

Environmental Impact Study

51-55 Hawkesville Rd., St. Jacobs ON

PREPARED FOR POLOCORP INC.

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LIMITATIONS OF USE

This document, Hawkesville Rd. Environmental Impact Study (EIS), was prepared by Dougan Ecology for Polocorp Inc. on January 21, 2025. The purpose of this document is to provide an ecological impact study (EIS) in support of a Zoning By-Law Amendment (ZBA) proposing a residential (subdivision) development, at 51-55 Hawkesville Rd., St. Jacobs, ON. A revised version of this EIS was submitted on December 17, 2025, February 27, 2026, March 7, 2026 and May 15, 2026 following agency comments.

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1. INTRODUCTION

1.1. Study Purpose and Objectives

Dougan Ecology (Dougan) was retained to complete an Environmental Impact Statement (EIS) for the above-noted subject property (Figure 1) in support of a ZBA on existing trucking company lands zoned agricultural. The proposed development will consist of the following components: 16 lots of freehold singles, 44-58 units of freehold street townhouses, 55-65 units of stacked townhouses, as well as associated parking, streets, and servicing. The need for an EIS was triggered based on the presence of mapped natural heritage features including the Conestogo River and associated valleylands, regulated watercourse and pond.

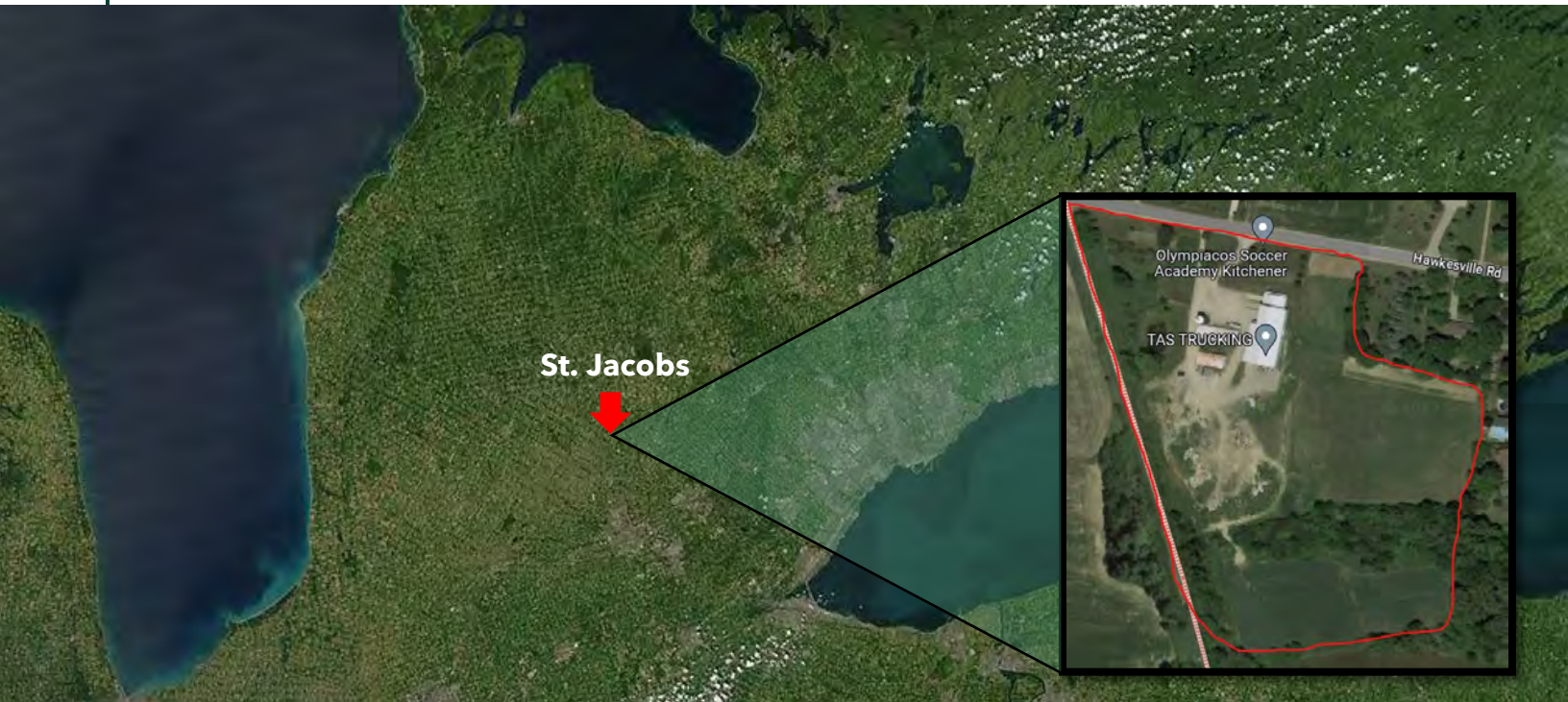


Figure 1. Site Location

1.2. Terms of Reference

The Region of Waterloo requires an EIS for any proposed development within environmental constraint areas to demonstrate that the proposal will not adversely affect these areas. Generally, development is discouraged within Environmental Constraint Areas that as it would detract from the functions performed by the natural environment such as groundwater recharge, erosion control, wildlife habitat, or where environmental constraints exist. However, such development may be permitted where

it can be demonstrated that the proposal will not adversely affect the Environmental Constraint Areas (Region of Waterloo, 2015).

A draft Terms of Reference (TOR) was prepared and submitted to the Agencies in May 2024 based on a previous version of the site plan. Comments were received from GRCA and the Region of Waterloo in December 2024 and have been addressed through this submission, including a revised plan.

The study area for the EIS is shown on Figure 1. This includes the subject property, the adjacent 120m lands and any natural heritage features that overlap the 120m adjacent lands. The EIS includes review of background data, documents, plans and legislation relevant to the subject property. The information gathered in this phase will provide a preliminary understanding of the natural heritage features and functions present on the subject lands, facilitate decision-making during the study, and will be incorporated into subsequent reporting. The scope of desktop and field studies for this EIS is proposed based on the presence of documented constraint features or anticipated constraints and includes studies outlined in Table 1.

Table 1. Summary of EIS study requirements in accordance with the TOR

EIS Component	Number of Surveys and Timing
Background and Policy Review	Desktop
Significant Wildlife Habitat (SWH) Screening	Desktop, supplemented with field verification
Species at Risk (SAR) Screening	Desktop, supplemented with field verification
Ecological Land Classification (ELC)	3 visits: Fall 2023, Spring and Summer 2024
Botanical Inventory (3 surveys: spring, summer, fall)	3 visits: Fall 2023, Spring and Summer 2024
Tree Inventory and Arborist Assessment	Fall 2023
Breeding Bird Surveys (2 surveys: May 24-July 10)	2 visits: May-June 2024
Nocturnal Amphibian Call Surveys (3 surveys: April, May, June)	3 visits: April, May, June 2024
Bat Visual Exit Surveys (VES) (2 surveys in June)	2 visits: June 2024
Wetland Boundary Verification (with GRCA)	May 2026



1.3. Proposed Development

According to the site development concept (Appendix C), the proposed development will consist of 16 lots of freehold singles, 44-58 (49 planned) units of freehold street townhouses, 55-65 (58 planned) units of stacked townhouses, as well as associated parking, streets, and servicing. A 5,118.3m² private stormwater management (SWM) facility is also planned for the site. The forested slope is to remain undeveloped, bound by the dripline at the top of slope and floodplain limit at the bottom. Adjacent to the SWM facility and extending below the slope, a 23,707.8 m² open space area/hazard lands block is proposed, in addition to a parkette/servicing block within the residential development area totaling 529.9m².

1.4. Background Review

1.4.1. Natural Heritage Information Centre (NHIC) Biodiversity Atlas

The NHIC maintains a database of information on natural heritage features and rare species occurrences in Ontario using a 1km x 1km data grid. The NHIC database was reviewed to identify any known natural heritage features or species at risk records within the study area and adjacent lands (data squares 17NJ3521, 17NJ3520, 17NJ3421 and 17NJ3420). The NHIC query results can be found in Appendix A.

1.4.2. GCRA Mapping

Subject to the Conservation Authorities Act, the Grand River Conservation Authority (GRCA) regulates development and activities in or adjacent to natural hazard features (e.g. watercourses, wetlands, steep slopes, shorelines). GRCA regulation mapping was reviewed to identify the approximate regulation boundaries within and adjacent to the study area to inform future permitting requirements. Upon review, it was found that portions of the site are within the GRCA regulated area (Ontario Regulation 41/24) and they will need to be consulted in order to proceed with the proposed development. See Figure 2 for a map of the GRCA regulated area relative to the site.



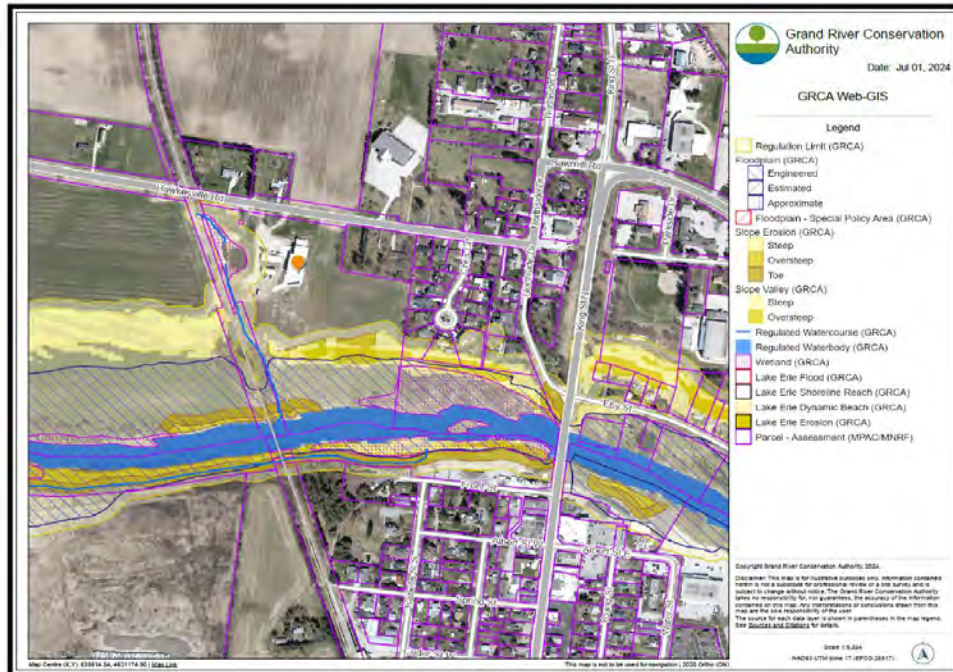


Figure 2. GRCA regulated areas for the subject and adjacent lands

1.4.3. Region of Waterloo Official Plan Schedules and Relevant Zoning By-Laws

The Region of Waterloo's Regional Official Plan (ROP) outlines the city's Greenlands Network which is defined as environmental features and the linkages among them. The Greenlands Network and the ecological functions it provides contribute to maintaining the environmental health of Waterloo Region and the Grand River watershed. The Greenlands Network consists of the following categories of environmental features designated in the Regional Official Plan (ROP) and Area Municipal Official Plans:

Landscape Level Systems

- Environmentally Sensitive Landscapes
- Significant Valleys
- Regional Recharge Areas
- Provincial Greenbelt Natural Heritage System

Core Environmental Features

- Habitat of Endangered and Threatened Species
- Provincially Significant Wetlands
- Environmentally Sensitive Policy Areas
- Significant Woodlands
- Environmentally Significant Valley Features

Supporting Environmental Features

- Environmentally Significant Discharge Areas
- Environmentally Significant Recharge Areas
- Linkages
- Other environmental features designated in Area Municipal Official Plans and/or regulated by the Grand River Conservation Authority

The ROP and the Greenlands Network Implementation Guideline (RWM, 2016) were referenced to determine where the site lies in relationship to the Greenlands Network and any implications with respect to the proposed development.

1.4.4. Global Biodiversity Information Facility (GBIF)

The Global Biodiversity Information Facility (GBIF) is a platform that compiles and provides access to a vast global database of biodiversity information, including records of various species and their occurrences from around the world. To assess the presence of natural heritage features and records of species at risk within the study area, a query was conducted in the GBIF database, encompassing not only the specific study area but also its adjacent lands and the surrounding regions. The results of this GBIF query can be found in Appendix A.

