake/large river. No suitable habitat within study area. No potential SWH function.

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Migratory Butterfly Stopover Areas Rationale: Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral <u>Special Concern</u> Monarch	Combination of ELC Community Series; need to have present one Community Series from each land class: <u>Field:</u> CUM CUT CUS <u>Forest:</u> FOC FOD FOM CUP Anecdotaly, a candidate site for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake 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. <u>Information Sources</u> - OMNRF (NHIC) - Agriculture Canada in Ottawa may have list of butterfly experts. - Field Naturalist Clubs - Toronto Entomologists Association - Conservation Authorities	Studies confirm: - The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur. - Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. - MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral’s is to be considered significant. - SWHMiST Index #16 provides development effects and mitigation measures.	Property is not located within 5km of Lake Ontario nor is it of sufficient size to be considered significant. No suitable habitat present within study area. No potential SWH function.
Landbird Migratory Stopover Areas Rationale: Sites with a high diversity of species as well as high numbers are most significant.	All migratory songbirds. Canadian Wildlife Service Ontario website. All migratory songbirds. Canadian Wildlife Service Ontario website:	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	Woodlots need to be >10 ha in size and within 5 km of Lake Ontario. - If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Ontario are more significant. - Sites have a variety of habitats; forest, grassland and wetland complexes. - The largest sites are more significant. - Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5km of Lake Ontario are Candidate SWH . <u>Information Sources</u> - Bird Studies Canada - Ontario Nature - Local birders and naturalist club - Ontario Important Bird Areas (IBA) Program	Studies confirm: - Use of the habitat by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. This abundance and diversity of migrant bird species is considered above average and significant. - Studies should be completed during spring (Apr./May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #9 provides development effects.	Not located within 5km of Lake Ontario. No suitable habitat present within the study area. No potential SWH function.

Wildlife Habitat	Wildlife Species	Candidate SWH		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Deer Yarding Areas Rationale: Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in “yards” to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.	White-tailed Deer	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	- Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. - The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%. - 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.	No Studies Required: - Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. - Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). - Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. - If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. - SWHMiST Index #2 provides development effects and mitigation measures.	Not mapped as deer yard by the province. No vegetation communities meeting the ELC ecosite codes are present within the study area. No suitable habitat within the study area. No potential SWH function.
Deer Winter Congregation Areas Rationale: Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions.	White-tailed Deer	All Forested Ecosites with these ELC Community Series; FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50 ha may also be used.	- Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. - Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands . - If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. - Large woodlots > 100ha 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. <u>Information Sources</u> - MNRF District Offices - LIO/NRVIS	Studies confirm: - Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. - Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF. - Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey. - If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. - SWHMiST Index #2 provides development effects and mitigation measures.	Not geographically located within an area where Deer Winter Congregation occurs. Please refer to assessment above related to Deer Yarding Areas. No potential SWH function.

Table 1.2.1 Rare Vegetation Communities

Rare Vegetation Community	Candidate SWH			Confirmed SWH	Assessment
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	
Cliffs and Talus Slopes Rationale: Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO TAS TAT CLO CLS CLT	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.	Most cliff and talus slopes occur along the Niagara Escarpment. <u>Information Sources</u> - The Niagara Escarpment Commission has detailed information on location of these habitats. - OMNRF District - Natural Heritage Information Center (NHIC) has location information available on their website - Field Naturalist clubs - Conservation Authorities	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes - SWHMiST Index #21 provides development effects and mitigation measures.	No cliffs or talus slopes.
Sand Barren Rationale: Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered, but less than 60%.	A sand barren area >0.5ha in size. <u>Information Sources</u> - MNRF Districts - Natural Heritage Information Center (NHIC) has location information available on their website. - Field Naturalist clubs - Conservation Authorities	- Confirm any ELC Vegetation Type for Sand Barrens - Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.) - SWHMiST Index #20 provides development effects and mitigation measures.	No sand barrens.
Alvar Rationale: Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregions 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 Five Alvar Species: 1) <i>Carex crawei</i> 2) <i>Panicum philadelphicum</i> 3) <i>Eleocharis compressa</i> 4) <i>Scutellaria parvula</i> 5) <i>Trichostema brachiatum</i> These indicator species are very specific to Alvars within Ecoregion 6E.	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover.	An Alvar site > 0.5 ha in size. <u>Information Sources</u> - Alvars of Ontario (2000), Federation of Ontario Naturalists. - Ontario Nature – Conserving Great Lakes Alvars. - Natural Heritage Information Center (NHIC) has location information available on their website - OMNRF Districts - Field Naturalist clubs - Conservation Authorities	- Field studies that identify four of the five Alvar Indicator Species at a Candidate Alvar site is Significant. - Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). - The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses. - SWHMiST Index #17 provides development effects and mitigation measures.	No alvar.

Rare Vegetation Community	Candidate SWH			Confirmed SWH	Assessment
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	
Old Growth Forest Rationale: Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest. <u>Information Sources</u> - OMNRF Forest Resource Inventory mapping - OMNRF Districts. - Field Naturalist clubs - Conservation Authorities - Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. - Municipal forestry departments	Field Studies will determine: - If dominant trees species are >140 years old, then the area containing these trees is Significant Wildlife Habitat. - The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present). - The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. - Determine ELC vegetation types for the forest area containing the old growth characteristics. - SWHMiST Index #23 provides development effects and mitigation measures.	No old growth forest within the study area.
Savannah Rationale: Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.	No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. <u>Information Sources</u> - Natural Heritage Information Center (NHIC) has location information available on their website - OMNRF Districts - Field Naturalist clubs - Conservation Authorities	Field studies confirm one or more of the Savannah indicator species listed in Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used. - Area of the ELC Ecosite is the SWH. - Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). - SWHMiST Index #18 provides development effects and mitigation measures.	No savannah.
Tallgrass Prairie Rationale: Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover.	No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. <u>Information Sources</u> - Natural Heritage Information Center (NHIC) has location information available on their website - OMNRF Districts - Field Naturalist clubs - Conservation Authorities	Field studies confirm one or more of the Prairie indicator species listed in Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 6E should be used. - Area of the ELC Ecosite is the SWH. - Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). - SWHMiST Index #19 provides development effects and mitigation measures.	No tallgrass prairie.
Other Rare Vegetation Communities Rationale: Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	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. <u>Information Sources</u> - Natural Heritage Information Center (NHIC) has location information available on their website - OMNRF Districts - Field Naturalist clubs - Conservation Authorities	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG. - Area of the ELC Vegetation Type polygon is the SWH. - SWHMiST Index #37 provides development effects and mitigation measures.	Vegetation communities within the study area are heavily influenced by agricultural land use and historical modifications. Forested lands are common within the study area and within the overall landscape. No rare vegetation communities within study area.

1.2.2 Specialized Habitat for Wildlife

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Waterfowl Nesting Area Rationale: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	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	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. - Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. - Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. <u>Information Sources</u> - Ducks Unlimited staff may know the locations of particularly productive nesting sites. - OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. - Reports and other information available from Conservation Authorities.	Studies confirmed: - Presence of 3 or more nesting pairs for listed species excluding Mallards, or; - Presence of 10 or more nesting pairs for listed species including Mallards. - Any active nesting site of an American Black Duck is considered significant. - Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. - SWHMiST Index #25 provides development effects and mitigation measures.	No suitable habitat conducive to waterfowl nesting within the study area. None of the listed wildlife species observed during Azimuth’s field investigations. No potential SWH function.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat Rationale: Nest sites are fairly uncommon in Eco-region 6E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey Special Concern Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. - Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree’s canopy. - Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). <u>Information Sources</u> - Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. - MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. - Nature Counts, Ontario Nest Records Scheme data. - OMNRF Districts - Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented - Reports and other information available from Conservation Authorities. - Field Naturalists clubs	Studies confirm the use of these nests by: - One or more active Osprey or Bald Eagle nests in an area. - Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. - For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with large trees within this area is important. - For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat. - To be significant a site must be used annually. When found inactive, the site must be known to be inactive for > 3 years or suspected of not being used for >5 years before being considered not significant. - Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #26 provides development effects and mitigation measures.	Although deciduous forest is present within the study area, it is not associated with lake, pond, river or shoreline habitat. No Osprey or Bald Eagle nests were observed during Azimuth’s field investigations. No potential SWH function.

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Woodland Raptor Nesting Habitat <u>Rationale:</u> Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	Northern Goshawk Cooper’s Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3	All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat. Interior habitat determined with a 200m buffer - Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers Hawk nest along forest edges sometimes on peninsulas or small off-shore islands. - In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. <u>Information Sources</u> - OMNRF Districts. - Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented. - Check data from Bird Studies Canada. - Reports and other information available from Conservation Authorities.	Studies confirm: - Presence of 1 or more active nests from species list is considered significant. - Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH . (The 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest). - Barred Owl – A 200m radius around the nest is the SWH. - Broad-winged Hawk and Coopers Hawk– A 100m radius around the nest is the SWH. - Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. - Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial. (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. - SWHMiST Index #27 provides development effects and mitigation measures.	Study area does not provide the combination of habitat features required to be considered significant. Although the woodland may be of sufficient size, it does not contain >10ha of interior habitat. No stick nests were observed during Azimuth’s field investigations. No suitable habitat present within the study area. No potential SWH function.
Turtle Nesting Areas <u>Rationale:</u> These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle <u>Special Concern Species</u> Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	- Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. - For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. - Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. <u>Information Sources</u> - Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). - Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. - Natural Heritage Information Center (NHIC) - Field Naturalist clubs	Studies confirm: - Presence of 5 or more nesting Midland Painted Turtles. - One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. - The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH. - Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. - Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. - SWHMiST Index #28 provides development effects and mitigation measures for turtle nesting habitat.	No naturally occurring exposed mineral soils that could be utilized for turtle nesting. No suitable habitat present within the study area. No potential SWH function.

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Seeps and Springs Rationale: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system. - Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species. <u>Information Sources</u> - Topographical Map - Thermography - Hydrological surveys conducted by Conservation Authorities and MOE. - Field Naturalists clubs and landowners. - Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Field Studies confirm: - Presence of a site with 2 or more seeps/springs should be considered SWH. - The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat. - SWHMiST Index #30 provides development effects and mitigation measures.	No seeps and springs documented during Azimuth’s field investigations. No potential SWH function.
Amphibian Breeding Habitat (Woodland). Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	- Presence of a wetland, pond or woodland pool (including vernal pools) >500m² (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. - Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat. <u>Information Sources</u> - Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records. - Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. - OMNRF District - OMNRF wetland evaluations - Field Naturalist clubs - Canadian Wildlife Service - Amphibian Road Call Survey - Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm; - Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3. - A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. - The habitat is the wetland area plus a 230m radius of woodland area. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. - SWHMiST Index #14 provides development effects and mitigation measures.	No suitable habitat within the study area. Amphibian surveys did not reveal sufficient amphibian calling to be considered SWH.

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Amphibian Breeding Habitat (Wetlands) Rationale: Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	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 (<i>e.g.</i> Bull Frog) may be adjacent to woodlands.	- Wetlands>500m² (about 25m 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. <u>Information Sources</u> - Ontario Herpetofaunal Summary Atlas (or other similar atlases) - Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. - OMNRF Districts and wetland evaluations - Reports and other information available from Conservation Authorities	Studies confirm: - Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3. or; Wetland with confirmed breeding Bullfrogs are significant. - The ELC ecosite wetland area and the shoreline are the SWH. - A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. - If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. - SWHMiST Index #15 provides development effects and mitigation measures.	No permanent water bodies or ponds within the study area. Amphibian surveys did not reveal sufficient amphibian calling to be considered SWH.
Woodland Area-Sensitive Bird Breeding Habitat Rationale: Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. - Interior forest habitat is at least 200 m from forest edge habitat. <u>Information Sources</u> - Local bird clubs. - Canadian Wildlife Service (CWS) for the location of forest bird monitoring. - Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species. - Reports and other information available from Conservation Authorities.	Studies confirm: - Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. - Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. - Conduct field investigations in spring and early summer when birds are singing and defending their territories. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #34 provides development effects and mitigation measures.	Although deciduous forest/swamp (FOD/SWD) communities are present within the study area, none of the listed wildlife species were observed during Azimuth’s field investigations. No potential SWH function.