1.4.5. Online Citizen Science Databases

iNaturalist

iNaturalist is an online platform and mobile app that encourages individuals to observe, document, and share their observations of the natural world, including plants, animals, and fungi. iNaturalist serves as a valuable tool for biodiversity research and citizen science, enabling people to contribute to a global database of species observations and supporting conservation efforts. iNaturalist records were queried and results can be found in Appendix A.

Nature Counts

Nature Counts is an online platform that allows users to collect, archive, interpret and access wildlife data to advance the understanding of bird populations across the Western Hemisphere. It is a program of Birds Canada and is partnered with the Avian Knowledge Network. Nature Counts records were queried and examined data from the Ontario Breeding Bird Atlas, Ontario Reptile and Amphibian Atlas and the Ontario Butterfly Atlas. Results of this query can be found in Appendix A.

1.4.6. Constraints Summary Letter (Dougan Ecology, May 2023) for 51 Hawkesville Road

An initial background review of natural heritage features using GRCA online mapping and a subsequent site visit revealed two corridors containing multiple natural features of concern in terms of environmental constraints for the proposed development. The

first is the Conestoga River Corridor, which extends through the south end of the property and contains the main concentration of natural features of concern including the river, regulated floodplain, unevaluated wetland and treed valley slope, with a portion mapped as noon-sensitive woodland and the other as significant valley. The second is the West End Corridor, which includes a regulated watercourse, online pond and potential wetland making up the concentration of more disturbed natural features along the western edge of the property adjacent to the railway line.

This assessment recommended that the Site Plan consider setbacks from the top of slope and western drainage feature. The exact location of the top of slope would need to be confirmed in the field with a geotechnical consultant and GRCA. The western drainage feature setbacks, if required, should be reviewed with a hydrologist. If site alterations are otherwise kept out of the Valley and associated natural heritage features the remaining constraint would be vegetation and tree removal, which would be restricted to the fall and winter, outside the period of occupancy for migratory birds (MBCA, 1994) and/or if permitted by the MECP for removal of trees deemed as suitable for bat roosting.

DFO Species at Risk Mapping and Aquatic Resource Area Data

The Department of Fisheries (DFO) Canadian Aquatic SAR mapping was referenced for potential Species at Risk and Critical Habitat within and adjacent to the study area. Additionally, the Aquatic Resource Area Polygon (ARAP) segment tool was used to determine waterbody characteristics and fish communities of the Conestoga River. The results of these aquatic focused background queries can be found in Section 3.4.7.

2. METHODS

2.1. Vegetation

2.1.1. Ecological Land Classification (ELC)

Three vegetation surveys were conducted on September 20, 2023, May 17, 2024, and July, 25, 2024 to capture spring, summer and fall vascular plants. Vegetation communities within the study area were characterized according to the Ecological Land Classification (ELC) System protocol for Southern Ontario, 1st approximation (Lee et al., 1998). ELC classification and mapping was produced via high quality aerial photo interpretation and confirmation through field surveys. ELC field data was compiled into an ArcGIS database using Survey 123 and linked to mapped ELC units in an ArcGIS feature class where it was managed, reviewed, and exported for analysis and reporting. See Map 1 for the location of ELC polygons.



2.1.2. Vascular Plant Inventory

Two vascular plant inventories were carried out simultaneously with the ELC surveys involving recording all vascular plant species encountered within the canopy, sub-canopy, understory, or ground layer with relative abundance within each polygon. A plant list was collected and digitally uploaded to an ArcGIS database to facilitate data management, QA/QC, analysis, and mapping. The taxonomy, nomenclature and provincial ranks for each of the species are consistent with the Natural Heritage Information Centre. Plant rarity status was assessed using COSEWIC rankings for federal status (COSEWIC, 2024), SARO ranks for Species at Risk in Ontario (MECP, 2024), and Srank for rarity in Ontario (NHIC, 2024). Local status is based on the Region of Waterloo Significant Species List (RMW, 1999).

2.1.3. Tree Inventory & Arborist Assessment

An inventory and arborist assessment of all trees within the anticipated limit of development (LOD) was completed as part of the Arborist Report and Tree Preservation Plan (TPP) for 51-55 Hawkesville Rd, submitted under separate cover (Dougan, 2024). The arborist assessment was completed by an International Society of Arboriculture (ISA) Certified Arborist on September 20 and 21, 2023. All trees 10 cm DBH (diameter at breast height) and over were tagged and documented using a custom Survey 123 ArcGIS application and geolocated using the Trimble Catalyst GNSS receiver.

The following data was collected on each tree:

- Unique tree tag number;
- Species (common name, botanical name);
- DBH recorded at 1.4m (in cm);
- Crown reserve i.e. canopy diameter (in m);
- Tree height (in m);
- Structure condition (high, medium, low);
- Biological health (high, medium, low);
- Preservation priority (high, medium low);
- Any additional comments.

For further details, please refer to the Arborist Report and Tree Preservation Plan (TPP) for 51-55 Hawkesville Rd (Dougan, 2024).

2.2. Wildlife

2.2.1. Nocturnal Amphibian Call Surveys

Nocturnal amphibian call surveys were conducted in accordance with the Marsh Monitoring Program (BSC, 2009). Three (3) visits are required in late April, May and



June to ensure that all frog species' calling windows are covered during surveys. Surveys commenced 30 minutes after sunset and were concluded by midnight under appropriate weather conditions stipulated in the Marsh Monitoring Program (i.e. low winds, no rain, minimum temperature thresholds met). Species and abundance counts were recorded at the monitoring location shown on Map 2.

2.2.2. Breeding Bird Surveys

Two (2) breeding bird surveys were completed by a qualified avian ecologist, in accordance with Ontario Breeding Bird Atlas survey guidelines (2021). Surveys took place between May 24 and July 10 and were carried out at least seven (7) days apart. Surveys were conducted between sunrise and approximately five (5) hours afterwards, under suitable weather conditions (i.e. light winds, good visibility, and no heavy rain). Breeding bird surveys were conducted using an area search methodology, to ensure full coverage of the site and its varying habitats (ref. Map 2). Species, numbers of individuals, and breeding evidence were documented.

2.2.3. Bat Habitat & Visual Exit Surveys

An assessment of candidate bat roosting trees within the anticipated limit of development was undertaken during the arborist assessment in September 2023. Trees 25cm DBH or greater that were in various levels of decline exhibiting snag characteristics such as cracks, crevices, loose bark etc. were identified as candidate roosting trees.

Following an assessment of the structures on site, visual exit surveys of the barn were undertaken on June 18 and 27, 2024. Surveys were undertaken in accordance with MECP's Use of Buildings by Species at Risk Bats Survey Methodology whereby surveys occurred under appropriate weather conditions; surveyors were in place by sunset with a clear view of suitable exit holes. Surveys occurred for 1 hour after the first bat emerged or for 1.5 hours after sunset, if no bats were seen emerging. Wildlife Acoustics Echo Meter Touch 2 Pro units were used during surveys to capture species occurrences. Manual vetting of auto-identified bat species was completed following surveys using Kaleidoscope Pro software.

2.2.4. Incidental Wildlife

All wildlife encountered incidentally during other targeted field surveys were recorded and assessed for their significance. Fauna species were detected through either direct observation of wildlife, by song or call (birds, amphibians), or by evidence, including track and sign (mammals and other wildlife). A complete list of fauna species and their significance can be found in Appendix D.



2.3. Special Features & Ecological Functions

2.3.1. Species at Risk (SAR)

A complete Species at Risk (SAR) screening was undertaken based on background records gleaned from available sources (ref. section 1.4), in addition to species records confirmed during fieldwork undertaken in 2023 and 2024, in accordance with the Terms of Reference.

2.3.2. Significant Wildlife Habitat (SWH)

An SWH desktop screening was conducted based on the MNRF's (2015) Significant Wildlife Habitat Criteria for Ecoregion 6E. On-site habitat and results of targeted fieldwork completed in 2023 and 2024 informed the overall SWH status as absent, candidate, or confirmed.

2.3.3. Woodlands

Treed areas within the study area were assessed under the Region's definition of "woodlands", such that a woodland must cover at least one hectare and meet the following tree density criteria:

- A minimum of 1,000 trees per hectare of any size.
- At least 750 trees per hectare with a diameter over five centimeters.
- A minimum of 500 trees per hectare with a diameter over 12 centimeters.
- At least 250 trees per hectare with a diameter over 20 centimeters.

Any treed communities meeting this definition were then assessed under the Waterloo Regional Official Plan (ROP) policies on Significant Woodlands (ROP section 7.C.6) including:

7.C.6 Significant Woodlands are areas that meet all of the following criteria:

- a) greater than four hectares in size, excluding any adjoining hedgerows;*
- b) consisting primarily of native species of trees; and*
- c) meets the criteria of a woodland in accordance with the provisions of the Regional Woodland Conservation By-law.*

The boundary of a Significant Woodland may be more precisely delineated, subject to Policy 7.A.6, to exclude plantations of primarily non-native species, small lobes and projections, and low quality wooded habitat on the periphery of the feature, the removal of which does not create an adverse environmental impact on the residual woodland.

Studies undertaken as part of this EIS to confirm woodland extent and significance include:

- Dripline delineation to confirm the woodland boundary (2021);
- Determination of whether woodlands are present as defined by the Region;
- Completion of a significance assessment using criteria outlined in ROP policy 7.C.6 (*Significant Woodlands*) based on desktop and field studies.

2.3.4. Valleylands

A Top of Bank delineation was completed on site by CVDE (2021). This feature was delineated and assessed under the Region's criteria for *Regulated River Valleys*, and further as an *Environmentally Significant Valley Feature* as defined by the Region (ROP policy 7.C.7):

Studies undertaken as part of this EIS to confirm the presence/extent and significance of valleylands include:

- Top of Bank delineation (completed by CVDE);
- Determination of whether Regulated River Valleys are present as defined by the Region;
- Completion of a significant valleyland assessment using criteria outlined in ROP policy 7.C.7 based on desktop and field studies;
- Assessment of an appropriate setback requirements under the Region's policy and the recently introduced interim Ontario Regulation 41/24.

2.3.5. Wetlands

Provincial LIO (Land Information Ontario) and GRCA online mapping identified an unevaluated wetland in the northwest corner of the property that appears to have been dug sometime between 1963 and 2000 (CVD, 2023). The wetland extent and significance were assessed, including:

- On-site wetland boundary delineation (**May 2026**);
- Assessment of an appropriate setback requirements under the recently introduced interim Ontario Regulation 41/24.

2.3.6. Drainage Channel & Regulated Floodplain

A drainage swale exists along the westerly property boundary. This feature consists of sections of open and piped flow, storm sewers and culverts that convey flows southward towards the Conestogo River (**CVDE, 2023**).

The southern portion of the site contains a forested area and steep slope and is located within the floodplain of the Conestogo River (Map 4). The South portion of the Site is located within regulatory floodplain under O. Reg. 150/06 (Grand River Conservation Authority (GRCA), 2024). The existing/long-term stable top of slope was identified by GEI as part of a Slope Stability Study. Stable top of slope was identified between



337.99 m and 339.40 m (GEI, 2024). GEI's study recommended a 6 m building setback from top of slope.

2.3.7. Aquatic Habitat

On July 26, 2024, Dougan Ecologists inspected the on-site **mapped** watercourse connected to the Conestogo River to assess aquatic habitat presence. Investigations began at the outlet into the river and proceeded upstream. Key watercourse locations were documented with photos. The piped drainage system and man-made pond were also examined to determine if fish habitat extends into the tablelands on the site.

3. EXISTING CONDITIONS

3.1. Physiography and Topography

A screening using Ontario Geological Surveys (OGS) online as well as supporting documents by Chapman and Putnam (2007), the site is positioned within the Lake Simcoe Rideau ecoregion of Ontario, with the property resting fully on the (drumlinized) Till Plains landform (Chapman & Putnam, 2007). The soils in this area are loam and silt loam over outwash gravel. These sediments generally consist of gravel and sand with a minor fraction of silt and rarely of clay. The gravels are typically rounded and contain interstitial sand. (Ontario Geological Survey, 2010).

In addition to the physiography and surficial geology screening conducted using OGS online and the above resources, a soil sample was also taken at one location, adjacent to the Open Aquatic (OAO) community (Polygon 9, Map 1) to supplement the screening as well as to confirm the wetland boundary (see Figure 2 below for the specific location), and revealed soils of sandy loam in the A and B horizons and silty sand in the C horizon. The soils were very moist, but a layer of fill (A horizon) was on top of the organic layer (B horizon), therefore the organic layer was likely the true A horizon historically. Depth to mottles was 12cm and depth to gley was 40cm, indicating the presence of wetland. Further soil analysis were completed at two different locations within the Meadow Marsh (MAM) wetland polygon in the summer under dryer conditions to confirm that the boundary was similar to what was taken the fall prior. Results indicated a depth to mottles of 12 cm and 17 cm at the two different assessment locations within the MAM, therefore confirming the wetland boundary matched what was previously taken. The wetland boundary as well as the presence/condition of the regulated watercourse **was** officially confirmed with the GRCA in May of 2026. **Mapping has been updated to reflect this.**



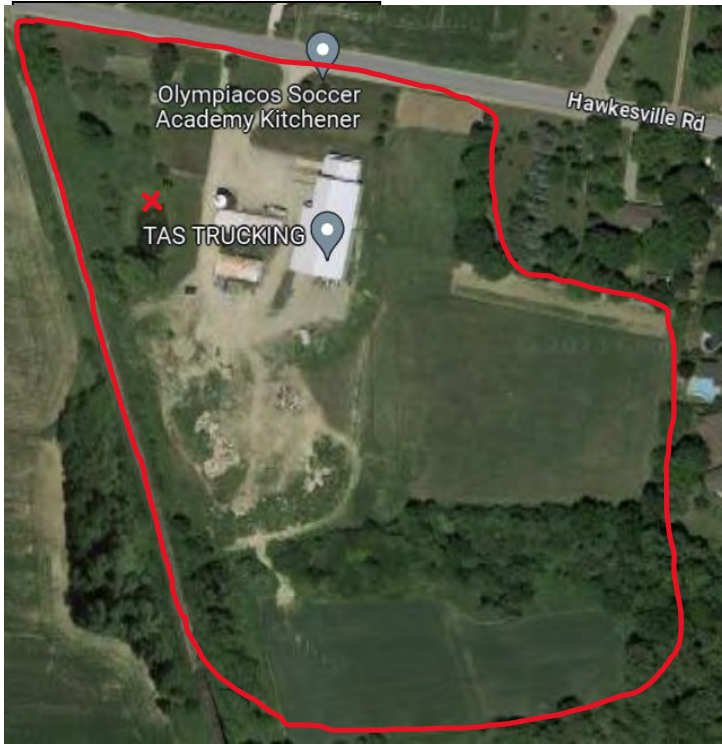


Figure 3: Soil sample location (marked with a red 'X')

3.2. Vegetation

3.2.1. Ecological Land Classification

A total of 25 ELC polygons comprised of 11 unique vegetation communities were detected on the subject lands, including adjacent lands (lands within 120 m of subject lands), as summarized in Table 2 below and shown on Map 1. The general characteristics as well as the most abundant plant species in each community are described below.

Table 2 Summary of Ecological Community Series

COMMUNITY SERIES	POLYGON #	INCLUSION	On Subject Lands
CUM1 - Mineral Cultural Meadow	1	---	Yes
CUW1 - Mineral Cultural Woodland	2	---	Yes
SWD - Deciduous Swamp	3	---	No*

AGR - Agricultural	4	---	Yes
CUT1 - Mineral Cultural Thicket	5	---	Yes
AGR - Agricultural	6	---	Yes
ANTH - Anthropogenic	7	---	No*
ANTH - Anthropogenic	8	---	Yes
OAD - Open Aquatic	9	---	Yes
MAM2-2 Reed Canary Grass Mineral Meadow Marsh	10	Fresh-Moist Willow Lowland Deciduous Forest	Yes
CUM1 - Mineral Cultural Meadow	11	---	Yes
ANTH - Anthropogenic	12	---	No*
AGR - Agricultural	13	---	No*
AGR - Agricultural	14	---	No*
AGR - Agricultural	15	---	No*
CUW - Cultural Woodland	16	---	No*
CUW1 - Mineral Cultural Woodland	17	---	No*
CUM - Cultural Meadow	18	---	No*
OAD - Open Aquatic	19	---	No*
CUT - Cultural Thicket	20	---	No*
AGR - Agricultural	21	---	No*
ANTH - Anthropogenic	22	---	No*
CUW - Cultural Woodland	23	---	No*
OAD - Open Aquatic	24	---	No*
CUW - Cultural Woodland	25	---	No*

*Polygon is present within 120m adjacent lands. Surveyors did not have access to these lands; vegetation communities were assessed based on visual inspection from the subject lands.

Polygon 1: Mineral Cultural Meadow (CUM1)

Polygon 1 is a mineral cultural meadow, possibly an old farm field, but with no evidence that it had been planted in 2023 or 2024. The vegetation in this polygon is comprised mostly of an understory and a ground layer, with the most abundant understory species' being Common Tansy (*Tanacetum vulgare*) and Canada Goldenrod (*Solidago canadensis*). The ground layer is dominated by Kentucky Bluegrass (*Poa*

pratensis), Quackgrass (*Elymus repens*), Crownvetch (*Cornilla varia*) and Garden Bird's-foot Trefoil (*Lotus corniculatus*).

Polygon 2: Mineral Cultural Woodland (CUW1)

This polygon is a cultural woodland along the west edge of the property along the slope and adjacent to the railroad. Cultural Woodland communities are treed communities with evidence of past anthropogenic disturbance and are 5-60% tree cover often with a large proportion of non-native species. The understory is the densest layer which is dominated by European Buckthorn (*Rhamnus cathartica*) and Morrow's Honeysuckle (*Lonicera morrowii*), two highly invasive species in Ontario. The ground layer is primarily Reed Canary Grass (*Phalaris arundinacea*), a very common species that often outcompetes other species by altering soil conditions to make them more favourable for its growth. The canopy and subcanopy are sparse with the occasional Manitoba Maple (*Acer negundo*), Black Walnut (*Juglans nigra*) and Crack Willow (*Salix x fragilis*).

Polygon 3: Deciduous Swamp (SWD)

Dougan could only access the edge of Polygon 3 as the majority of it was outside of the property boundary, however ELC and plant list data was collected based on what was observable from the property boundary. The canopy is dominated by Black Walnut (*Juglans nigra*) and Crack Willow (*Salix x fragilis*), with the subcanopy also comprised mostly of Black Walnut (*Juglans nigra*) in addition to Manitoba Maple (*Acer negundo*). The understory is mostly young Manitoba Maple (*Acer negundo*) and European Buckthorn (*Rhamnus cathartica*). The most abundant ground layer species include Dame's Rocket (*Hesperis matronalis*), Giant Goldenrod (*Solidago gigantea*) and Canada Avena (*Geum canadense*). Upon inspection with GRCA during the spring of 2026, the polygon was determined to be deciduous swamp, based on visible saturation and depressions in the topography, which aligns with current GRCA regulation mapping.

Polygon 4: Agricultural (AGR)

Polygon 4 is an agricultural field located at the base of the slope in the Conestogo River floodplain that is dominated by Alfalfa (*Medicago sativa*), but with the occasional Common Teasel (*Dipsacus fullonum*) and Foxtail (*Setaria sp.*) within the ground layer. Based on our 2023 and 2024 field visit, it is unclear when the field was last actively farmed but looks to be an abandoned field with a variety of opportunistic species popping up.

Polygon 5: Mineral Cultural Thicket (CUT1)

Polygon 5 is a Mineral Cultural Thicket located along the steep slope separating the two Agricultural Polygons (Polygons 4 and 6) and is composed mainly of Dotted Hawthorn (*Crataegus punctata*), Riverbank Grape (*Vitis riparia*) and European Buckthorn (*Rhamnus cathartica*). Cultural thicket communities are typically the result of past anthropogenic disturbance and are often densely populated (often by non-native

species) in the subcanopy in understory, with tree coverage <25%. The sparse canopy layer was comprised of Black Walnut (*Juglans nigra*), Crack Willow (*Salix x fragilis*), Common Apple (*Malus pumila*), Peach-leaved Willow (*Salix amygdaloides*) and some dead White Ash (*Fraxinus americana*) snags. The ground layer is primarily made up of Garlic Mustard (*Alliaria petiolata*) and Floodplain Avens (*Geum laciniatum*).

Polygon 6: Agricultural (AGR)

Similar to Polygon 4, Polygon 6 is an agricultural field adjacent to the Cultural Meadow (Polygon 1) and Anthropogenic polygons (Polygons 7 & 8) and is also mostly Alfalfa but with the occasional Common Teasel and Foxtail species. Based on our 2023 and 2024 field visit, it is unclear when the field was last actively farmed but looks to be an abandoned field with a variety of opportunistic species popping up.

Polygon 7: Anthropogenic (ANTH)

This anthropogenic polygon is mostly dominated by open lawn and mowed grass. Some mature trees are present in the canopy with little to no natural understory or ground layer present. The main house is central to the polygon, accompanied by landscaped gardens, a driveway, and garage. The adjacent open parkland, lined with planted hedgerows is also included in this polygon. The most abundant trees in the hedgerows are Norway Spruce (*Picea abies*) and Scotch Pine (*Pinus sylvestris*) with a few Sugar Maple (*Acer saccharum*) in the subcanopy. Note that this property is not included in the development area.

Polygon 8: Anthropogenic (ANTH)

This anthropogenic polygon is mostly dominated by open lawn and mowed grass. Some mature trees are present in the canopy with no natural understory or ground layer present. The polygon includes an apple orchard, several farm buildings, dirt driveway, and a garage. The most abundant canopy trees are Common Apple (*Malus pumila*), Weeping Birch (*Betula pendula*), Sugar Maple (*Acer saccharum*) and some White Ash snags (*Fraxinus americana*).

Polygon 9: OAO (Open Aquatic)

Polygon 9 is a man-made pond adjacent to the railroad on the northwestern side of the property. The species found in the pond included a Watermeal species (*Wolffia* sp.) and an Algae species. Narrow-leaved Cattail (*Typha angustifolia*) and Broad-leaved Cattail (*Typha laternifolia*) are present along the pond edges. The pond is evidently functioning as wildlife habitat; Green Heron (*Butorides virescens*) Great Blue Heron (*Ardea herodias*), Wood Duck (*Aix sponsa*) and Midland Painted Turtles (*Chrysemys picta marginata*) were observed utilizing the pond in 2023 (See Appendix B - Incidental Wildlife for a complete list of all incidental species documented during site visits).

Polygon 10: Reed Canary Grass Mineral Meadow Marsh (MAM2-2)

Polygon 10 is a Mineral Meadow Marsh with the majority of species present make up the subcanopy and ground layer with Reed Canary Grass (*Phalaris arundinacea*) and Canada Goldenrod (*Solidago canadensis*) co-dominating the understory and Fox Sedge (*Carex vulpinoidea*) and Dudley's Rush (*Juncus dudleyi*) being most abundant in the ground layer. The canopy is limited but comprised of a few Bebb's Willow (*Salix bebbiana*) trees and a single hybrid Butternut tree, called a Buartnut tree (*Juglans x bixbyi*). Polygon 10 also contains a culvert that diverts water running from the northwest corner of the property, under the cedar stand and discharging it adjacent to the Fresh-Moist Willow Lowland Deciduous Forest inclusion (FOD7-3), which has likely supported the creation of this inclusion community. This culvert discharge may also support the sustaining of the Reed Canary Grass Mineral Meadow Marsh of Polygon 10 as a wetland.

Polygon 10 Inclusion: Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3)

Embedded within Polygon 10 is a Fresh-Moist Willow Lowland Deciduous Forest inclusion to the southwest of the man-made pond (Polygon 9). The most frequently observed canopy species include Weeping Willow (*Salix babylonica*) and Black Walnut (*Juglans nigra*). The understory and ground layer are comprised mostly of Common Teasel (*Dispacus fullonum*) and Common Bedstraw (*Galium aparine*). The hydrology of the community is likely supported by the adjacent culvert discharge resulting in saturated soils and water-loving species such as the Weeping Willow (*Salix babylonica*).