1.3 Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Marsh Breeding Bird Habitat Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan Special Concern: Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	- Nesting occurs in wetlands. - All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. - For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. <u>Information Sources</u> - OMNRF District and wetland evaluations. - Field Naturalist clubs - Natural Heritage Information Center (NHIC) Records. - Reports and other information available from Conservation Authorities. - Ontario Breeding Bird Atlas	Studies confirm: - Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species. - Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. - Area of the ELC ecosite is the SWH. - Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #35 provides development effects and mitigation measures.	There is no expectation that the small anthropogenic influenced wetland within the study area provides suitable habitat for any of the listed species. None of the listed wildlife species were observed during Azimuth’s field investigations. No suitable habitat present within the study area – no potential SWH function.
Open Country Bird Breeding Habitat Sources Defining Criteria Rationale: This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow Special Concern Short-eared Owl	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30 ha. - Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years). - 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. <u>Information Sources</u> - Agricultural land classification maps, Ministry of Agriculture. - Local bird clubs. - Ontario Breeding Bird Atlas - Reports and other information available from Conservation Authorities.	Field Studies confirm: - Presence of nesting or breeding of 2 or more of the listed species. - A field with 1 or more breeding Short-eared Owls is to be considered SWH. - The area of SWH is the contiguous ELC ecosite field areas. - Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #32 provides development effects and mitigation measures.	Property is surrounded by active earthworks, woodland/wetland and active agricultural lands. The property was subject to active agricultural practices (<i>i.e.</i> row crops) up until approximately 2022. Although Savannah Sparrow and Vesper Sparrow were probable breeders on and adjacent to the property, the property does not meet the habitat criteria to be considered SWH.
Shrub/Early Successional Bird Breeding Habitat Rationale: This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species	Large field areas succeeding to shrub and thicket habitats>10ha in size. - Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (<i>i.e.</i> no row-cropping, haying or live-stock pasturing in the last 5 years). - Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. - Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. <u>Information Sources</u> - Agricultural land classification maps, Ministry of Agriculture. - Local bird clubs - Ontario Breeding Bird Atlas - Reports and other information available from Conservation Authorities.	Field Studies confirm: - Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. - A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. - The area of the SWH is the contiguous ELC ecosite field/thicket area. - Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #33 provides development effects and mitigation measures.	Although thicket swamp is present on adjacent lands, the study area does not provide sufficiently sized habitat (<i>i.e.</i> >10ha) for shrub/early successional birds. Probable breeding for any of the listed wildlife species was not confirmed during Azimuth’s field investigations. No potential SWH function.

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Terrestrial Crayfish <u>Rationale:</u> Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	Chimney or Digger Crayfish; <i>(Fallicambarus fodiens)</i> Devil Crayfish or Meadow Crayfish; <i>(Cambarus Diogenes)</i>	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.	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. <u>Information Sources</u> - Information sources from “Conservation Status of Freshwater Crayfishes” by Dr. Premek Hamr for the WWF and CNF March 1998.	Studies Confirm: - Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites. - Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. - Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult. - SWHMiST Index #36 provides development effects and mitigation measures.	Prior to the channel re-alignment, Crayfish chimneys were observed throughout the Sandy Cove Creek corridor.
Special Concern and Rare Wildlife Species <u>Rationale:</u> These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre.	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites <u>Information Sources</u> - Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. - NHIC Website “Get Information” : http://nhic.mnr.gov.on.ca - Ontario Breeding Bird Atlas - Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: - Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. - The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species <i>e.g.</i> specific nesting habitat or foraging habitat. - SWHMiST Index #37 provides development effects and mitigation measures.	Monarch Butterfly was documented during Azimuth field investigations. Although not documented, Snapping Turtle has been recorded within the area according to LSRCA information and was documented to be utilizing the adjacent lands for nesting (Roots, 2021).

1.4 Animal Movement Corridors

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria	
Amphibian Movement Corridors Rationale: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	Corridors may be found in all ecosites associated with water. Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1	Movement corridors between breeding habitat and summer habitat. - Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat –Wetland) of this Schedule. <u>Information Sources</u> - MNRF District Office - Natural Heritage Information Center (NHIC) - Reports and other information available from Conservation Authorities. - Field Naturalist Clubs	- Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. - Corridors should consist of native vegetation, with several layers of vegetation. - Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant. - Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20m. - Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat. - SWHMiST Index #40 provides development effects and mitigation measures.	No amphibian breeding function that would be considered SWH. No potential amphibian movement corridor function within study area.
Deer Movement Corridors Rationale: Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	White-tailed Deer	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule. - A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion. - Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). <u>Information Sources</u> - MNRF District Office - Natural Heritage Information Center (NHIC). - Reports and other information available from Conservation Authorities. - Field Naturalist Clubs	- Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. - Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. - Corridors should be at least 200m wide with gaps <20m and if following riparian area with at least 15m of vegetation on both sides of waterway. - Shorter corridors are more significant than longer corridors. - SWHMiST Index #39 provides development effects and mitigation measures.	No deer wintering habitat present.

1.5 Exceptions for EcoRegion 6E

EcoDistrict	Wildlife Habitat and Species	Candidate			Confirmed SWH	Assessment
		Ecosites	Habitat Description	Habitat Criteria and Information	Defining Criteria	
6E-14 <u>Rationale:</u> The Bruce Peninsula has an isolated and distinct population of black bears. Maintenance of large woodland tracts with mast-producing tree species is important for bears.	Mast Producing Areas Black Bear	All Forested habitat represented by ELC Community Series: FOM FOD	- Black bears require forested habitat that provides cover, winter hibernation sites, and mast-producing tree species. - Forested habitats need to be large enough to provide cover and protection for black bears.	Woodland ecosites >30ha with mast-producing tree species, either soft (cherry) or hard (oak and beech). <u>Information Sources</u> Important forest habitat for black bears may be identified by OMNRF.	All woodlands > 30ha with a 50%composition of these ELC Vegetation Types are considered significant: FOM1-1 FOM2-1 FOM3-1 FOD1-1 FOD1-2 FOD2-1 FOD2-2 FOD2-3 FOD2-4 FOD4-1 FOD5-2 FOD5-3 FOD5-7 FOD6-5 SWHMiST Index #3 provides development effects and mitigation measures.	Not on Bruce Peninsula.
6E- 17 <u>Rationale:</u> Sharp-tailed grouse only occur on Manitoulin Island in Eco-region 6E, Leks are an important habitat to maintain their population	Lek Sharp-tailed Grouse	CUM CUS CUT	- The lek or dancing ground consists of bare, grassy or sparse shrubland. There is often a hill or rise in topography. - Leks are typically a grassy field/meadow >15ha with adjacent shrublands and >30ha with adjacent deciduous woodland. Conifer trees within 500m are not tolerated.	Grasslands (field/meadow) are to be >15ha when adjacent to shrubland and >30ha when adjacent to deciduous woodland. - Grasslands are to be undisturbed with low intensities of agriculture (light grazing or late haying) - Leks will be used annually if not destroyed by cultivation or invasion by woody plants or tree planting <u>Information Sources</u> - OMNRF district office - Bird watching clubs - Local landowners - Ontario Breeding Bird Atlas	Studies confirming lek habitat are to be completed from late March to June. - Any site confirmed with sharp-tailed grouse courtship activities is considered significant - The field/meadow ELC ecosites plus a 200 m radius area with shrub or deciduous woodland is the lek habitat - SWHMiST Index #32 provides development effects and mitigation measures	Not on Manitoulin Island.

APPENDICES

- Appendix A: LSRCA Information and Correspondence**
 - Appendix B: Planning Information**
 - Appendix C: Provincial Information and Correspondence**
 - Appendix D: Amphibian Data**
 - Appendix E: Site Plan**
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APPENDIX A

LSRCA Information and Correspondence



Environmental Assessments & Approvals

September 19, 2022

AEC 20-243

Lake Simcoe Region Conservation Authority
120 Bayview Parkway
Newmarket ON
L3Y 3W3

Attention: Shawn Filson, Planner 2

**Re: Ecological Offsetting Strategy for Sandy Creek Estates
969, 979 and 989 Maplevue Drive East, City of Barrie**

Dear Mr. Filson:

Azimuth Environmental Consulting Inc. (Azimuth) was retained to provide a Natural Heritage Evaluation (NHE) for a proposed residential and commercial development within the Phase 1 lands at the location described above (Figure 1). The property as a whole (Phase 1 and Phase 3) includes several identified natural heritage features, including several areas of wetland (Figure 2). The proposed development includes the development of the lands located outside of the defined Natural Core Area. A separate project, co-ordinated by the Sandy Cove Creek Landowners Group includes the re-alignment of a portion of Sandy Cove Creek which will result in a 60m-wide creek corridor that will traverse through the subject lands. The Impact Assessment related to the proposed Channel Realignment has been prepared by Geoprocess Research Associated (2021). No development is proposed within this 60m corridor, which will be retained as a riparian wetland system (Figure 3). The proposed development will, however, result in the loss of wetland habitat located outside of the 60m corridor (Figure X). It is our understanding that prior to the issuance of a permit related to the creek re-location works, LSRCA will require resolution related to the Ecological Offsetting that will be required for the loss of wetland habitat occurring within the defined development areas associated with Sandy Creek Estates.



1.0 EXISTING CONDITIONS

The property is composed primarily of active agricultural lands. Although historically used for agriculture, portions of these lands remain fallow in recent years. Where these lands have been left fallow, wetland has formed. Sandy Cove Creek and the associated 60m-wide retained corridor traverses through the Phase 1 lands. This watercourse is an agricultural drain that has been straightened in the past and is void of mature vegetation. Treed hedgerow exists along the perimeter of the property with woodland at the southernmost limit of the property.

2.0 PLANNING POLICY

The Study Area contains lands that are within the City of Barrie's Natural Heritage System with portions designated as High (S) Constraint Stream Corridor Area – Special, and within the larger land holding are areas designated Natural Core Area and High Constraint Stream Corridor according to Schedule 9A:Community Structure and 9B: Natural Heritage System. Streams and floodplain have also been identified on the property. Through the Hewitt's Creek Secondary Plan process, the wetland areas associated with the fallow agricultural lands would be excluded from the City's Natural Core Area (*i.e.* not protected) and that the Stream Corridor may be modified and/or relocated as per Section 9.3.2.3 of the City of Barrie's Official Plan.

3.0 WETLAND FUNCTION

The wetland features (MAMM1-2, MAMM3-1a, b, c) are anthropogenically influenced wetland communities that appear to have been clear of vegetation as recently as 2018 with the exception of MAMM3-1c which appears to have been periodically cut over the years due to the lack of shrub cover. As documented within Azimuth's NHE, none of the wetland communities are considered to be provincially rare, no provincially rare or LSRCA watershed-rare species were documented within any of the wetland communities. There is no potential Significant Wildlife Habitat functions associated with any of these wetland features – although potential Significant Wildlife Habitat functions were identified within the creek corridor.

4.0 SANDY COVE CREEK CORRIDOR

The creek re-alignment will include a 60m wide corridor (currently a corridor of about 15m exists along this section of Sandy Cove Creek) which includes a natural channel design. This corridor will create a 30m buffer from development on either side of the creek in which no development is proposed.



Potential Significant Wildlife Habitat functions attributed to the existing creek corridor (*i.e.* below the top of bank), as identified in Azimuth's NHE, includes the presence of Chimney Crayfish habitat and a potential movement corridor for turtles (based on records of Snapping Turtle within the area but not documented on site). As per Geoprocess's report, the Sandy Cove Creek re-alignment includes the creation of bottom lands within the creek corridor which will provide suitable habitat for burrowing crayfish post-construction. The protected corridor is larger than the current habitat areas and local crayfish species are expected to migrate to these areas once re-alignment works are complete (Geoprocess, 2021). The 60m corridor will maintain, and improve any potential turtle movement corridor along the creek. Restoration measures will include the planting of native trees and shrubs throughout the corridor (Geoprocess, 2021) that will improve riparian functions for aquatic and fish habitat. Enhancement features including rock piles/hibernacula, brush piles, turtle nesting area and standing snags will provide additional ecological functions that have not been previously documented on this property. Overall, the creation of this 60m wide corridor represents an ecological net gain for the property and adjacent lands.