Polygon 11: Mineral Cultural Meadow (CUM1)

Polygon 11 is similar in composition to Polygon 1 with vegetation comprised mostly of an understory and a ground layer, with the most abundant understory species' being Common Tansy (*Tanacetum vulgare*) and Canada Goldenrod (*Solidago canadensis*). The ground layer is dominated by Kentucky Bluegrass (*Poa pratensis*), Quackgrass (*Elymus repens*), Crownvetch (*Cornilla varia*) and Garden Bird's-foot Trefoil (*Lotus corniculatus*). In addition, there are limited species in the canopy and subcanopy in Polygon 10, but the canopy is comprised of a stand of Eastern White Cedars to the west of the man-made pond (Polygon 9), Silver Maple (*Acer saccharinum*), Manitoba Maple (*Acer negundo*) and Black Walnut (*Juglans nigra*).

The following polygons had restricted access and thus, ecological communities were determined visually from the subject lands:

- **Polygon 12: Anthropogenic (ANTH)**
- **Polygon 13: Agricultural (AGR)**
- **Polygon 14: Agricultural (AGR)**
- **Polygon 15: Agricultural (AGR)**
- **Polygon 16: Cultural Woodland (CUW)**
- **Polygon 17: Cultural Woodland (CUW)** Appeared to be the same community as Polygon 2, just separated by a railroad track.
- **Polygon 18: Mineral Cultural Meadow (CUM1)** Appeared to be the same community as Polygon 1, just separated by an agricultural field.
- **Polygon 19: Open Aquatic (OAO)**
- **Polygon 20: Cultural Thicket (CUT)**
- **Polygon 21: Agricultural (AGR)**
- **Polygon 22: Anthropogenic (ANTH)**
- **Polygon 23: Cultural Woodland (CUW)**
- **Polygon 24: Open Aquatic (OAO)**
- **Polygon 25: Cultural Woodland (CUW)**

3.2.2. Vascular Plant Inventory

Of the 131 vascular plants observed on site, 118 were identified to species level with 13 identified to genus level only. Of the plants identified to species level, 64 (53%) are native and 56 (47%) are considered introduced. All species observed in the vascular plant survey on site are federally and provincially secure. A potential butternut tree (*Juglans cinerea*) was observed in Polygon 10 adjacent to the man-made pond and a sample was sent to NatureMetrics for genetic testing to confirm if it was a pure Butternut or a hybrid. Results from the genetic analysis revealed that the tree is a hybrid (*Juglans x bixbyi*) and therefore, not a Species at Risk and not protected under provincial or federal legislation. No species observed are federally or provincially at risk (SARA, 2021; SARO, 2018).

The Municipality of Waterloo (RMW) provides a list of regionally significant species. Based on the flora documented during 2024 surveys, three (3) species have a significance status (R, R+, and R+*): Autumn Willow (*Salix serissima*), Virginia Creeper (*Parthenocissus quinquefolia*), Black Walnut (*Juglans nigra*). Further outline of these species and code definitions will be provided in Appendix B.

An assessment of vegetation quality was undertaken using the Coefficient of Conservatism (CC). This is a value (0 to 10) assigned to native species in Ontario based on their degree of fidelity to a specific vegetation community type (Oldham et al., 1995). The lower this value, the more likely the plant is to be found in a wide variety of

plant community types including disturbed sites. The average CC for the Hawkesville site is 3.25, indicating a relatively low quality and highly disturbed site compared to more natural areas.

For a comprehensive list of all plants found on the property see Appendix B.

3.2.3. Tree Inventory & Arborist Assessment

A total of 103 living trees of 10 cm DBH or larger were tagged and assessed within the anticipated disturbance limit and overlapping natural heritage features, comprised of 19 species. The most frequently encountered species were Scots Pine (18), Blue Spruce (11), Common Apple (11) and Silver Maple (10).

The majority of the trees were assessed as having high structural condition and high biological health (Table 3). High ranking is defined by trees with no structural defects, no disease symptoms and/or high vigor.

Table 3 Summary of Structural Condition, Biological Health and Preservation Priority of Inventoried Trees

Ranking	Structural Condition	Biological Health	Preservation Priority
High	63	47	42
Medium	25	43	45
Low	15	13	16
Total	103	103	103

For further details, please refer to the Arborist Report and Tree Preservation Plan for 51-55 Hawkesville Rd (Dougan, 2025).

3.3. Wildlife

3.3.1. Nocturnal Amphibian Call Surveys

Two (2) species of amphibian were heard calling during the second and third round of targeted call surveys at station 1 (Map 2): Green Frog (*Lithobates clamitans*) (up to 6 individuals calling during May and June surveys) and American Bullfrog (*Lithobates catesbeianus*) (2 individuals calling during June survey). Both never exceeded call code 1 (Individuals can be counted; calls not simultaneous). Both are native amphibian species commonly found within the Waterloo Region. They are assigned a provincial status rank of S5 by the Natural Heritage Information Center (NHIC, 2021), indicating the stability of populations at the provincial level. No amphibians were detected during the early season (April) nocturnal call survey.

The Ontario Ministry of Natural Resources (OMNR, 2000) considers American Bullfrog to be area sensitive (AS). That is, they require relatively large areas of suitable habitat for their long-term survival and thus can be sensitive to development.

3.3.2. Breeding Bird Surveys

A total of thirty-nine (39) bird species were detected during the two rounds of breeding bird surveys completed in 2024. Thirty-seven (37) of these were considered as possibly breeding on the site and within adjacent lands – Great-Blue Heron (*Ardea herodias*) and Tree Swallow (*Tachycineta bicolor*) were observed without exhibiting any breeding evidence. Four (4) of the species observed, European Starling (*Sturnus vulgaris*), House Finch (*Haemorhous mexicanus*), House Sparrow (*Passer domesticus*), and Rock Pigeon (*Columba livia*) are considered introduced (non-native) in the province.

Of the thirty-three (33) native breeding species, one (1) is a Species at Risk (SAR): Barn Swallow (*Hirundo rustica*) - listed provincially as Special Concern (ESA, 2007), and federally as Threatened (SARA, 2002). The Barn Swallows (up to two individuals) were observed foraging over the pond and nearby Conestoga River. Suitable structures exist on the property for nesting habitat and old nests were discovered within the gravel shed adjacent to the industrial buildings on-site. Nests appeared to be inactive during breeding bird surveys in June 2024. This species was assigned a 'Possible' breeding status within the study area.

At a provincial level, the thirty-three (33) native breeding species have been assigned a provincial conservation status (S-rank) of either S4 or S5 by the Natural Heritage Information Centre (NHIC, 2024), which indicates that their provincial populations are "apparently secure" or "secure", respectively (NHIC, 2024).

The Ontario Ministry of Natural Resources (OMNR, 2000) considers Hairy Woodpecker (*Dryobates villosus*) and White Breasted Nuthatch (*Sitta carolinensis*) to be area sensitive. That is, they require relatively large areas of suitable habitat for their long-term survival and thus can be sensitive to development. However, they are not provincially significant (ESA, 2007; both have provincial conservation status rank of S5 or "secure"). The White-breasted Nuthatch is associated with forested habitats, in addition to parks and urban backyards, and although they will likely be directly impacted by future buildout of the site, protection and enhancement of natural features into the site design can help mitigate for this. The Hairy Woodpecker is more of a forest specialist, found in a wide variety of habitats as long as large trees are present. Preservation or provision of dead snags can help counteract decline in suitable nesting sites for this species.

Four (4) of the breeding species have local significance rankings for Regional Municipality of Waterloo (RMW): Belted Kingfisher (*Megasceryle alcyon*), Hairy Woodpecker (*Dryobates villosus*), Swamp Sparrow (*Melospiza melodia*), and Warbling Vireo (*Vireo gilvus*). Refer to Appendix D for a comprehensive outline of RMW significance codes.

The highest level of breeding evidence obtained was ‘Confirmed’, as evidenced by recently fledged young (FY), adult entering a nest site (AE), adult carrying food for young (CF), distraction display (DD) and detection of nest containing eggs (NE). This was the highest level of breeding evidence for ten (10) bird species. “Probable” breeding is the next highest level, as evidenced by pairs of birds (code P), a presumed territory (T), agitated behaviour (A) or a bird observed visiting a probable nest site (code V). This was the highest level obtained for ten (10) species. The next highest level of breeding evidence was “possible” breeding (OBBA, 2021), as seen with singing males (code S) or birds being present in appropriate breeding habitat during the breeding season (code H); this evidence was the highest breeding level for the remaining seventeen (17) species.

A full list of all wildlife recorded within and adjacent to the study area can be found in Appendix D.

3.3.3. Bat Habitat & Visual Exit Surveys

During visual exit surveys targeting the on-site barn, five (5) native bat species were detected during the two rounds of visual exit surveys: Little Brown Myotis (*Myotis lucifugus*), Northern Hoary Bat (*Lasiurus cinereus*), Silver-haired Bat (*Lasionycteris noctivagans*), Eastern Red Bat (*Lasiurus borealis*) and Big Brown Bat (*Eptesicus fuscus*). A total of 193 call sequences were recorded; primarily Northern Hoary Bat and other low- frequency bats (Silver-haired bat and Big Brown Bat) that are not considered at risk in Ontario.

Table 4 Confirmed Bat Species and Call Counts Recorded During Visual Exit Surveys Using Echo Meter Touch Pro and Kaleidoscope Pro Software.

Common Name	Scientific Name	Call Sequence Count
Northern Hoary Bat*	<i>Lasiurus cinereus</i>	153
Silver-haired bat*	<i>Lasionycteris noctivagans</i>	14
Unidentified Low Frequency Bat	---	12
Big Brown Bat	<i>Eptesicus fuscus</i>	6
Big Brown Bat / Silver-haired bat*	<i>Eptesicus fuscus</i> / <i>Lasionycteris noctivagans</i>	2
Northern Hoary Bat* / Big Brown Bat	<i>Eptesicus fuscus</i>	2
Little Brown Myotis*	<i>Myotis lucifugus</i>	2
Eastern Red Bat*	<i>Lasiurus borealis</i>	1
Silver-haired bat* /Big Brown Bat	<i>Lasionycteris noctivagans</i> / <i>Eptesicus fuscus</i>	1
Grand Total		193

**Species at Risk - Endangered*

Little Brown Myotis, Silver-haired Bat, Northern Hoary Bat, and Eastern Red Bat are Endangered provincially (ESA, 2007) and federally (SARA, 2002). Surveys recorded 170 call sequences of these species documented on June 18 and 27.

As with other Myotis species, there has been significant decline in this species since the mid-2000s due to the spread of white-nose syndrome (WNS). Little Brown Myotis inhabit maternity roost spaces during the summer months where they rear their pups. Maternity roosts are often selected within tree cavities or in abandoned / less disturbed buildings such as barns and attics. This species tends to exhibit within-year fidelity to anthropogenic roosting sites but may also switch sites within and between years to maintain optimal thermoregulation (Syme et al., 2001). Individual bats can fit through gaps as small as 6 mm and prefer warm, dark areas close to water with entrances typically 4 m or higher from the ground (CWF, 2020). Foraging habitat includes over water and in open areas when insects are abundant. In agricultural areas, Little Brown Myotis tend to follow linear wooded features (such as hedgerows) for commuting and foraging (Humphrey & Fotherby, 2019).

Silver-haired bat, Eastern red bat and Northern hoary bat were recently added to the Species at Risk in Ontario legislature in early 2025 with declines linked primarily to wind turbine mortality during fall migration, as well as insect decline abundance (their food source) and loss of foraging and forested roosting habitat (COSEWIC, 2023).

Although less susceptible to WNS due to their tendency to mostly roost alone, Silver-haired bats form small maternity groups, which can harbor WNS, but it is much less common. Silver-haired bats roost primarily in the tree cavities or under the loose or peeling bark of mature, decaying deciduous or coniferous trees, often near water. Roosting is more variable during migration periods expanding to buildings, rock crevices or woodpiles, however, are usually kept to trees during summer roosting (WCS Canada, 2025).

WNS is also less of an issue for Northern hoary bats who are also solitary-roosters and only join other bats during fall migration. Roosting typically occurs via hanging from the foliage of large coniferous or deciduous trees mimicking the appearance of dead or decaying foliage. They are often found in tall trees adjacent to forest clearings, edges or wetlands for ease of foraging flight. Although rare, Northern hoary bats have been found to roost in buildings, but are primarily tree-roosters (Saunders, 1988). Similarly, Eastern red bats are solitary-roosters utilizing the same camouflage technique to disguise themselves as dead leaf clusters while roosting in deciduous and coniferous trees. They are also mostly tree-roosters, but will sometimes roost on the underside of shingles of buildings in an urban setting (WCS Canada, 2023).

3.3.4. Incidental Wildlife

Incidental wildlife observations include the following amphibians: American Bullfrog (*Lithobates catesbeianus*) (12 individuals observed), American Toad (3 individuals observed) and Northern Leopard Frog (1 individual observed). All of these species have provincial status ranks of S4 (apparently secure) or S5 (secure).

Additional observations were also made of Midland Painted Turtle (*Chrysemys picta marginata*) (3 individuals basking in the pond observed during one site visit in late summer of 2023). Midland Painted Turtle was recently listed as a Species at Risk federally, and is now regarded as Special Concern in Canada (SARA, 2021).

Additional observations were made of tracks of Eastern Coyote (*Canis latrans*) and White-tailed Deer (*Odocoileus virginianus*) primarily in the southern field adjacent to the Conestoga River.

Five (5) bird species were documented as incidental observations outside of Breeding Bird Survey windows, and are therefore regarded as non-breeding within the study area. Woodchuck (*Marmota monax*), Smallmouth Bass (*Micropterus dolomieu*), White Sucker (*Catostomus commersonii*), and schools of unidentified fishes were also documented during summer ELC surveys. The fishes were observed at the mouth of the waterbody that connects from the property into the Conestoga River.

3.4. Special Features & Ecological Functions

3.4.1. Species at Risk (SAR)

A detailed SAR screening table was completed based on the background review, features present, and species recorded during field surveys (Table 5).

Table 5 SAR Records from Background Sources and Fieldwork

Common Name	Scientific Name	SARA Status	SARO Status	S Rank	RMW* Rarity	Bg.** Record	Fw.*** Record
Butternut	<i>Juglans cinerea</i>	END	END	S2	--	x	
Nine-spotted Lady Beetle	<i>Coccinella novemnotata</i>	END	END	SH	--	x	
Transverse Lady Beetle	<i>Coccinella transversoguttata</i>	SC	END	SH	--	x	



Barn Swallow	<i>Hirundo rustica</i>	THR	SC	S4B	--	x	x
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	S4B	--	x	
Wood thrush	<i>Hylocichla mustelina</i>	THR	SC	S4B	--	x	
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	S3	--	x	
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	SC	--	S4	--	x	x
Black Ash	<i>Fraxinus nigra</i>	THR	END	S4	--	x	
Greater Redhorse	<i>Moxostoma valenciennesi</i>	--	--	S3	--	x	
Silver Shiner	<i>Notropis photogenis</i>	THR	THR	S2S3	--	x	
Rainbow Mussel	<i>Villosa iris</i>	END	THR	S2S3	---	x	
Wavy-rayed Lampmussel	<i>Lampsilis fasciola</i>	SC	THR	S1	---	x	
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	S3	---		x
Silver-haired Bat	<i>Lasionycterus noctivagans</i>	---	END	S3	---		x
Northern Hoary Bat	<i>Lasiurus cinereus</i>	---	END	S3	---		x
Eastern Red Bat	<i>Lasiurus borealis</i>	---	END	S3	---		x

*Regional Municipality of Waterloo

**Bg. = Background

***Fw. = Fieldwork



Butternut

One suspected Butternut tree (identification number 500) was observed in polygon 4 during the tree inventory in the hedgerow fronting Highway 8. Butternut is known to hybridize with Persian Walnut (*Juglans regia* L.) and, more commonly, with Japanese Walnut (*J. ailantifolia* x *cinerea*). The more common Japanese Walnut and Butternut hybrid is called *J. x bixbyi*, and the Persian Walnut and Butternut hybrid is *J. x quadrangulate* (Government of Ontario, 2021).

Butternut that are confirmed to be genetically 'pure' are designated as Endangered species in Schedule 2 of Ontario Regulation (O. Reg.) 230/08 'the Species at Risk in Ontario List' and are protected by the ESA, 2007. In Ontario, Butternut regularly hybridize with other walnut (*Juglans*) species, and hybrid individuals are not considered Endangered or protected under legislation.

Butternut trees (of any size or age) at a site that may be impacted by a proposed activity must be either assessed by a Butternut Health Expert (BHE) or a sample taken and sent in for genetic testing before commencing any actions that may impact those Butternut trees or their habitat.

A leaf, twig and bud sample were taken for tree number 500 on October 5, 2023. The results of the genetic examination determined the tree was to be a hybrid (*Juglans x bixbyi*). Therefore, this individual is not considered an Endangered species, and is not protected under the ESA, 2007. There were no other Butternut or Butternut hybrids identified within the study area during the tree inventory.

Barn Swallow

Barn Swallow (*Contopus virens*), recorded during the first breeding bird survey, is listed provincially as Special Concern and federally as Threatened (SARA, 2002). Two Barn Swallows were observed foraging over the pond and nearby Conestoga River. Suitable structures exist on the property for nesting habitat and potential old nests were discovered within the gravel shed adjacent to the industrial buildings on-site, however they were old and inactive in June 2024. Therefore, Barn Swallow was assessed as a "Possible" breeder, though nesting activity in 2024 is considered absent.

Midland Painted Turtle

Midland Painted Turtle was detected incidentally in Polygon 9 during 2023 and 2024 field surveys. While targeted turtle surveys were not conducted, under the precautionary principle, it is assumed that polygon 9 provides overwintering habitat for this species. Midland Painted Turtle does not receive provincially protection under the Endangered Species Act (ESA) as it is listed as Special Concern (SC). Special Concern species receive habitat protection under the Province's Significant Wildlife Habitat provisions that fall under the Provincial Planning Statement (PPS, 2024). Mitigation and enhancement strategies to address requirements under the PPS (2024) Significant Wildlife Habitat provisions have been provided in this EIS.

Little Brown Myotis

During targeted bat visual exit surveys, two records of Little Brown Myotis were documented. These individuals were not seen emerging from the barn but were detected on the Echo Meter Touch Pro unit. It is likely that these individuals were incidentally flying overhead. However, under the precautionary approach it is assumed that the barn may provide habitat for SAR bats. Mitigation and enhancement strategies to address ESA (2007) requirements for Little Brown Myotis have been provided in this EIS.

Silver-haired Bat

During targeted bat visual exit surveys, 14 records of Silver-haired bat were documented. These individuals were not seen emerging from the barn but were detected on the Echo Meter Touch Pro unit. It is likely that these individuals were incidentally flying overhead. However, under the precautionary approach it is assumed that the barn may provide habitat for SAR bats. Mitigation and enhancement strategies to address ESA (2007) requirements for Silver-haired bat have been provided in this EIS.

Northern Hoary Bat

During targeted bat visual exit surveys, 153 records of Northern Hoary bat were documented. These individuals were not seen emerging from the barn but were detected on the Echo Meter Touch Pro unit. It is likely that these individuals were incidentally flying overhead. However, under the precautionary approach it is assumed that the barn may provide habitat for SAR bats. Mitigation and enhancement strategies to address ESA (2007) requirements for Northern Hoary bat have been provided in this EIS.

Eastern Red Bat

During targeted bat visual exit surveys, 1 record of Eastern Red bat were documented. These individuals were not seen emerging from the barn but were detected on the Echo Meter Touch Pro unit. It is likely that these individuals were incidentally flying overhead. However, under the precautionary approach it is assumed that the barn may provide habitat for SAR bats. Mitigation and enhancement strategies to address ESA (2007) requirements for Northern Hoary bat have been provided in this EIS.

Other SAR

None of the additional SAR (Nine-spotted Lady Beetle, Transverse Lady Beetle, Bobolink, Wood Thrush, Snapping Turtle, Black Ash, Greater Redhorse, Silver Shiner, Rainbow Mussel, and Wavy-rayed Lampmussel) were detected during fieldwork investigations. Potentially suitable habitat for Snapping Turtle, Nine-spotted Lady Beetle, Transverse Lady Beetle, Wood Thrush, and Bobolink exist within the study area, however none of these species were detected during fieldwork. There is no suitable habitat for Black Ash within the study area.

For additional details, please see the complete SAR screening which can be found in Appendix E.

3.4.2. Significant Wildlife Habitat (SWH)

Potential Significant Wildlife Habitat (SWH) categories identified through a desktop screening were reviewed on-site during field investigations to confirm habitat (ELC) and/or indicator species presence, in accordance with the MNRF's SWH Criteria for Ecoregion 6E (2015).

In accordance with the PPS, 2024, development and site alteration are not permitted within or adjacent to SWH unless it has been demonstrated that there will be no negative impacts on the habitat or its ecological functions (policy 4.1.5).

Of the 38 potential SWH categories in Ecoregion 6E, five (5) categories were found to potentially present (candidate) on the subject lands, and two (2) were confirmed to be present (ref. Map 6 series):

Confirmed

Specialized Habitat for Wildlife

- Amphibian breeding (wetland)

Habitat for Species of Special Concern

- Habitat for special concern and rare wildlife – Midland Painted Turtle

Candidate

Seasonal Concentration Areas of Animals

- Turtle wintering habitat
- Bat maternity colonies

Rare Vegetation Communities

- Other Rare Vegetation Communities

Specialized Habitat for Wildlife

- Turtle nesting areas

Habitat for Species of Special Concern

- Snapping turtle
- Bald eagle
- Eastern wood-pewee
- Rusty blackbird
- Common Nighthawk

Please refer to Appendix E for the complete SWH screening. Section 8 contains mitigation strategies to demonstrate no negative impact to Significant Wildlife Habitat.



3.4.3. Woodlands

A total of five (5) treed communities are present within the study area and adjacent lands, including three (3) communities located within the subject lands:

- Polygon 2 (CUW1) - 0.20 ha
- Polygon 3 (FOD7) - 1.13 ha
- Polygon 10 (FOD7-3) - 0.13 ha

Polygons 2 and 10 are too small to be considered woodlands under the Region's criteria. Polygon 2 is 0.20 ha in size and located on the tablelands in the northwestern portion of the site. Polygon 10 is 0.13 ha and located along the slope towards the train tracks in the southwestern portion of the study area.

Polygon 3 is much larger, comprising 1.13 ha within the study area and further extending out of the study area to the east along the Conestogo River Valley. Polygon 3 meets the Region's woodland criteria. It should be noted that while a stem density assessment was not completed, Polygon 3 is a deciduous forest as defined by ELC (Lee et al., 1998) comprised of mid-age growth that would most certainly meet density requirements to be considered a woodland under the Region's definition.

An assessment of the Region's Significant Woodland criteria was applied to Polygon 3 to determine if it is significant. ROP policy 7.C.6 outlines the criteria for Significant Woodlands as areas meeting all of the following criteria:

- a) greater than four hectares in size, excluding any adjoining hedgerows;
- b) consisting primarily of native species of trees; and**
- c) meets the criteria of a woodland in accordance with the provisions of the Regional Woodland Conservation By-law.**

The boundary of a Significant Woodland may be more precisely delineated, subject to Policy 7.A.6, to exclude plantations of primarily non-native species, small lobes and projections, and low-quality wooded habitat on the periphery of the feature, the removal of which does not create an adverse environmental impact on the residual woodland.

Polygon 3 (and associated contiguous woodland) appears to be approximately 2.6 ha in size based on air photo interpretation outside of the study area. Therefore, it does not meet the size criteria of 4 ha or greater. Based on observations from the edge of this feature, the community does consist primarily of native species (a), and meets the criteria of a woodland as defined by the Regional Woodland Conservation Bylaw (b). **However, since polygon 3 does not meet all three (3) criteria as defined, it is not considered significant.**

3.4.4. Valleylands

The limits of the Regulated River Valley present in the southern portion of the study area were confirmed by the geotechnical consultant (CVDE).