5.0 LSRCA ECOLOGICAL OFFSETTING

It is our understanding that LSRCA is accepting of the fact that these anthropogenic wetlands will be lost as a result of the proposed development however, prior to the issuance of a permit related to the creek re-location works, LSRCA will require resolution related to the Ecological Offsetting that will be required for the loss of wetland habitat occurring within the defined development areas associated with Sandy Creek Estates.

Apart from the 60m Sandy Cove Creek Corridor, there is no opportunity on the property to compensate for the loss of wetland on-site. Through previous consultation with LSRCA, it is our understanding that there is limited/no opportunity within the Sandy Cove Creek subwatershed for compensation due to lack of publically owned lands. Therefore, a combination of compensation (*i.e.* Sandy Cove Creek Corridor improvements) and cash-in-lieu is being proposed.

Based on the above, it is Azimuth's opinion that the proposed development should be considered a suitable candidate for Ecological Offsetting according to LSRCA's mitigation hierarchy outlined in the LSRCA Ecology Offsetting Policy (EOS; July 2021).

The LSRCA's EOS is being used as a general guideline for compensation. The LSRCA developed an Ecological Offsetting Policy (July 2021) in support of the 'no net loss' principle. Furthermore, Azimuth had the opportunity to review the LSRCA accepted



compensation for the adjacent lands to the west of the subject property “Mapleview South”. The Summary of Ecological Offsetting for “Mapleview South” was also used as a guideline to calculate the proposed ecological offsetting cost (appended) as it is important for the offsetting strategy to remain consistent across the properties included within the Channel Realignment.

The wetlands that are located within the development footprint of the Phase 1 and 3 lands are summarized in Table 1 below and correlates with Figure 2.

Table 1: Wetland Features Located Outside of the Natural Core Area

Wetland Unit	Wetland Area outside 60m corridor (ha)	Wetland Area within 60m corridor (ha)	Total Wetland Area Lost (ha)	Vegetation Protection Zone outside 60m corridor (ha)	Vegetation Protection Zone within 60m corridor (ha)	Total Vegetation Protection Zone Lost (ha)	Phase
MAMM3-1a	0.038	0	1.41	0	0	2.41	3
MAMM3-1b	0.91	0		0.79	0.11		3
MAMM3-1c	0.15	0.07		0.57	0.37		1
MAMM1-2	0.205	0		0.54	0.03		3
Total	1.34	0.07		1.9	0.51		

Based on the information within Table 1, Ecological Offsetting calculations will be prepared to offset for the loss of wetland habitat and associated Vegetation Protection Zone (VPZ; 30m) that is located outside of the 60m-wide Sandy Cove Creek Corridor. For the purposes of our assessment, it has been assumed that the flat bottom section of the creek corridor will be wetland (0.58ha). Therefore, it has been calculated that approximately **0.58ha** of wetland will remain on site beyond the Natural Core Area post-development within the re-aligned channel (Figure X). Approximately **1.01ha** of VPZ will also remain within the re-aligned channel (Figure X). As highlighted in the EOS, a lower replacement ratio may be considered, provided it is demonstrated that the functional improvement represents a net gain. Furthermore, offsetting calculations for the adjacent “Mapleview South” lands, accepted by the LSRCA have been provided to us by the City of Barrie (Appendix A). Therefore, offsetting calculations will align with what has been accepted by LSRCA for adjacent lands.



Ecological offsetting formula components are as follows:

Feature Creation Cost (FCC)	$(\text{wetland area loss (ha)} \times 3) + (\text{wetland buffer* area loss} \times 1) \times \$95,386$
Ecosystem Services Value (ESV)	$(\text{wetland area} + \text{buffer area*}) \times \$8,034$
Land Acquisition Fund (LAF)	15% of FCC + <u>ESV</u>
Administration Fee (AF)	15% of FCC + ESV

*The term 'buffer' is synonymous with Vegetation Protection Zone (VPZ)

Calculations as follows:

A. Full Ecological Offsetting Cost

Wetland = 1.41ha (lost)

VPZ = 2.41ha (lost)

Total = \$878,209.99

B. Credited Works in Re-aligned Channel

Wetland = 0.58ha

VPZ = 1.01ha

Total = \$363,800.65

C. Ecological Offsetting Cost with Credit for Works in Proposed Re-aligned Channel Corridor

Wetland = 0.83ha (lost)

VPZ = 1.4ha (lost)

Total = \$514,409.33

D. Ecological Offsetting Cost for with Credit for Works in Proposed Realigned Channel Corridor and no VPZ

Wetland = 0.83ha (lost)

VPZ = 0ha

Total = \$322,927.20

In order to recognize the cost associated with the proposed channel re-location, the amount in "D" has been calculated with no compensation amount for the VPZ lands and has further been reduced by 21% - which aligns with calculations completed for the adjacent lands (Attached). Therefore, based on this information, **\$255, 112.49** is being proposed to LSRCA to offset for the loss of wetland on the subject lands.



Further to this value, please see information below denoting total offsetting amount split by phasing of the development. Compensation values to be paid in tandem with the following site alteration permits or development agreements. The majority of the wetland removals will occur as part of the 2nd phase of development (within Phase 3 lands of the Hewitt's Secondary Plan); therefore, the payments will be weighted accordingly:

Phase 1 Lands and Creek Re-alignment: \$40, 818.00

Phase 3 Lands: \$214, 294.49

Total Compensation Value: **\$255, 112.49**

We trust that the offsetting value being proposed is appropriate based on what has previously been submitted and accepted by the LSRCA (See Attached EOS for "Mapleview South" lands).

Please feel free to contact the undersigned should you have any questions or wish to discuss.

Yours truly,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.

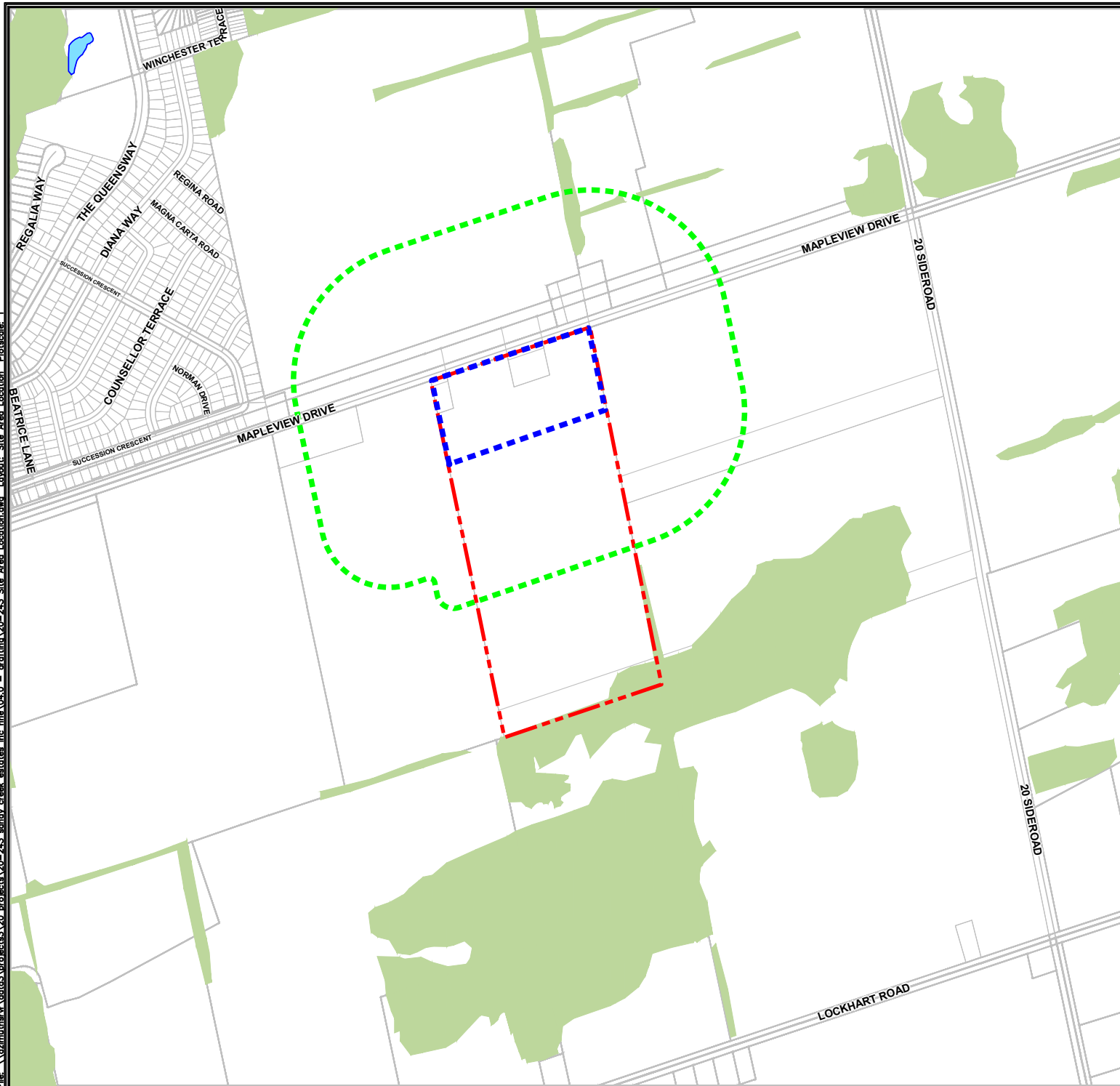

Lisa Moran, B.Sc.Env
Terrestrial Ecologist

Attach: Figures 1-3

Figure X: LSRCA Wetland Compensation Areas

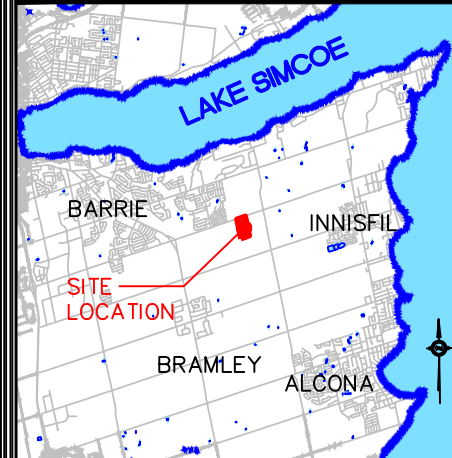
Summary of Ecological Offsetting – "Mapleview South" APID 402857 September 23, 2021

Plotted by: ALU on January 27, 2022 at 4:13pm
File: \\azimuth\baron\docs\projects\20-243 sandy creek estates inc nhe\04.0 - draft\20-243 Site Area Location.dwg Layout: Site Area Location - PlotScale: 1



LEGEND:

- APPROX. PROPERTY BOUNDARY
- STUDY AREA - PHASE 1 LANDS
- 120m STUDY AREA LIMIT



REGIONAL MAP

SCALE 1:250000



SITE AREA LOCATION

SANDY CREEK ESTATES INC. NHE
BARRIE, ON

DATE ISSUED: JANUARY 2022
CREATED BY: A.L.
PROJECT NO.: 20-243
REFERENCE: SIMCOE COUNTY

Figure No.

1

Plotted by: AUJ on January 27, 2022 at 4:14pm
File: \azimuth\work\20-243 sandy creek estates inc.nhe\04.0 - drafting\20-243 ELC.dwg Layout: EF Plotcode: 1



LEGEND:

- APPROX. PROPERTY BOUNDARY
- WOODLAND BOUNDARY
- STUDY AREA - PHASE 1 LANDS
- 120m STUDY AREA LIMIT
- WATERCOURSE
- TOP OF BANK
- 2015 SURVEY OF THE NHS

SURVEY STATIONS

- AMPHIBIAN SURVEY STATION
- BIRD SURVEY STATION

ELC VEGETATION COMMUNITIES:

- FODM5-11 DRY-FRESH SUGAR MAPLE-HARDWOOD DECIDUOUS FOREST
- FODM8-1 FRESH-MOIST POPLAR DECIDUOUS FOREST
- MEMM3 DRY-FRESH MIXED MEADOW TREED FENCEROW
- TAGM5

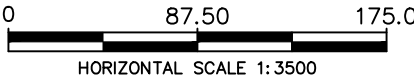
AZIMUTH SURVEYED WETLANDS:

- LSRCA CONFIRMED/STAKED WETLANDS:

- MAMM1-2 CATTAIL GRAMINOID MINERAL MEADOW MARSH
- MAMM3-1 MIXED MINERAL MEADOW MARSH
- SWDM2-2 GREEN ASH MINERAL DECIDUOUS SWAMP



LOCATION PLAN

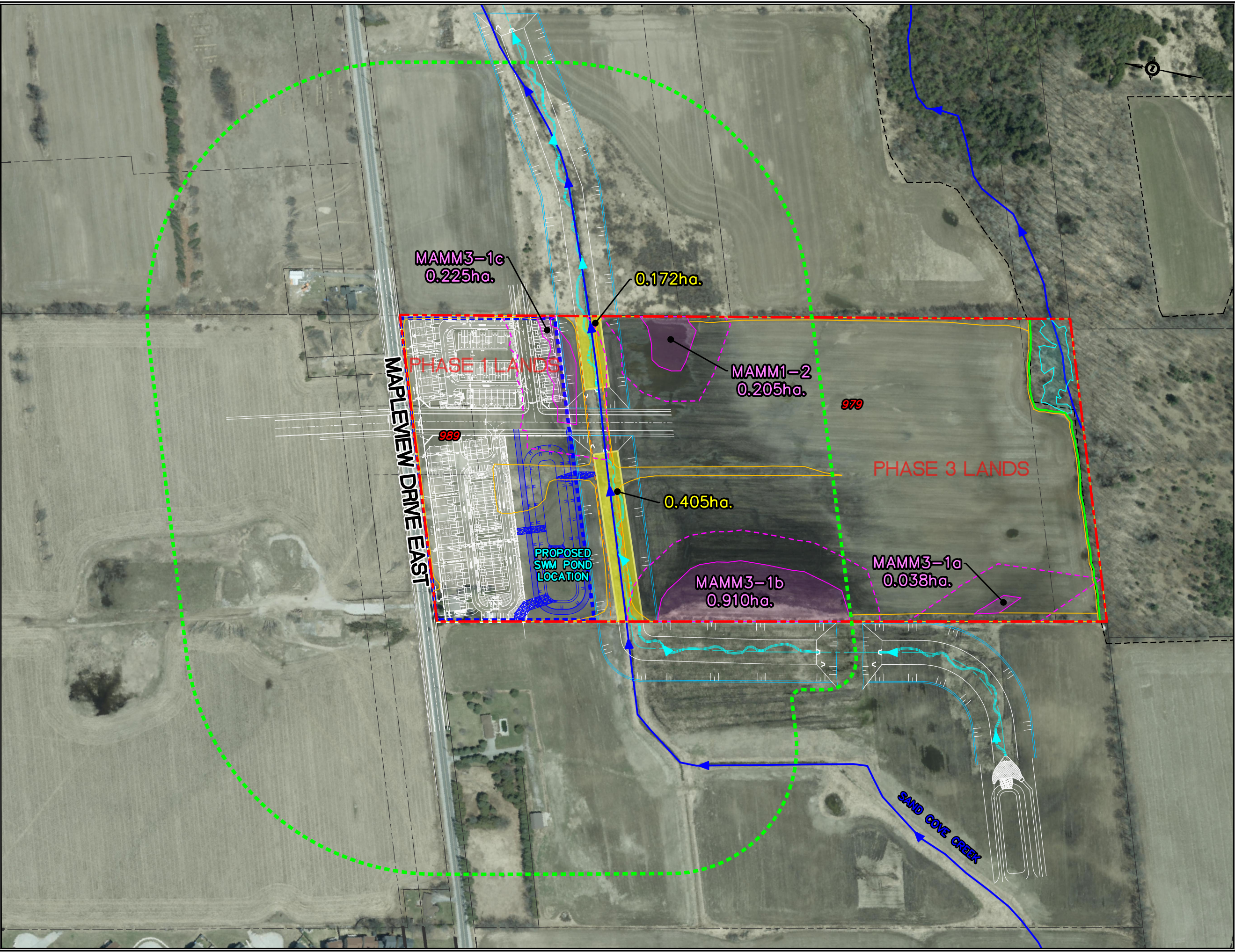


ENVIRONMENTAL FEATURES

SANDY CREEK ESTATES INC. NHE
BARRIE, ON

DATE ISSUED:	JANUARY 2022	Figure No. 2
CREATED BY:	A.L.	
PROJECT NO.:	20-243	
REFERENCE:	SIMCOE COUNTY	

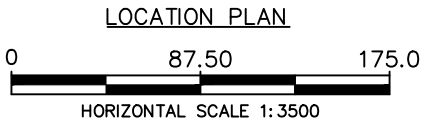
Plotted by: ALU on September 19, 2022 at 2:15pm
File: Q:\20 Projects\20-243 Sandy Creek Estates Inc. NHE\04.0 - Drafting\20-243 ELC.dwg Layout: X Plotcode: 1



- LEGEND:**
- APPROX. PROPERTY BOUNDARY
 - WOODLAND BOUNDARY
 - STUDY AREA - PHASE 1 LANDS
 - 120m STUDY AREA LIMIT
 - WATERCOURSE
 - TOP OF BANK
 - 2015 SURVEY OF THE NHS

- ELC VEGETATION COMMUNITIES:**
- FODM5-11 DRY-FRESH SUGAR MAPLE-HARDWOOD DECIDUOUS FOREST
 - FODM8-1 FRESH-MOIST POPLAR DECIDUOUS FOREST
 - MEMM3 DRY-FRESH MIXED MEADOW
 - TAGM5 TREED FENCEROW
- AZIMUTH SURVEYED WETLANDS:**
- MAMM1-2 CATTAIL GRAMINOID MINERAL MEADOW MARSH
 - MAMM3-1 MIXED MINERAL MEADOW MARSH
 - SWDM2-2 GREEN ASH MINERAL DECIDUOUS SWAMP

- VEGETATION PROTECTION ZONE**
- SANDY COVE CREEK REALIGNMENT CENTRELINE
 - SANDY COVE CREEK REALIGNMENT MEANDER
 - 60m WIDE CHANNEL RELOCATION CORRIDOR
 - WETLAND (WITHIN 60m CORRIDOR)



LSRCA WETLAND COMPENSATION

**SANDY CREEK ESTATES INC. NHE
BARRIE, ON**

DATE ISSUED:	APRIL 2022	Figure No.
CREATED BY:	A.L.	X
PROJECT NO.:	20-243	
REFERENCE:	SIMCOE COUNTY	

SUMMARY OF ECOLOGICAL OFFSETTING – “Mapleview South” APID 402857

September 23, 2021

Values Based on current BOD Approved Ecological Offsetting Policy (July 2021)

A. Full Ecological Offsetting Cost (Inclusive of feature loss resulting from proposed channel realignment)

Wetland	4.43ha
VPZ	6.11
Admin Fee	15%
Total	\$2,559,258.04

B. Credited Works in Proposed Realigned Channel Corridor

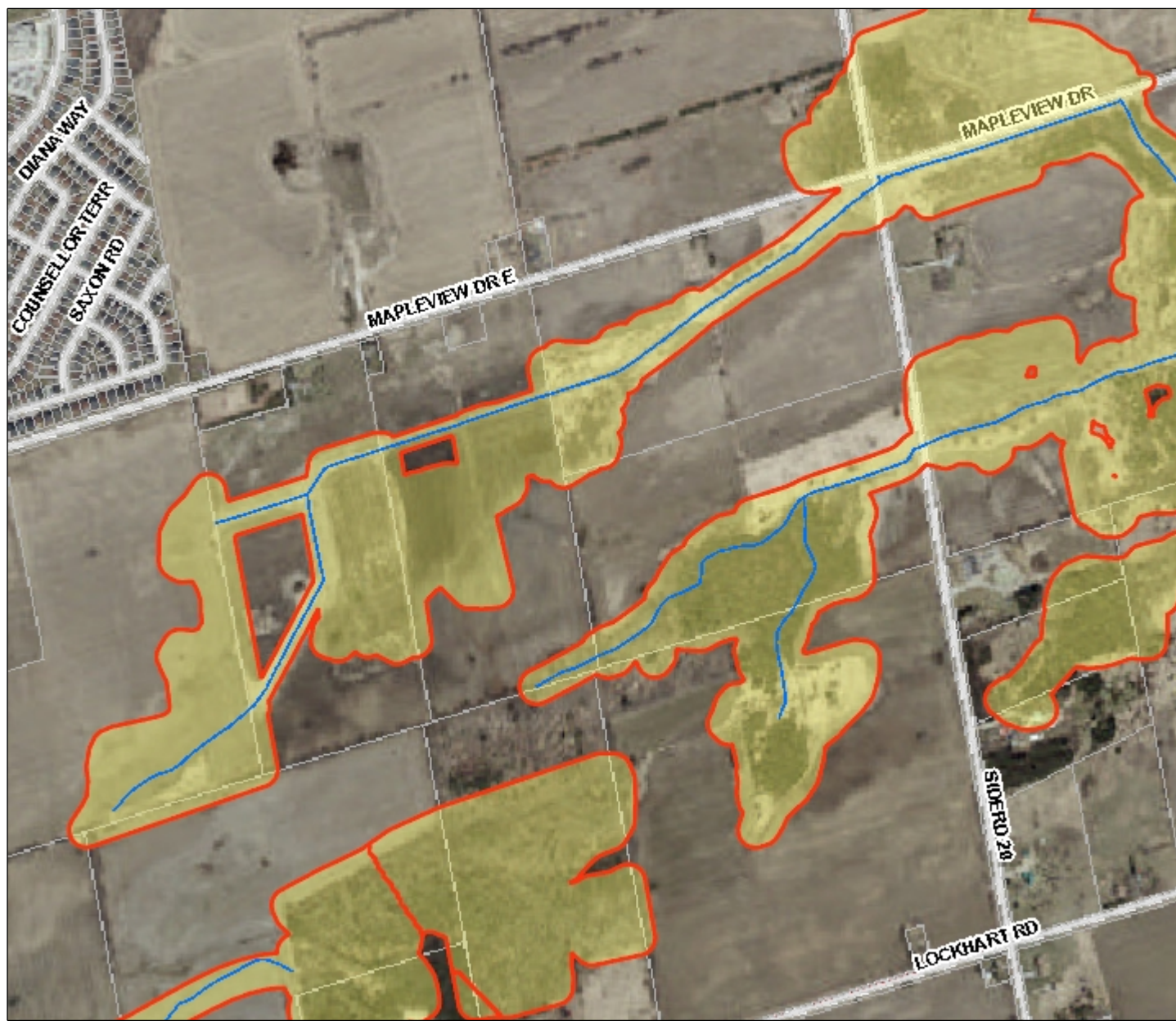
Wetland	2.42ha
VPZ	1.0ha
Admin Fee	15%
Total	\$1,078,319.74

C. Ecological Offsetting Cost with Credit for Works in Proposed Realigned Channel Corridor and Admin Fee Capped @ \$80,000

Wetland	2.01ha
VPZ	4.79ha
Admin Fee	\$80,000
Total	\$1,329,238.15

D. Ecological Offsetting Cost for with Credit for Works in Proposed Realigned Channel Corridor, Capped Admin Fee @ \$80,000 and No VPZ

Wetland	2.01ha
VPZ	0ha
Admin Fee	\$80,000
Total	\$760,024.81



Features

- LSRCA Watershed Boundary
- Lake Simcoe
- Watercourse
- Regulated Area Boundary
- Regulated Area
- Road Labels
- Assessment Parcel
- Roads
 - Hwy 400 Series
 - Highway, Arterials
 - Local Road
- Railway

Printed On:
5/21/2021

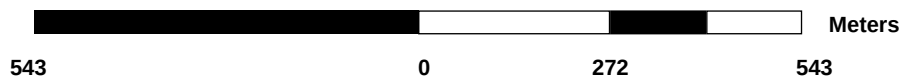


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Auxiliary_Sphere

Mapped By: LM - May 21,

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Scale 1: 10,692



Lisa Moran

From: Kate Lillie [K.Lillie@lsrca.on.ca]
Sent: July 14, 2020 11:28 AM
To: Lisa Moran
Cc: Melinda Bessey
Subject: RE: Terms of Reference - 979 and 989 Mapleview Drive, City of Barrie
Attachments: 979_989MapleviewDr_ELC.pdf

Hi Lisa,

Thank-you for providing a terms of reference for an NHE. As you know, a portion of the Natural Heritage System (NHS), as identified in Hewitt's Secondary Plan, exists on the property. The limits of features within the NHS have been confirmed with LSRCA on site. However, an area of wetland has also been mapped on the property, outside of the NHS. A site visit with LSRCA will be required to confirm the presence/absence of this feature and to confirm the feature limits (if applicable). Note that a site visit fee of \$1500 will apply. Please ensure that this area remains undisturbed until a site visit can be completed. Contact us to coordinate, but keep in mind that we are only able to confirm wetland boundaries from mid-June to early October.