The Waterloo Regional Official Plan designates the Conestogo River Valley as a Significant Valley (Map 4). In the ROP, Significant Valleys are landscape-scale environmental features included within the Regional Greenlands Network. This designation includes the slopes along the entire channel of the Conestogo and are defined up to the top of bank. Within the Significant Valleys designation, the Regional OP has specific policy related to Environmentally Significant Valley Features, which are designated as Core Environmental Features within a Significant Valley that consist of the following (ROP policy 7.C.7):

- a) at least one of the following:
 - i) river channel; or
 - ii) Environmentally Significant Discharge Areas or Environmentally Significant Recharge Areas; or
- b) both of the following ecological features:
 - i) habitat of regionally significant species of flora or fauna;
 - ii) natural area, such as a woodland of one to four hectares in extent, floodplain meadow or wetland, which consists primarily of native species; or;
- c) any one of Policy 7.C.7 (b) above plus any one of the following Earth Science features:
 - iii) river terrace;
 - iv) esker;
 - v) cliff or steep slopes;
 - vi) oxbow;
 - vii) confluence with significant watercourse draining a watershed greater than five square kilometres;
 - viii) regionally significant Earth Science Area of Natural and Scientific Interest; or
 - ix) fossil bed.

The Significant Valley meets the ROP criteria designation as Environmentally Significant Valley Features, due to presence of the Conestogo River (river channel). The Top of Slope was delineated in 2021 by the project geotechnical consultant (CVDE, 2021) (Map 3). According to the Slope Stability Study completed by GEI (2024), the required setback is 6 m from Top of Slope.

3.4.5. Wetlands

The wetland located in the northwest portion of the property is comprised of a man-made pond (OAO, ELC Polygon 9) and adjacent Reed Canary Grass Mineral Meadow Marsh (MAM2-2, ELC Polygon 10). This relatively small wetland encompasses only 0.2ha in total. The wetland is hydrologically connected to the Conestogo River via an underground pipe which receives excess water from the pond moving it southward to the River below. The Preliminary Hydrogeological Assessment (Chung & Vander Doelen Engineering Ltd. (CVD E), 2023) & the Hydrogeological Assessment (GEI, 2024), both corroborate that the pond is man-made, and that it is neither a source of significant groundwater discharge nor recharge, citing the low permeability of the clay/till soils in this location.

The plant species composition of the pond is primarily aquatic and obligate wetland species, with a mix of facultative wetland and upland species in the meadow marsh. The wetland is evidently providing a variety of wildlife habitat functions. It is confirmed amphibian breeding habitat, and a variety of bird observations were recorded in and around the wetland. Observations of the Special Concern species Midland Painted Turtle indicate this wetland as candidate (possible) turtle nesting and wintering habitat.

The wetland is mapped by GRCA and MNRF (Land Information Ontario) as unevaluated. As a GRCA-regulated feature, any development activity that could interfere with the hydrologic function of this wetland is subject to Ontario Regulation 41/24 & GRCA Policies for the Administration of O. Reg 41/24. Under Section 7.1 of the GRCA Policies for the Administration of O. Reg 41/24, there is a general prohibition of development activity within regulated areas, subject to a number of exceptions. Section 8.4 provides specific policies regarding wetlands and their Areas of Interference (ie. lands within 30m from the wetland boundary). According to these policies, any development within a wetland or its Area of Interference requires permission from GRCA. Section 8.4.5 provides the specific criteria with respect to the allowance for development activity within anthropogenic wetlands; see detailed assessment in the table below.

Table 6 GRCA Policy Analysis for Development Within Anthropogenic Wetlands

GRCA Policy Criteria (S. 8.4.5)	Does the Wetland Meet Criteria for Allowance of Development within Anthropogenic Wetlands (GRCA, 2024)
Anthropogenic Wetland	YES - this wetland meets the definitions of both "anthropogenic" and "wetland" as provided in the glossary of <i>GRCA Policies for the Administration of O. Reg 41/24</i> .



Less than 2 ha in size	YES - the total wetland area is 0.2 ha	
It can be demonstrated that the wetlands hydrologic functions can be maintained or enhanced elsewhere within the subwatershed or planning area	YES -	
	Hydrological Functions¹	Can function be maintained/enhanced elsewhere? (explanation)
	Groundwater recharge/discharge	N/A - According to the Hydrogeological Assessment (GEI, 2024) the wetland does not provide any significant function with respect to groundwater recharge or discharge.
	Flood Attenuation	Yes - In terms of surface hydrology, the pond currently acts as a catchment for precipitation and surface runoff, thereby providing some level of flood attenuation to the surrounding lands. It is expected that this function will replicated and enhanced through the proposed stormwater management plan, to be detailed in the Functional Servicing Report (GEI).
	Water Quality Improvement	Yes - The wetland may be currently performing some level of water quality improvement as nutrients, sediments, and other pollutants are retained and modified. It is expected that the Functional Servicing Report will provide the detail to confirm that water quality will be effectively maintained or enhanced via the stormwater management plan.
	Carbon Sink	N/A - this wetland is not actively accumulating organic soils and would not be considered a significant carbon sink.

¹ Hydrological function assessment based on the parameters identified in the Ontario Wetland Evaluation System, Southern Manual, 4th edition. 2022.



	Shoreline Erosion Control	N/A - the wetland is neither riverine nor lacustrine and has no bearing on shoreline stability.
Wetland is not located within a floodplain or watercourse	YES - The wetland is not located within a floodplain or watercourse (see section 3.4.6).	
There are no negative or adverse impacts on flooding and erosion,	YES - It is expected that potential impacts regarding flooding and erosion will be addressed through the Functional Servicing Report to be prepared by GEI, and specifically that the proposed stormwater management facility will be more effective in this regard than the existing pond.	
Hazards related to unstable soils can be addressed.	YES - It is expected that if the removal of the wetland creates unstable soil hazards related to the pond sediment, that these will be addressed through the Geotechnical Report to be prepared by GEI. Specifically, we anticipate there will be recommendations for usage of engineered fill and compaction to address these concerns.	

¹ Hydrological function assessment based on the parameters identified in the Ontario Wetland Evaluation System, Southern Manual, 4th edition. 2022.

Based on the assessment above, **paired with on-site wetland investigations with GRCA**, the wetland meets GRCA's criteria for allowing development in an anthropogenic wetland.

3.4.6. Watercourse & Floodplain

The study area contains the Conestogo River, and associated floodplain, which is a GRCA-regulated feature. The "mapped watercourse" (*the feature is shown as a watercourse on mapping but, as is described in the text, was confirmed on site to traverse the surface only in brief segments with the remaining feature conveyed via a buried pipe*) that drains site is hydrologically connected to the on-site wetland. The Conestogo River floodplain is defined by GRCA mapping (available online; see screenshot in Figure 2).

The **mapped** watercourse and associated floodplain were assessed by GEI (2023) in a preliminary engineering assessment, and by CVDE in 2023 and GEI in 2024, in a preliminary hydrogeological assessment. The findings of these studies indicate that the mapped watercourse appears to have been 'man-altered' and originates from open ditches and culverts to the northwest of the property along the adjacent railway line and Hawkesville Rd (CVDE, 2023). The on-site wetland discharges to this watercourse via an overflow pipe (CVDE, 2023) that connects to a buried and piped section of the



mapped watercourse. Given that the watercourse is situated within clayey soil deposits, it is unlikely to be a significant groundwater recharge or discharge feature (CVDE, 2023). No development activities are proposed within the floodplain limit established by GRCA (GEI, 2025).

Based on field investigations outlined in section 2.3.6, the on-site “watercourse” feature consists of sections of open and piped flow, storm sewers and culverts that convey flows southward towards the Conestogo River. The “watercourse” does not have a formal source; it is topographically driven by runoff, not a recognized river or other waterbody and thus, does not connect to a key hydrological feature at its start.

The Ontario Regulation 41/24 defines a watercourse as a defined channel, having a bed and banks or sides, in which a flow of water regularly or continuously occurs (having established physical banks). Since this “watercourse” feature is man-made and originates from open ditches and culverts along the railway, paired with sections of piped flow, it does not have a consistent bed or established physical banks and therefore, **does not meet the criteria to be considered a watercourse according to O. Reg 41/24 (CVDE, 2023)**. It will henceforth be referred to as a **drainage swale**.

3.4.7. Aquatic Habitat

DFO screening indicates that there is critical habitat for Silver Shiner (THR) and Black Redhorse (THR) present within the Conestogo River. Additional species at risk that might be present in the river include Rainbow Mussel (SC) and Wavy-rayed Lampmussel (SC).

The Aquatic Resource Area Polygon (ARAP) segment tool does not provide data on the presence of fish habitat regarding the on-site **drainage swale** connected to the Conestogo River, which is mapped separately from the river. The ARUP tool classifies the thermal regime of the Conestogo River as a warm system as defined by the fish communities present including species such as: Black Redhorse, Blacknose Dace, Blackside Darter, Bluntnose Minnow, Brook Stickleback, Brown Bullhead, Creek Chub, Greater Redhorse, Hornyhead Chub, Johnny Darter x Tesselated Darter, Largemouth Bass, Least Darter, Pumpkinseed, Rainbow Darter, Rosyface Shiner, Smallmouth Bass, and White Sucker.

Fish habitat is intermittently present in the portion of the **drainage swale** directly connected to the Conestogo River (within the floodplain). This connection is correlated with the change of flow based on the level of precipitation throughout the year that allows the on-site **drainage swale** to directly connect to the river. With high water flow, the Conestogo River connects to the on-site **drainage swale**, intermittently providing fish habitat to the area below the tablelands. Moreover, fish habitat is absent in the upstream extent of the on-site drainage pipe outfall, including the man-made pond located on the tablelands. The drainage pipe prevents any fish passage from the extent

of the **drainage swale** that is connected to the Conestogo River to the piped area in the tablelands. Figures 3-8 outline the characteristics present within the **drainage swale** leading up to the piped drainage outlet.

Fish habitat is not being directly impacted by the proposal, as no development activities are occurring below top of slope, and there is no fish habitat present on the tablelands. Water quality and quantity is being maintained to the intermittent flow below top of slope that confluences with the Conestogo River. There will be no change in flow entering the river post development (GEI, 2025).

The Region has agreed there is no need for further aquatic habitat assessment, OSAP, or additional aquatic studies in a meeting on Dec 19, 2024.



Figure 4. On-site **drainage swale** outlet connecting to Conestogo River during high flow, facing downstream from on-site **drainage swale**

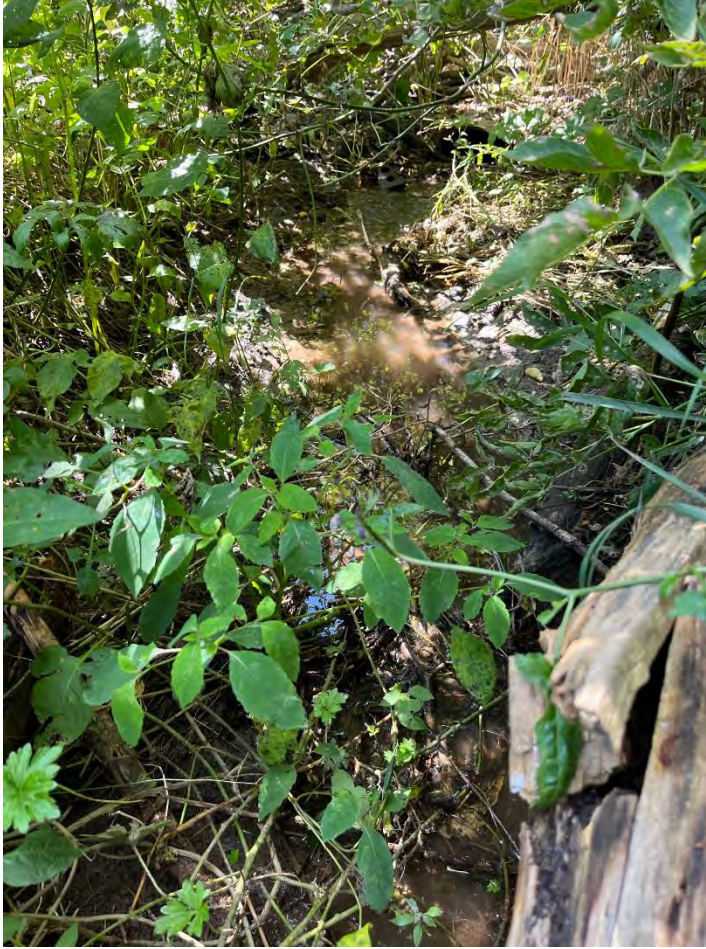


Figure 5. Downstream extent of the on-site **drainage swale** before the river, facing upstream



Figure 6. Continuation of **drainage swale** leading to the start of the floodplain area of the site, facing upstream of River



Figure 7. **Drainage swale** located at the midway point of the floodplain, facing upstream



Figure 8. Pooling of **drainage swale** adjacent to the floodplain within approximately 10m of the drainage pipe, facing upstream



Figure 9. Facing upstream, showcasing the disconnect from the fish habitat **drainage swale** and the buried drainage outlet that extends upstream throughout the site to the man-made pond where the piped **drainage swale** begins



Figure 10. Man-made pond (polygon 9) disconnected to the downstream extent of the **drainage swale** that connects to the Conestogo River

4. LEGISLATION & POLICY REVIEW

4.1. Federal

4.1.1. Species at Risk Act, 2002

The federal *Species at Risk Act (SARA)*, 2002, is a key piece of legislation which aims to protect at risk plant and animal species and their critical habitat. This legislation provides the federal mandate for the protection of species identified as Endangered, Threatened or Special Concern on federal lands.