The scope of study you've proposed for an NHE is appropriate with the following additions/points of clarification:

- Complete **three** dawn breeding bird surveys in the appropriate window of time (based on the potential for SAR grassland bird habitat on the property).
- Complete three evening amphibian surveys as per the Marsh Monitoring Protocol.
- Complete ELC as per Lee et al. **1998** Ecological Land Classification for Southern Ontario: First Approximation and Its Applications. SCSS Field Guide FG-02.
- If suitable habitat for Species at Risk (SAR) is present, species-specific surveys may be required. Please contact MECP for further direction as needed.
- Record observations of all wildlife occurrences and assess wildlife habitat function; screen for existing or potential significant wildlife habitat on the property.
- A catchment-based water balance is required to assess existing drainage conditions and moisture regimes supporting hydrologic features. It must demonstrate how supporting these hydrologic inputs will be maintained post-development. We understand that this work will be completed under separate cover, but findings related to the function of natural heritage features must be included in the NHE as well.
- Note that any approved loss of wetland or woodland from the property may be subject to LSRCA's Ecological Offsetting Policy. If applicable, please include a preliminary Ecological Offsetting Strategy to address these losses as part of the NHE.
- Map the proposed development and limit of disturbance on a current, high quality orthoimage.

For the data you've requested, please find attached a map depicting "landcover" in the area. ELC mapping is included with this; however, it is largely based on ortho-interpretation and should be field verified still. We also have three aquatic monitoring stations downstream, all between the 20th and 25th Sideroads. I've place a request for any data from these stations with our Aquatic Ecologist and will provide that back to you once available. Lastly, terrestrial crayfish, snapping turtle, and barn swallow have all been observed in the area. There is potential for these species to be using the subject property as well. We are also aware of a Blanding's turtle occurrence, approximately 1.5km from the subject property, but you'll need to follow up with MECP if you require more information about that sighting.

Please let me know if you have any questions or concerns with what I've provided above.

Kind regards,

Kate Lillie, HBSc, EP, ISA

Natural Heritage Ecologist
Lake Simcoe Region Conservation Authority
120 Bayview Parkway,
Newmarket, Ontario L3Y 3W3
905-895-1281, ext. 286 | 1-800-465-0437
k.lillie@LSRCA.on.ca | www.LSRCA.on.ca

Twitter: @LSRCA

Facebook: LakeSimcoeConservation

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From: Lisa Moran <Lisa@Azimuthenvironmental.Com>
Sent: July 6, 2020 11:19 AM
To: Melinda Bessey <M.Bessey@lsrca.on.ca>
Cc: Kate Lillie <K.Lillie@lsrca.on.ca>
Subject: Terms of Reference - 979 and 989 Mapleview Drive, City of Barrie

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

Good Morning Melinda and Kate,

Azimuth has been retained to complete a Natural Heritage Evaluation (NHE) for a property located at 979 and 989 Mapleview Drive East, City of Barrie (Hewitt's Secondary Plan Area) (Figure 1). The proponent wishes to develop the property for residential use.

It is our understanding that a NHE is required under the Lake Simcoe Protection Plan (LSPP) because the property is located in proximity to a Key Natural Heritage Feature and/or Key Hydrologic Feature as defined in the Hewitt's Secondary Plan (*i.e.* Natural Core Area according to the Hewitt's Secondary Plan) (Figure 2).

The staking of the Natural Core Area on the subject property (*i.e.* woodland) took place in July 2015 for all the participating landowners in the Hewitt's Secondary Plan Area. The staking was undertaken with staff from the Lake Simcoe Region Conservation Authority (LSRCA), Natural Resource Solutions Inc., the City of Barrie, Azimuth, R.J. Burnside, The Jones Consulting Group and the affected landowners. The feature limits were defined, agreed to by all parties and staked. Each stake location was georeferenced and the final survey of the features was circulated to all participants. The buffer width as approved by the Ontario Municipal Board (OMB) was added to the feature limit to define the development limit for the preparation of the draft plans of subdivision. Therefore, our assessment will identify the significant features as approved by the province, City and LSRCA. For completeness, an assessment of other potential natural heritage features and will include an assessment of potential Significant Wildlife Habitat (SWH) within the NHE.

Based on this information, the following outlines the activities we would undertake in preparation of the NHE:

- Search for existing rare species observation records for the property and surrounding lands;
- Conduct two dawn breeding bird surveys (July 2020);
- Identify the vegetation communities, using protocols of the Ecological Land Classification (ELC) for Southern Ontario;
- Conduct a survey of vascular plants on the property during the summer (2020);
- Conduct an aquatic habitat assessment of the aquatic features on the property;

- Conduct a Species at Risk Screening for the property utilizing available background information, habitat assessments and field data collected for the property;
- Overlay identified environmental features on aerial photography so that the relationship between the natural heritage features and functions can be assessed relative and an assessment of the sufficiency of the approved buffers can be undertaken;
- Assess the potential direct, indirect and cumulative impacts of the proposed conceptual development plan on the sensitive or significant environmental features as described above;
- Recommend and develop an appropriate avoidance, mitigation and/or restoration strategy;
- Demonstrate conformity with the applicable policies of the City, LSRCA and Province; and
- Prepare one NHE report for circulation to approval agencies.

Azimuth is completing a Hydrogeological Assessment under a separate cover which will include a water balance.

It is our understanding that the Sandy Cove Creek Landowners Group have proposed to re-align Sandy Cove Creek and have been working with the LSRCA in this regard. Another consultant has been retained to provide an assessment of potential impacts associated with the re-alignment. Therefore, the NHE report will not provide an assessment related to the proposed re-alignment. Furthermore, it is our understanding that the buffering requirements related to the re-aligned Sandy Cove Creek are contained within the proposed 60m creek corridor.

If you could please review the proposed TOR and provide comment on its suitability, it would be appreciated. We would also like to take this opportunity to request any background information/mapping that you may have related to this property and adjacent lands (*i.e.* within 120m) that may be beneficial to us in completing the NHE.

Thank you for your attention to this matter. Please feel free to contact me if you have any questions or wish to discuss.

Regards,

Lisa Moran
Terrestrial Ecologist



Azimuth Environmental Consulting, Inc
642 Welham Road
Barrie, ON, L4N 9A1
ph: (705) 721-8451 ext 202
cell: (705) 331-1479
lisa@azimuthenvironmental.com
www.azimuthenvironmental.com

*Providing services in **hydrogeology, terrestrial and aquatic ecology & environmental engineering***

At this time, I am working remotely. The Azimuth office is currently closed to the public but I can be reached on my cell or email.



Scale 1: 6,491



Features

- LSRCA Watershed Boundary
- LSPP Watershed Boundary
- Landcover
 - Building
 - Paved
 - Stormwater Pond
 - Unpaved
- Assessment Parcel
- Lot and Concession
- Road Labels
- Watercourse
- Lake Simcoe
- Roads
 - Hwy 400 Series
 - Highway, Arterials
 - Local Road
- Railway
- Lower Tier Municipality

Printed On:
7/14/2020



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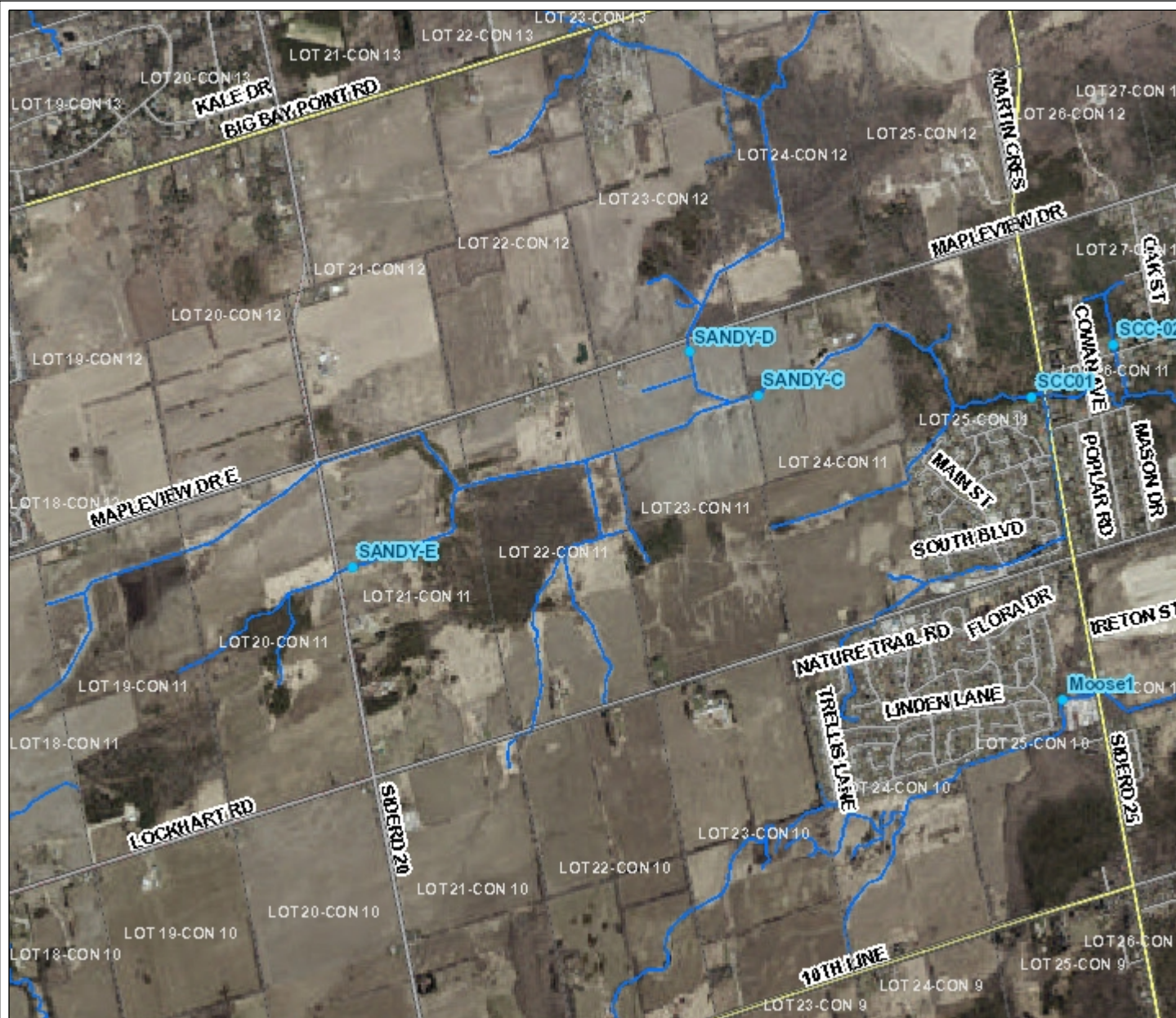