Site Implications: The *SARA (2002)* legislation is not relevant to this site, as this parcel of land is not federally owned. Species at Risk protection on non-federal lands are protected through the *Endangered Species Act (2007)* and the Province's Significant Wildlife Habitat provisions contained in the *Provincial Policy Statement (2020)*. These pieces of legislation are discussed below.

4.1.2. Migratory Birds Convention Act, 1994, and Migratory Bird Regulations, 2022

The *Migratory Birds Convention Act (MBCA)*, 1994, policies and regulations ensure legal protection of listed migratory bird species, their nests, eggs and offspring. In its

application, it requires best management practices to detect and avoid disturbance to active nests during development activities.

The MBCA protects migratory birds and their nests (S.4). Section 6 of the Migratory Bird Regulations (Consolidated Regulations of Canada (CRC), c. 1035) prohibits the disturbance, destruction or taking of a nest, egg, or nest shelter of a migratory bird. The MBCA is the enabling statute for the Migratory Birds Regulations, which were updated in May 2022 (MBR, 2022). Under the 2022 MBR, nests for 18 bird species (7 of which occur in Ontario) receive year-round protection for a prescribed length of time ranging from 24-36 months (Schedule 1), and all other nests of migratory birds are protected when they contain a live bird or viable egg (S. 5(2)(b)). Birds that are listed on Schedule 1 (those that receive year-round protection) were not identified for the Subject Project during breeding bird surveys.

Disturbance to nests of other MBCA protected species during the course of vegetation clearing is a contravention of the MBCA. The primary nesting period (i.e., the period when the percent of total nesting species is greater than 10%) identified for southern Ontario is April 1 - August 31, although nesting also infrequently occurs outside of this period (Environment Canada 2014). To significantly reduce the risk of damaging or disturbing bird nests and contravening the MBCA, vegetation clearing will occur between September 1 and March 31.

Site Implications: Disturbance to nests of other MBCA protected species during the course of vegetation clearing is a contravention of the MBCA. Incidental take of migratory birds, nests or eggs must be avoided by limiting activities during sensitive periods, and migration measures should be implemented to ensure appropriate nesting areas are re-established on the site. Tree and vegetation clearing should not take place within the active nesting season between approximately **April 1 and August 31**. If the areas proposed for removal are thoroughly checked during the active breeding season for bird nests by a qualified biologist during the construction phase, and no nests are found, then construction may be permitted. Although nesting activity outside of this timing window is unlikely, to ensure compliance with the MBCA and the MBR, construction activities should be halted if an active nest or eggs of protected birds are found until the period of occupancy concludes.

4.1.3. Fisheries Act, 2019

In June 2019, the new *Fisheries Act* became law. The updated Act provides comprehensive protection for all fish and fish habitat and aims to create clearer permitting requirements for development projects. Department of Fisheries and Ocean's (DFO) has the mandate for administering the habitat protection provisions of the *Fisheries Act*. The federal *Fisheries Act* protects against the 'death of fish, other than by fishing'. Under section 35 of the *Fisheries Act*, no one may carry out any work or undertaking that results in the harmful alteration, disruption or destruction (HADD) of

fish habitat, unless this HADD has been authorized by the Minister of Fisheries and Oceans Canada. Proponents can access the "Measures to protect fish and fish habitat" found on the "Projects near water" website, which provides guidance to avoid impacts to fish and fish habitat. If the project will still result in harmful impacts to fish and fish habitat, the Department will work with proponents to assess the risk of their proposed work, undertaking or activity, and provide advice and guidance on how to comply with the Fisheries Act.

Site Implications: the Fisheries Act/Request for Review process does not apply to the aquatic habitat at the site, as the proposed development and site plan will not be impacting the existing fish habitat.

4.2. Provincial

4.2.1. Provincial Planning Statement, 2024

The Provincial Planning Statement (PPS), 2024 is issued under the authority of Section 3 of the Planning Act. Section 4.1 of the PPS contains natural heritage policies and establishes clear direction on the adoption of an ecosystem approach and the protection of significant natural heritage resources including: significant woodlands & Valleylands in Ecoregions 6E and 7E; significant wildlife habitat; habitat of Endangered and Threatened species.

Policies 4.1.5 and 4.1.8 of the PPS prohibits development and site alteration within and adjacent to significant wildlife habitat and significant woodlands unless there has been an evaluation of the ecological function of the adjacent lands and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions. MNRF (2015) identifies the categories and criteria for evaluation of SWH in Ecoregion 6E (Appendix F).

Section 4.1.7 of the PPS state that development and site alterations within or adjacent to habitat of Endangered and Threatened species is not permitted, except in accordance with provincial and federal requirements.

Site Implications: The subject property contains significant natural heritage features, including Significant Wildlife Habitat (SWH), Significant Woodlands, Significant Valleylands, and habitat of Endangered and Threatened species. In accordance with PPS, 2024, an EIS must fulfill conservation authority & municipal development approvals in compliance with Section 4.1 of the PPS, 2024 to demonstrate that the adjacent development will not result in negative impacts to these natural features or on their ecological functions.



4.2.2. Endangered Species Act, 2007

The Endangered Species Act (ESA), 2007 and associated regulation (O.Reg. 230/08) provide the provincial mandate for protection of species identified as Endangered or Threatened and their habitats.

Site Implications: A desktop review of available species records from background sources was conducted and field studies were conducted in accordance with the approved Terms of Reference to identify SAR and/or SAR habitat within the study area (Appendix F). A total of 14 regulated Endangered or Threatened species were identified through background review and five (5) were identified through field studies. See section 3.4.1 for details.

4.2.3. Conservation Authorities Act & O. Reg. 41/24

The Conservation Authorities Act and its associated Regulations establish legal responsibilities of the Conservation Authorities (CA's) of Ontario. Under this legislation CA's have jurisdiction to regulate proposed development near wetlands, watercourses, and hazard lands as it pertains to the natural hazards policy statements issued under section 3 of the Planning Act.

O. Regulation 41/24, which pertains to all CA's in Ontario and recently replaced all 36 individual CA Regulations, outlines that development activities within 30 meters of a wetland are generally prohibited unless specific conditions are met. These conditions include ensuring that the activity will not exacerbate flooding risks, adversely affect the stability of the wetland or watercourse, or negatively impact the ecological functions of the area. Development proposed within the CA's Regulated Area must undergo pre-submission consultation and permit application processes as required by the CA. Exceptions to these prohibitions include minor activities that do not significantly impact wetlands or watercourses. Under Section 12 of this O.Reg, CA's are to develop policy & procedure documents with respect to their permit application and review process. This high-level framework is designed to safeguard Ontario's vital natural resources by preventing detrimental alterations and ensuring sustainable land use practices.

The GRCA Policies for the Administration of O. Reg 41/24 (approved May 24, 2024), outline the decision-making process that GRCA intends to follow regarding all applications made under the CA Act & O. Reg 41/24. Regulated Areas are to include "river or stream valleys, wetlands, and other areas where development activity could interfere with the hydrologic function of a wetland, adjacent or close to

Site Implications: A preliminary review using GRCA's Regulated Area Search tool indicates that a significant area of the site is regulated by the GRCA, including wetlands and their associated buffers, and a perennial watercourse, determined through on-site investigations to be a drainage swale (see section 3.4.6). Development within regulated

GRCA areas is subject to the policies outlined in O. Reg 41/24. See section 1.4.2. for a map of GRCA regulated areas (Figure 2).

4.3. Local

4.3.1. Waterloo Regional Official Plan, 2015

The *Waterloo Regional Official Plan* (ROP) (2015) provides a long-term vision for the Region regarding planning matters such as land use and development. The ROP defines a regional Greenlands Network which is made up of a system of environmental features (Landscape Level Systems, Core Environmental Features, and Supporting Environmental Features) and the linkages that connect them. Development or site alteration is generally not permitted within Core Features. Policy compliance will require assessment of landscape impacts to demonstrate that the proposed development will have no adverse environmental impact upon the environmental features and ecological functions of the Core Features; protection of the Core Features with an additional buffer applied that is in-line with the guidance of the Greenlands Network Implementation Guideline (RMW, 2016).

The Greenlands Network Implementation Guideline serves to provide detailed guidance for the preparation and review of development applications and site alterations that affect the Greenlands Network in the Region of Waterloo. The guideline serves multiple stakeholders including development applicants, the Ecological and Environmental Advisory Committee, and agency staff from various municipalities and authorities. It outlines the requirements for Environmental Impact Statements to assess potential impacts on the environment and suggests measures to mitigate these impacts. Additionally, the guideline aims to maintain, enhance, or restore the elements of the Greenlands Network as designated in regional and municipal plans.

Site Implications: The subject property contains significant natural heritage features, including Significant Wildlife Habitat (SWH), Unevaluated Wetlands & Significant Valleylands. In accordance with the Regional OP an Environmental Impact Statement (EIS) must confirm that the development will not adversely affect the Core Environmental Features and their ecological functions. Additionally, appropriate buffer zones must be implemented in accordance with the Greenlands Network Implementation Guideline.

The Greenlands Network Implementation Guideline States section IV 5 states

*"The location, width, composition, and use of buffers shall be determined through the completion and review of an Environmental Impact Statement. Buffers shall be a **minimum of 10 metres** measured from the outside boundary (i.e., dripline or wetland boundary) of the environmental feature as interpreted consistent with Section III of this Guideline. Wider minimum buffers will be implemented where previously*

recommended in an approved sub-watershed study, Master Environmental Servicing Plan, or Comprehensive Environmental Impact Statement, or as recommended through review of a Full or Scoped Environmental Impact Statement, or if required by the policies of another approval agency"

The Region of Waterloo Greenlands Network Implementation Guideline also provides direction regarding the function and design of buffers adjacent to environmental features. In addition to protecting ecological functions and minimizing edge effects, buffers may accommodate certain design elements necessary to integrate development with natural features. For example, the Guideline notes that buffers may incorporate *"transitional grading, where warranted, between an environmental feature with irregular native topography and a graded development area"* (Region of Waterloo, 2016, p.41)."

The Regional Official Plan states in section 7.C.9

"Development or site alteration will not be permitted within Core Environmental Features, except for:

- (a) forest, fish or wildlife management and conservation;*
- (b) flood or erosion control projects demonstrated to be in the public interest and for which no other alternative is feasible;*
- (c) minor alterations to legal non-conforming land uses within Core Environmental Features;*
- (d) infrastructure projects in accordance with Policies 7.C.12 and 7.C.13; or*
- (e) mineral aggregate operations in accordance with the policies in Chapter 9;*

Any application for development or site alteration for the above uses will require the submission of an Environmental Impact Statement, to the satisfaction of the Region, to determine the mitigation measures to be implemented, as appropriate, through the development review process.

7.C.10 Development or site alteration will only be permitted on lands contiguous to a Core Environmental Feature where an Environmental Impact Statement, or similar study, submitted in accordance with the policies in Section 7.G has determined to the satisfaction of the Region, Area Municipalities, the Grand River Conservation Authority and/or the Province, as appropriate, that approval of the proposed development or site alteration would not result in adverse environmental impacts on the features and ecological functions of the Core Environmental Feature. The Region may require conditions of approval to implement such recommendations.