Lake Simcoe Region
conservation authority

Sandy Cove Creek Aquatic Monitoring Stations

Features

- LSRCA Watershed Boundary
- LSPP Watershed Boundary
- Fish Sampling Sites
- Lot and Concession
- Road Labels
- Watercourse
- Lake Simcoe
- Roads
 - Hwy 400 Series
 - Highway, Arterials
 - Local Road
- Railway
- Lower Tier Municipality



Scale 1: 25,964



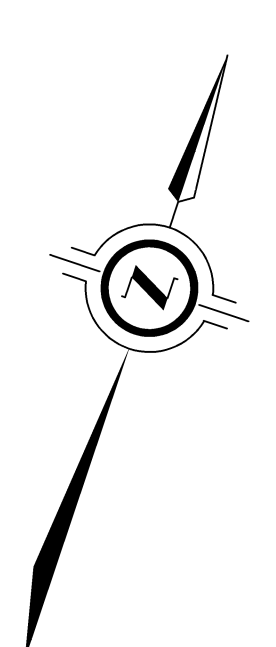
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MAPLEVIEW DRIVE EAST (BY BY LAW 82-35, INST. R0764309)
PIN 58091-0002
ORIGINAL ROAD ALLOWANCE BETWEEN CONCESSIONS 11 AND 12

PART 1
PLAN 51R-11231

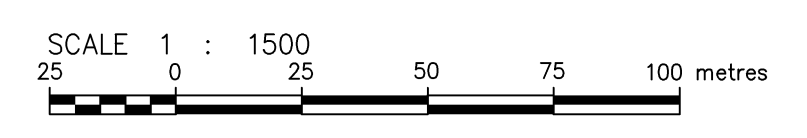
PART 2
PLAN 51R-35948

PART 2, PLAN 51R-4696

PLAN SHOWING
WETLANDS
PART OF LOT 19
CONCESSION 11
GEOGRAPHIC TOWNSHIP OF INNISFIL
NOW IN THE
CITY OF BARRIE
COUNTY OF SIMCOE

J.D. BARNES LIMITED
© COPYRIGHT 2020

METRIC DISTANCES AND/OR COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.



LOT

PART 1, PLAN 51R-41262

WETLANDS

PART 1, PLAN 51R-35948

19

WETLANDS

LOT

PART 1, PLAN 51R-4696

CONCESSION

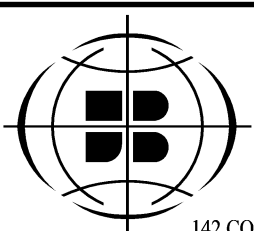
WETLANDS

LOT
PART 4, PLAN 51R-39092

19

LOT 20
PART 1, PLAN 51R-19071

THE FIELDWORK WAS COMPLETED ON OCTOBER 23, 2020.

 J.D.BARNES LIMITED LAND INFORMATION SPECIALISTS 142 COMMERCE PARK DRIVE, UNIT V, BARRIE, ON L4N 8W8 T: (705) 739-6770 F: (705) 739-6771 www.jdbarnes.com			SURVEYING MAPPING GIS
DRAWN BY: MIKE WALDOCK	CHECKED BY: PDR	REFERENCE NO.: 20-11-845-00	
PLOTTED: 11/5/2020		DATED: 11/05/2020	

APPENDIX B

Planning Information



OFFICIAL PLAN MAP 2 Land Use Designations

Approved as Modified
(Bill 162) – May 16, 2024

Neighbourhood Area	Employment Area - Non Industrial	Waste Disposal Assessment Area
Medium Density	Employment Area - Industrial	Extractive Industrial
High Density	Employment Area - Restrictive Industrial	Defined Policy Area
Strategic Employment and Economic District (SEED)	Natural Heritage System	Application Before the Local Planning Appeal Tribunal (LPAT)
Commercial District	Greenspace	TransCanada Pipeline Right-of-way
Community Hub	Infrastructure and Utility	

* All land use designations extend to the centre line of the right-of-way for streets. Land use designations, where applicable, extend to/terminate at the boundary of the right-of-way for provincial highways, rail corridors and utility corridors.
** Certain features like roads, parks and trails within the undeveloped designated greenfield area are conceptual and subject to change.



The City of Barrie does not warrant the accuracy, completeness, content, or currency of the information provided.
This is not a legal Plan of Survey
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Appendix B: Excerpt from the City of Barrie Official Plan (2024), Map 2: Land Use Designations (Note: Property contained within red circle drawn on map. Not to scale)



OFFICIAL PLAN
MAP 3
Natural Heritage
Protection Overlays

Approved as Modified
 (Bill 162) – May 16, 2024

**Environmental Protection Area
 Classification**



EPA - Level 1



EPA - Level 1 with Existing
 Development Designation Subject
 to 5.4.2.1.d



EPA - Level 2



EPA - Level 3



High Constraint Stream Corridor
 Area



High (S) Constraint Stream
 Corridor Area - Special



Medium Constraint Stream
 Corridor Area



Low Constraint Stream Corridor
 Area



High (S) Constraint Stream
 Corridor - Special Policy Area



Natural Core



Natural Linkage Area



Waterbody



Watercourse

* Where natural heritage protection areas are shown, they are often interconnected and continue beyond the municipal boundary.

** Certain features like roads, parks and trails within the undeveloped designated greenfield area are conceptual and subject to change.



The City of Barrie does not warrant the accuracy, completeness,
 content, or currency of the information provided.
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Appendix B: Excerpt from the City of Barrie Official Plan (2024) Map 3: Natural Heritage Protection
 Overlays (Note: Property contained within red circle drawn on map. Not to scale)

APPENDIX C

Provincial Information and Correspondence



Information Request

Date: April 29, 2021

Project Reference: AEC 20-243

Azimuth Contact: Lisa Moran, Terrestrial Ecologist
lisa@azimuthenvironmental.com

Attachments: Figure 1: Study Area Location
Figure 2: Environmental Features

Project Location: 979 and 989 Mapleview Drive East, City of Barrie. UTM coordinates: Northern limit - 17 T 611475.58 E 4911959.71.

Activity Description: Species at Risk (SAR) Assessment for proposed residential development.

The following sources were queries for natural heritage information related to the general location of the property:

- Species at Risk Ontario (*i.e.* Ontario Regulation 230/08);
- Land Information Ontario;
- Natural Heritage Information Centre (Squares 17PK1112, 17PK1111);
- Ontario Breeding Bird Atlas (Square 17TPK11);
- DFO online SAR mapping; and
- Ontario Reptile and Amphibian Atlas (Square 17PK11).

Natural Heritage Features on and Adjacent to the Property:

- Deciduous woodland within and adjacent to study area;
- Sandy Cove Creek; and
- Unevaluated wetland.

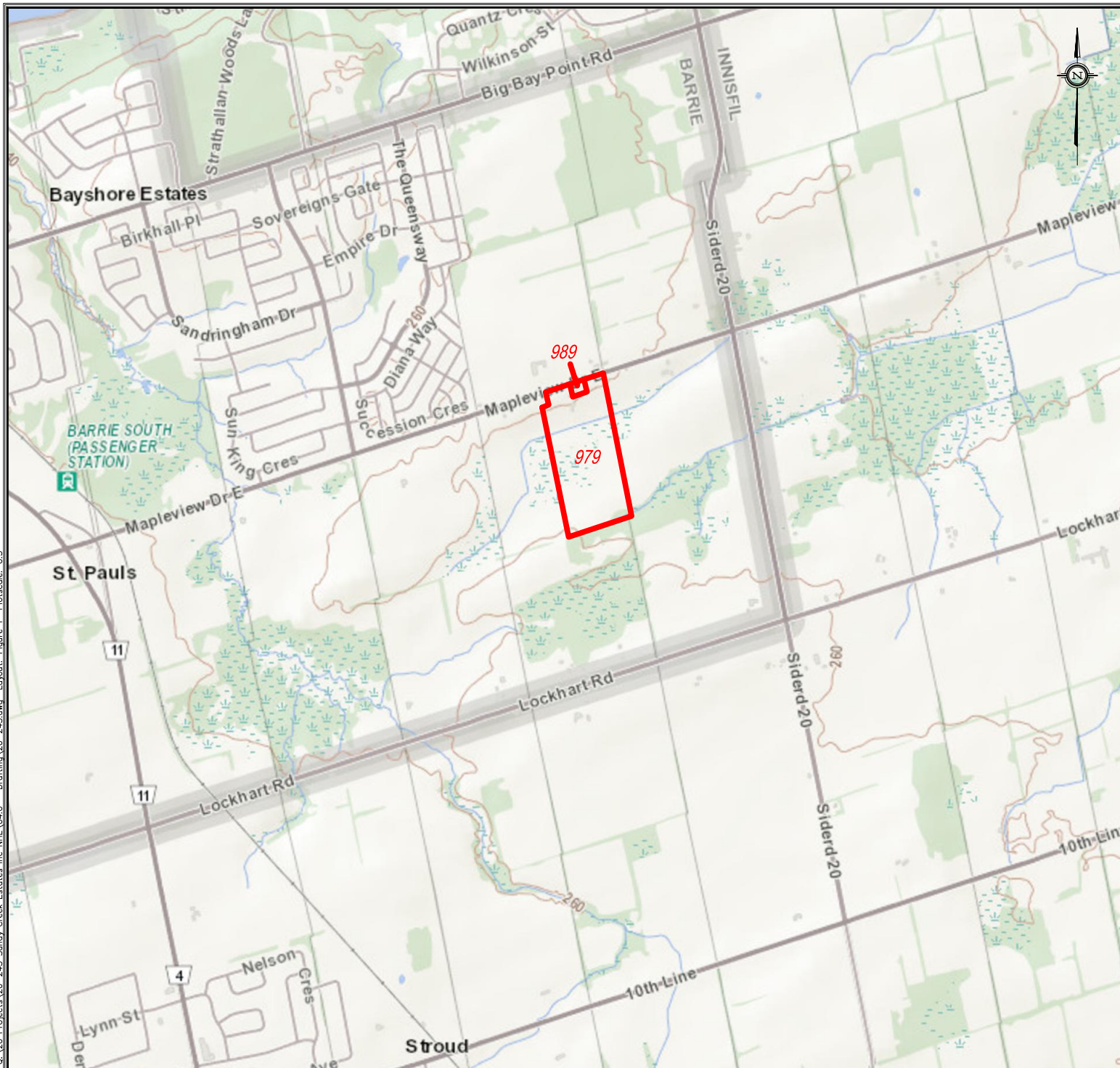
Consolidated SAR List for the Study Area and Adjacent Lands:

- Birds: Barn Swallow (THR), Bank Swallow (THR), Bobolink (THR), Canada Warbler (SC), Common Nighthawk (SC), Eastern Meadowlark (THR), Eastern Wood-Pewee (SC), Golden-winged Warbler (SC), Red-headed Woodpecker (SC), Wood Thrush (SC);
- Mammals: Little Brown Myotis (END), Northern Myotis (END), and Tri-colored Bat (END);
- Plants: Butternut (END); and
- Reptiles: Blanding's Turtle (THR) and Snapping Turtle (SC).



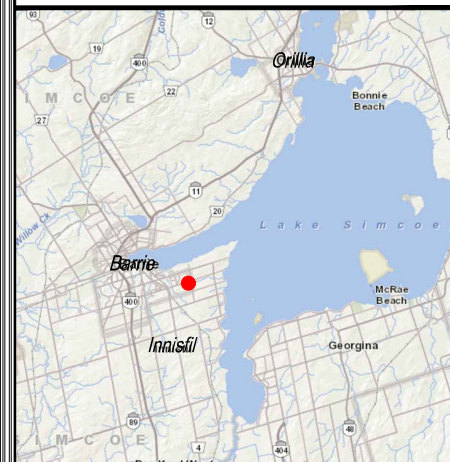
Information Request

Please confirm that the SAR list above includes all species of concern to the MECP and if not, please amend the list for accuracy.



LEGEND:

— Approx. Property Boundary



REG MAP



AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

Sandy Creek Estates Inc NHE,
 Barrie, ON

DATE ISSUED: July 2020

CREATED BY: JLM

PROJECT NO.: 20-243

REFERENCE: MNR

Figure No.

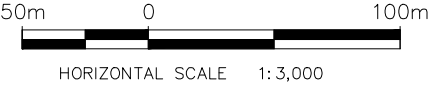
1

Plotted by: JMCARTNEY on July 29, 2020 at 8:39am
File: Q:\20 Projects\20-243 Sandy Creek Estates Inc. NHE\04.0 - Drafting\20-243.dwg Layout: EIS2 Plotscale: 0.5



LEGEND:

- Approx. Property Boundary
- Watercourse
- Flow Direction
- Azimuth Surveyed Wetland
- Top of Bank
- Woodland Dripline
- Meadow Peninsula



Environmental Features

Sandy Creek Estates Inc NHE,
Barrie, ON

DATE ISSUED:	July 2020	Figure No. 2
CREATED BY:	JLM	
PROJECT NO.:	20-243	
REFERENCE:	Simcoe County Maps	

Lisa Moran

From: Snell, Shamus (MECP) [Shamus.Snell@ontario.ca]
Sent: May 14, 2021 3:09 PM
To: Lisa Moran
Subject: MECP SARB Review: Information Request 979 and 989 Maplevue Drive East

Hi Lisa,

The Ministry of Environment, Conservation and Parks (MECP) Species at Risk Branch (SARB) has conducted review of the 979 and 989 Maplevue Drive East for Species at Risk (SAR) occurrences and has not detected any additional SAR occurrences which were not already identified in the information request.

While this review represents MECP's best currently available information, it is important to note that a lack of information for a site does not mean that SAR or their habitat are not present. There are many areas where the Government of Ontario does not currently have information, especially in areas not previously surveyed. On-site assessments will need to be performed to verify site conditions, identify and confirm presence of species at risk and/or their habitats.

The subject property overlaps numerous observations of Bobolink and Eastern Meadowlark and the habitat in these areas suggests there is a very high potential they could be using fields on the subject property as nesting habitat. Species specific surveys for Bobolink and Eastern Meadowlark are recommended.

It is the responsibility of the proponent to ensure that SAR are not killed, harmed, or harassed, and that their habitat is not damaged or destroyed through the proposed activities to be carried out on the site. If the proposed activities can not avoid impacting protected species and their habitats then the proponent will need to apply for a authorization under the Endangered Species Act (ESA).

Regards,

Shamus Snell
A/ Management Biologist
Species at Risk Branch
Ministry of Environment, Conservation and Parks
Email: shamus.snell@ontario.ca

From: Lisa Moran <Lisa@Azimuthenvironmental.Com>
Sent: April 29, 2021 4:40 PM
To: Species at Risk (MECP) <SAROntario@ontario.ca>
Subject: Request for Preliminary Screening - 979 and 989 Maplevue Drive East, Barrie ON

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Good afternoon,

Please find attached a request for background information related to 979 and 989 Maplevue Drive East, City of Barrie.

Regards,

Lisa Moran

Terrestrial Ecologist

Azimuth Environmental Consulting, Inc

642 Welham Road

Barrie, ON, L4N 9A1

ph: (705) 721-8451 ext 202

cell: (705) 331-1479

lisa@azimuthenvironmental.com

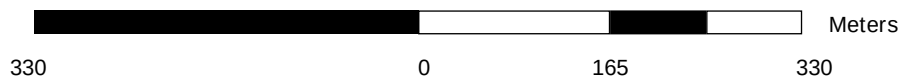
www.azimuthenvironmental.com

*Providing services in **hydrogeology, terrestrial and aquatic ecology & environmental engineering***

At this time, I am working remotely. The Azimuth office is currently closed to the public but I can be reached on my cell or email.



Scale 1: 6,491



Features

- LSRCA Watershed Boundary
- LSPP Watershed Boundary
- Landcover
 - Building
 - Paved
 - Stormwater Pond
 - Unpaved
- Assessment Parcel
- Lot and Concession
- Road Labels
- Watercourse
- Lake Simcoe
- Roads
 - Hwy 400 Series
 - Highway, Arterials
 - Local Road
- Railway
- Lower Tier Municipality

Printed On:
7/14/2020



WGS_1984_Web_Mercator_
Auxiliary_Sphere

Mapped By:

This product was produced by the Lake Simcoe Region Conservation Authority and some information depicted on this map may have been compiled from various sources. While every effort has been made to accurately depict the information, data/mapping errors may exist. This map has been produced for illustrative purposes from an interactive web mapping site. LSRCA GIS Services DRAFT printed 2020. © LAKE SIMCOE REGION CONSERVATION AUTHORITY, 2020. All Rights Reserved. The following data sets of Assessment Parcel, Roads, Upper & Lower Tier Municipalities, Wetlands are © Queens Printer for Ontario. Reproduced with Permission, 2020. The Current Regulation Limit and Boundary data sets are derived products from several datasets. Orthophotography 2002, 2005, 2007-2009, 2011-2018, © First Base Solutions, Inc.

Lisa Moran

From: Lisa Moran
Sent: May 21, 2021 11:03 AM
To: Michael Gillespie
Subject: FW: Information Request - Sandy Creek Estates Hewitt's SPA, City of Barrie
Attachments: InfoRequestGuide_2018-12-18-FINAL.pdf

AEC20-243

Hi Mike,

Sara is going to chat with you about this one. I'm going to forward some fish information to you.

Lisa

From: Shirley, Brent (MNRF) [mailto:brent.shirley@ontario.ca]
Sent: July 17, 2020 12:50 PM
To: Lisa Moran
Subject: RE: Information Request - Sandy Creek Estates Hewitt's SPA, City of Barrie

Hi Lisa,

Thank you for your request for information on natural heritage features. In order to provide the most efficient service possible, the attached *Natural Heritage Information Request Guide* has been developed to assist you with accessing natural heritage data and values from convenient online sources.

It remains the proponent's responsibility to complete a preliminary screening for each project, to obtain available information from multiple sources, to conduct any necessary field studies, and to consider any potential environmental impacts that may result from an activity. We wish to emphasize the need for the proponents of development activities to complete screenings prior to contacting the Ministry or other agencies for more detailed technical information and advice.

The Ministry continues to work on updating data housed by Lands Information Ontario and the Natural Heritage Information Centre, and ensuring this information is accessible through online resources. Species at risk data is regularly being updated. To ensure access to reliable and up to date information, please contact SAROntario@ontario.ca.

This information will assist in scoping the necessary field assessments for an area if development or site alteration is proposed. This information is not meant to replace the responsibility of the proponent to undertake species and / or habitat surveys. Surveys or additional site level assessment are often required to confirm presence or absence of natural heritage features and values. Environmental consulting firms have the professional and technical expertise to assess sites for natural heritage features and can gauge the potential for such features to exist.

Absence or lack of information for a given geographic area does not necessarily mean the absence of natural heritage features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. In addition, new species may be listed and new natural heritage features may be defined over time. For these reasons, the Ministry

cannot provide a definitive statement on the presence, absence or condition of natural heritage features in all parts of Ontario.

Sandy Cove Creek- all fisheries data is available in LIO. This watercourse is considered a coldwater thermal regime and the known fish species composition is Blacknose Dace, Bluntnose Minnow, Brassy Minnow, Brook Stickleback, Brook Trout, Central Mudminnow, Creek Chub, Emerald Shiner, Fathead Minnow, Iowa Darter, Johnny Darter, Longnose Dace, Mottled Sculpin, Northern Pearl Dace, Northern Redbelly Dace, Rock Bass, Sand Shiner, White Sucker and Yellow Perch. The timing restriction for this waterbody for in-water work would be July 15th until September 30th.

I hope this information and guide are useful in assisting you to find all the best available resources.

Thank you for your inquiry.

Best Regards,

Brent Shirley

A/Management Biologist
Midhurst District Ministry of Natural Resources and Forestry
Midhurst District Office | 2284 Nursery Rd | Midhurst | ON | L9X 1N8
Cell # - 705-790-6630

From: Lisa Moran <Lisa@Azimuthenvironmental.Com>
Sent: July 16, 2020 4:59 PM
To: MIDHURSTINFO (MNRF) <MIDHURSTINFO@ontario.ca>
Subject: Information Request - Sandy Creek Estates Hewitt's SPA, City of Barrie

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Good afternoon,

We have been retained to complete an EIS for a property located at 979 and 989 Mapleview Drive East, City of Barrie.

The property is primarily utilized for agriculture. A portion of Sandy Cove creek traverses through the property. A woodlot exists at the southern end of the property.

We would like to take this opportunity to request any available background information that MNRF may have that would be relevant to our study including any fisheries information related to Sandy Cove Creek (fish species composition, confirmation of thermal regime, timing restriction for in-water works) in addition to any other relevant Natural Heritage information.

Please let me know if you have any questions or require further information.

Regards,

Lisa Moran
Terrestrial Ecologist



Azimuth Environmental Consulting, Inc
642 Welham Road
Barrie, ON, L4N 9A1
ph: (705) 721-8451 ext 202
cell: (705) 331-1479
lisa@azimuthenvironmental.com
www.azimuthenvironmental.com

*Providing services in **hydrogeology, terrestrial and aquatic ecology & environmental engineering***

At this time, I am working remotely. The Azimuth office is currently closed to the public but I can be reached on my cell or email.



Notes:

Provincially mapped Natural Heritage Features

0.3 0 0.16 0.3 Kilometres

Absence of a feature in the map does not mean they do not exist in this area.

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

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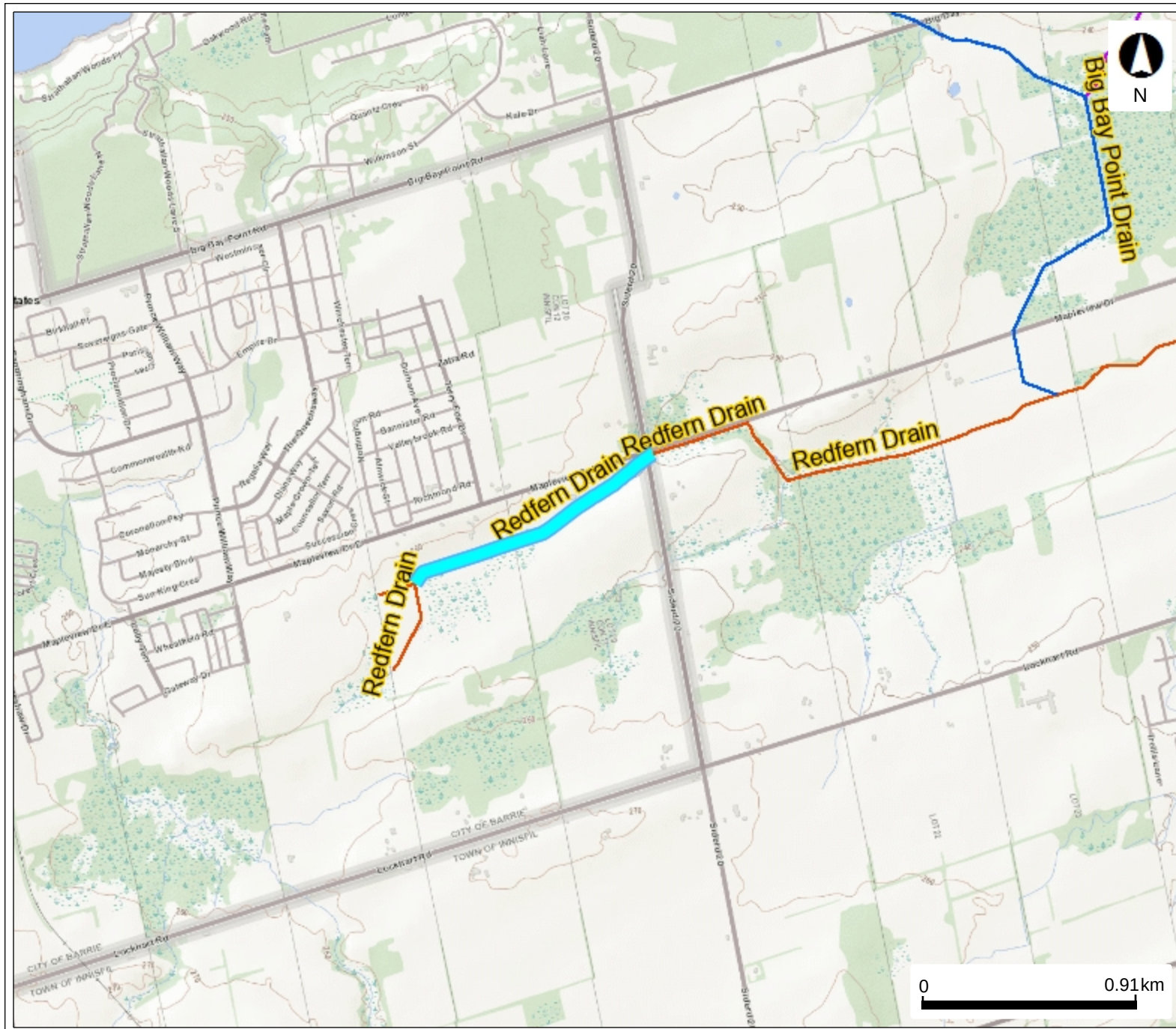
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Legend

-  Assessment Parcel
-  ANSI
-  Earth Science Provincially Significant/sciences de la terre d'importance provinciale
-  Earth Science Regionally Significant/sciences de la terre d'importance régionale
-  Life Science Provincially Significant/sciences de la vie d'importance provinciale
-  Life Science Regionally Significant/sciences de la vie d'importance régionale
-  Evaluated Wetland
-  Provincially Significant/considérée d'importance provinciale
-  Non-Provincially Significant/non considérée d'importance provinciale
-  Unevaluated Wetland
-  Woodland
-  Conservation Reserve
-  Provincial Park
-  Natural Heritage System



20-243 Sandy Creek Estates EIS - Tributary of Sandy Cove Creek



Legend

Drain Classification

- A
- B
- C
- D
- E
- F
- Closed/Tiled
- Not Rated

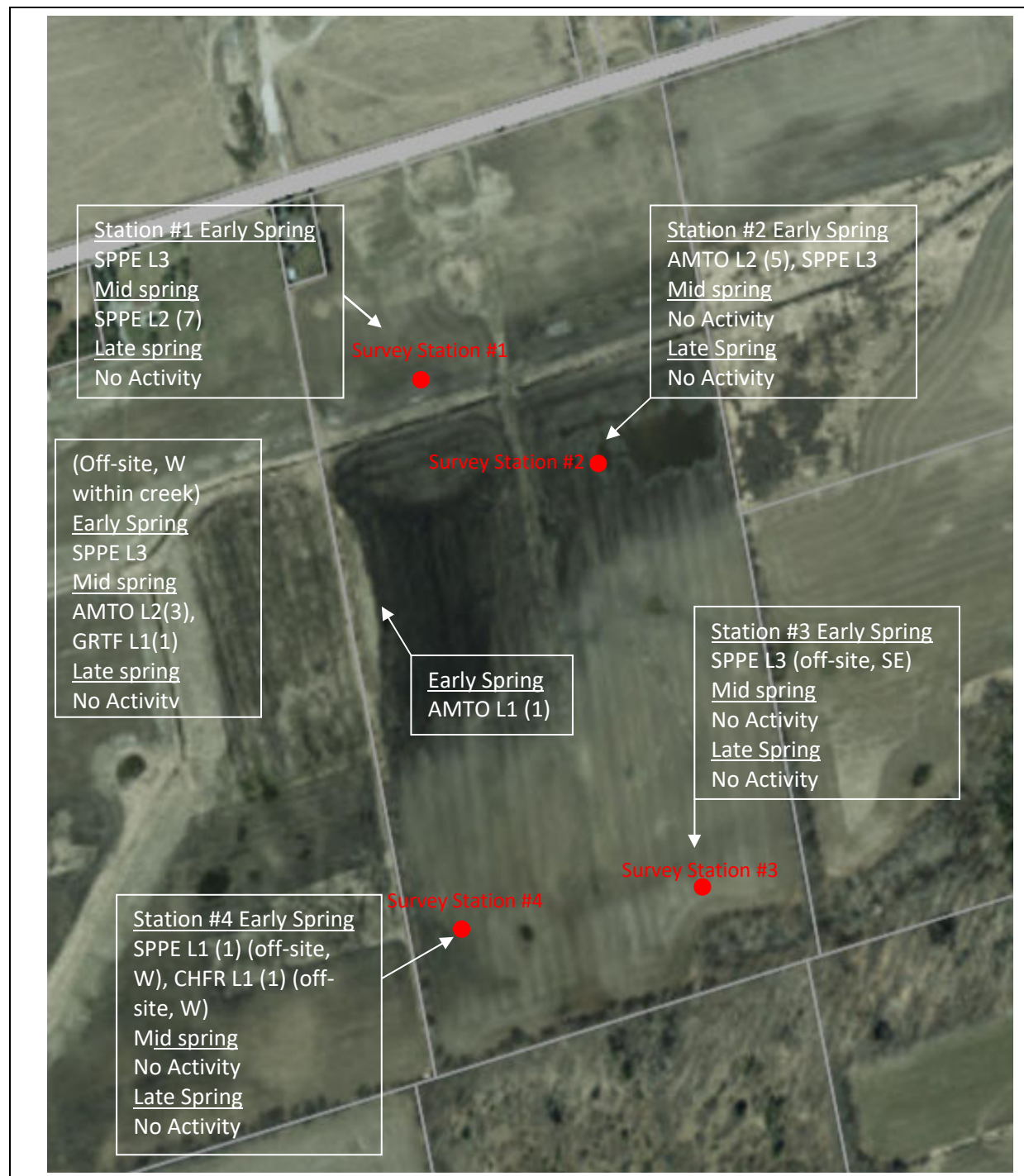
DFO Species at Risk Critical Habitat 2024

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APPENDIX D

Amphibian Data

Amphibian Survey Results Map (Calling Amphibian Activity Location), Sandy Creek Estates Inc. NHE



Observation Conditions Early Spring Survey: April 29, 2021, Observer: D. d'Entremont, Temperature: 9C, Precipitation: Light Rain, Cloud Cover: 100%, Beaufort (2), Sunset: 20:20, Search Time: 20:55-21:45 **Mid Spring Survey:** May 20, 2021, Observer: L. Moran, Temperature: 21C, Precipitation: Nil, Cloud Cover 70%, Beaufort (0), Sunset: 20:45, Search Time: 21:20 – 21:45 **Late Spring Survey:** June 15, 2021, Observer: S. Tarof, Temperature: 15C, Precipitation: Nil, Cloud Cover 0%, Beaufort (2), Sunset: 21:05, Search Time: 21:34-22:01.

APPENDIX E

Site Plan

969, 979 & 989 MAPLEVIEW DRIVE, BARRIE

PHASE 2 CONCEPT

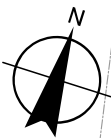
LOTTED CONCEPT

DENSITY: 73.4 PEOPLE & JOBS PER HECTARE

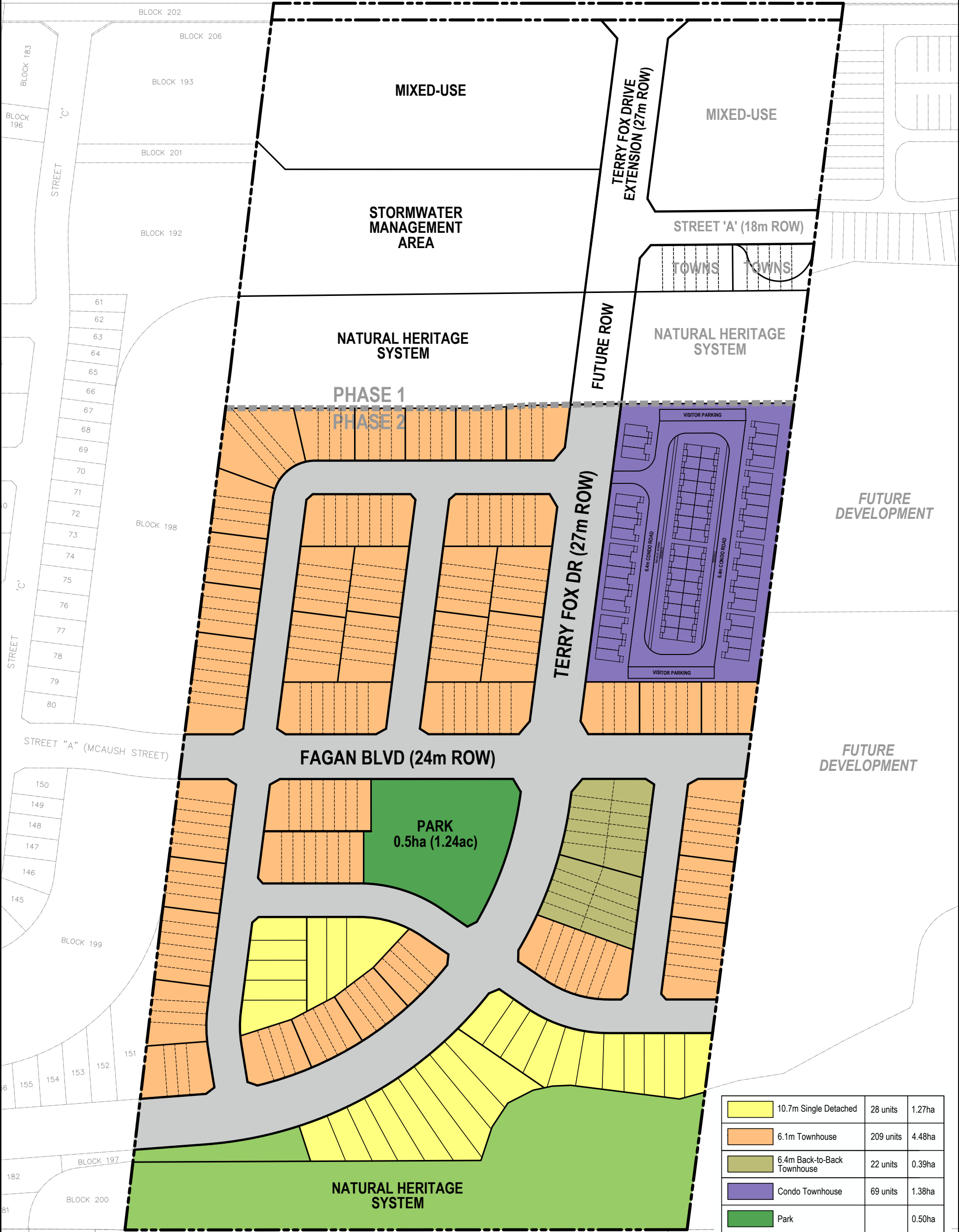
COLLECTOR DENSITY: 45.3 UNITS PER HECTARE

COMMERCIAL

4 STOREY
RESIDENTIAL



MAPLEVIEW DRIVE EAST



- Notes:
- Planning approvals required
 - To be reviewed by Town
 - Engineer to confirm roads meet City standard
 - Units based on product type provided by Client
 - Unit count can change based on product type

NATURAL HERITAGE
SYSTEM

DRAFT
FOR DISCUSSION PURPOSES

	10.7m Single Detached	28 units	1.27ha
	6.1m Townhouse	209 units	4.48ha
	6.4m Back-to-Back Townhouse	22 units	0.39ha
	Condo Townhouse	69 units	1.38ha
	Park		0.50ha
	Natural Heritage System / Open Space		1.62ha
	Right of Way		3.78ha
TOTAL		328 units	13.42ha