7.C.11 An Environmental Impact Statement submitted in accordance with Policies 7.C.9 or 7.C.10 will identify appropriate buffers to Core Environmental Features, to the



satisfaction of the Region, in consultation with Area Municipalities and the Grand River Conservation Authority. Such buffers will not only serve to protect Core Environmental Features from adverse environmental impacts but will also provide opportunities for net habitat enhancement to enhance or, wherever feasible, restore the ecological functions of the Core Environmental Feature. The location, width, composition and use of buffers will be in accordance with the approved Environmental Impact Statement, with buffers being a **minimum of 10 metres** as measured from the outside boundary of the Core Environmental Feature and established and maintained as appropriate self-sustaining native vegetation”

Furthermore, the Regional Official Plan indicates in section 7.E.5

*“Lands within river or stream valleys, floodplains, wetlands, watercourses, lakes or hazardous lands, or lands within **120 metres** of Provincially Significant Wetlands and wetlands greater than or equal to two hectares, or lands within **30 metres** of wetlands less than two hectares, are regulated by the Grand River Conservation Authority. Development or site alteration within these Regulated Areas will require a permit from the Grand River Conservation Authority in accordance with the applicable regulations approved under the Conservation Authorities Act”*

4.3.2. Township of Woolwich Official Plan, 2022

The Township's Official Plan (OP) centers on environmental protection and stewardship, guiding land use and development while emphasizing sustainability. At its core, the OP defines a Greenland's Network, a system of interconnected environmental features and linkages that supports ecological functions and biodiversity. The Greenland's Network comprises several key elements, including Landscape-Level Systems, Core Environmental Features, Supporting Environmental Features, Fish Habitat and.

- **Landscape-Level Systems** encompass large-scale environmental features or concentrations of features such as Environmentally Sensitive Landscapes, Significant Valleys, and Regional Recharge Areas. These systems are designated in the Regional Official Plan and contribute to the broader ecological framework within the township.
- **Core Environmental Features** represent the most significant elements of the network, including habitat for endangered or threatened species, provincially significant wetlands, significant woodlands, and significant areas of natural and scientific interest. Development or site alteration is generally prohibited within these features, with exceptions requiring Environmental Impact Statements.
- **Supporting Environmental Features** are locally significant areas that support the Greenland's Network's ecological functions. These features can include



locally significant wetlands, woodlands, valleys, wildlife habitats, and intermittent watercourses. Development within or adjacent to these features requires Environmental Impact Statements to ensure preservation and minimize environmental impact.

- **Fish Habitat** includes areas critical for fish spawning and development. Fish habitat is identified through watershed or subwatershed studies and other environmental assessments. Development or site alteration within fish habitat requires adherence to Provincial and Federal requirements, with Environmental Impact Statements providing the necessary mitigation measures.
- **Environmental Linkages** serve to connect the various environmental features, providing opportunities for plant and animal movement throughout the broader regional system. Environmental linkages are crucial for maintaining the integrity of the Greenland's Network, and their inclusion in development design is encouraged.

The Greenland's Network aims to maintain, enhance, and, where feasible, restore these environmental features to ensure the long-term health and sustainability of the township's natural environment. It plays a crucial role in connecting different ecological areas, supporting plant and animal movement, and contributing to the township's overall quality of life.

Site Implications: Significant Valleys are designated as landscape level systems and are present within the site. Core Environmental Features that are present on the site include significant woodlands. Other features found on the suite including wildlife habitats and wetlands are designated as Supporting Environmental Features. Development activities at the site must adhere to specific guidelines and requirements set forth in the Township of Woolwich Official Plan. Any proposed development within these features must prove that it will not result in adverse environmental impacts on the features and ecological functions through an Environmental Impact Statement (EIS)

Section 13.13.1 of the Township's OP states.

"An Environmental Impact Statement will be required in accordance with the policies of this Plan to identify and evaluate the potential effects of a proposed Chapter 13 Page 15 development or site alteration on elements of the Greenlands Network, and recommend means of preventing, minimizing or mitigating these impacts, as well as enhancing or restoring the quality and connectivity of elements of the Greenlands Network. An Environmental Impact Statement may also be used to identify and evaluate elements of the Greenlands Network and interpret the boundaries of these elements based on ecological considerations. The Township, the Province, the Region, the Grand River Conservation Authority, and other affected public agencies will co-ordinate the requirements for the preparation of an Environmental Impact Statement."



Given the presence of landscape level systems such as significant valleys and supporting environmental features like locally significant wetlands and significant wildlife habitats, development activities at the site must adhere to specific guidelines and requirements set forth in the Township of Woolwich Official Plan. Any proposed development within these features must prove that it will not result in adverse environmental impacts on the features and ecological functions through an Environmental Impact Statement (EIS).

4.3.3. Township of Woolwich Site Alteration By-Law

The Site Alteration By-law from the Township of Woolwich establishes a permit system to regulate land modifications, ensuring compliance with environmental and municipal regulations. It outlines the responsibilities of permit holders, establishes general rules for conducting alterations, and details the penalties for non-compliance. Additionally, the by-law includes an appeal process for permit-related decisions and provisions to maintain its effectiveness, even if specific sections face legal challenges. This framework is crucial for managing how land is altered within the township, safeguarding both the environment and community interests.

Site Implications: Under the Site Alteration By-law from the Township of Woolwich, any modifications to the land within the site require a permit.

4.3.4. Township of Woolwich Zoning By-Laws

The Zoning By-law 55-86 from the Township of Woolwich serves as a critical regulatory framework to manage land use and support sustainable development within the township. This bylaw outlines specific zoning categories that dictate permissible land uses, ensuring that activities are appropriately located to minimize environmental impact. It regulates aspects such as building setbacks, lot coverage, and height restrictions.

Site Implications: The site is zoned Agriculture (A) and must conform with policies outline in Section 7 - Zone A: Agricultural (Zoning By-law 55-86).

4.3.5. Region of Waterloo Woodlot Conservation By-Law

By-law 08-026, established by the Regional Municipality of Waterloo, aims to safeguard trees within woodlands to preserve the health of natural environments and promote good forestry practices. To be subject to this by-law, a woodland must cover at least one hectare and meet the following tree density criteria:

- A minimum of 1,000 trees per hectare of any size.
- At least 750 trees per hectare with a diameter over five centimeters.
- A minimum of 500 trees per hectare with a diameter over 12 centimeters.
- At least 250 trees per hectare with a diameter over 20 centimeters.

These density requirements set the scope for the by-law's protection, ensuring that significant tree populations are regulated to maintain the integrity of woodland ecosystems.

Site Implications: Any proposed tree removals within identified woodlands on site (i.e. Polygon 3 - FOD7; Map 1) must comply with the Regional Municipality of Waterloo Woodlot Conservation By-Law, ensuring the preservation of the woodland's ecological health and sustainability. Implications of this bylaw are addressed in the Arborist Report and Tree Preservation Plan for the site, prepared under separate cover (Dougan, 2024). It should be noted that based on the current LOD, there are no tree removals anticipated in Polygon 3.

5. KEY FINDINGS

Based on a review of the available background information, existing site conditions including species and vegetation communities, and relevant policy applicable to the subject lands, the following sensitive natural heritage features (Table 7) are present and may serve as constraints to the proposed activities.

Table 7 List of Sensitive Natural Heritage Features

Natural Heritage Features/Functions	Presence Within Study Area	Constraint Implications	Policy Reference
Environmentally Significant Valley Feature	Present in southern portion of the site below vegetated top of slope; associated with Conestogo River.	Environmentally Significant Valley Features are protected under the Province's natural heritage policies and the Region and Township's Greenlands policies.	<i>PPS, 2020</i> <i>Waterloo Regional Official Plan, 2015</i> <i>Township of Woolwich Official Plan, 2022</i>
Regulated Watercourse & Floodplain	A drainage swale flows southward along the western property edge. On the northern	A permit from GRCA is required in order to alter regulated	<i>Conservation Authorities Act & O. Reg. 41/24</i>



Natural Heritage Features/Functions	Presence Within Study Area	Constraint Implications	Policy Reference
	portion of this site the drainage swale exists only within an underground pipe, surfacing at the base of the valley slope where it outlets onto the floodplain terrace eventually draining to the Conestogo River. The Conestogo River and its floodplain are regulated by GRCA.	watercourses, waterbodies, wetlands, or floodplain.	
Endangered & Threatened Species	Little Brown Myotis was documented in 2024. These individuals were not seen emerging from the barn and is likely that these individuals were incidentally flying overhead. The Conestogo River contains potential aquatic SAR habitat: Silver Shiner, Black Redhorse, Rainbow Mussel, and Wavy-rayed Lampmussel.	Under the precautionary principle, mitigation and enhancement strategies to address potential roosting habitat for Little Brown Myotis in built structures are required under the ESA, 2007. No impacts to aquatic SAR habitat within the Conestogo River are expected. All development activities are	ESA, 2007



Natural Heritage Features/Functions	Presence Within Study Area	Constraint Implications	Policy Reference
		occurring within the tablelands (over 100 m from the river) which do not contain fish habitat. Pre- to post- water quality and quantity is being maintained to the Conestogo River. No in-water works are proposed.	
Significant Wildlife Habitat (SWH)	Confirmed Specialized Habitat for Wildlife: - Amphibian breeding (wetland) Habitat for Species of Special Concern: - Habitat for special concern and rare wildlife - Midland Painted Turtle	No development is permitted within or adjacent to SWH unless it can be demonstrated that the proposal will result in no negative impacts to SWH. This EIS must demonstrate that development or site alteration will result in no	<i>PPS, 2024</i> <i>Waterloo Regional Official Plan, 2015</i> <i>Township of Woolwich Official Plan, 2022</i>



Natural Heritage Features/Functions	Presence Within Study Area	Constraint Implications	Policy Reference
	Candidate Seasonal Concentration Areas of Animals: - Turtle wintering habitat - Bat maternity colonies Rare Vegetation Communities: - Other Rare Vegetation Communities Specialized Habitat for Wildlife: - Turtle nesting areas Habitat for Species of Special Concern: - Snapping turtle - Bald eagle - Eastern wood-pewee - Rusty blackbird - Common Nighthawk	negative impact to SWH.	
Unevaluated Wetland	The 0.2 ha GRCA-regulated wetland is comprised of a man-made pond (OAO, ELC Polygon 9) and adjacent Reed Canary Grass Mineral Meadow	The wetland meets GRCA's criteria for allowing development in an anthropogenic wetland.	<i>Conservation Authorities Act, O. Reg. 41/24, and GRCA Policies for the Administration of O. Reg 41/24</i>



Natural Heritage Features/Functions	Presence Within Study Area	Constraint Implications	Policy Reference
	Marsh (MAM2-2, ELC Polygon 10).		
Ecological Corridors/ Linkages	The Conestogo Valleylands provides a functional corridor/linkage along the river. This area is being preserved, undeveloped, and enhanced.	Ecological corridors and linkages should be preserved and enhanced to facilitate movement of flora and fauna within the Greenlands Network.	<i>Waterloo Regional Official Plan, 2015</i> <i>Township of Woolwich Official Plan, 2022</i>
Fish Habitat	Intermittent fish habitat is present below top of slope and the piped outfall. No fish habitat is present above the piped outfall on the tablelands.	Fish habitat is not being impacted by the proposal, as there is no suitable habitat present on the tablelands. Water quality and quantity is being maintained to the intermittent flow below top of slope that confluences with the Conestogo River (GEI, 2025).	<i>Fisheries Act, 1984</i> <i>Waterloo Regional Official Plan, 2015</i> <i>Township of Woolwich Official Plan, 2022</i>



6. DESCRIPTION OF PROPOSED DEVELOPMENT

Polocorp Inc. proposes to develop the property into 16 lots of freehold singles, 44-58 units (49 planned) of freehold street townhouses, and 55-65 units (58 planned) of stacked townhouses. The proposed development also includes a private SWM facility, parkette, and open space area (Table 8).

Table 8 Summary of Proposed Development Block Areas/Units

Proposed Development	Area (ha)
Single Detached	0.79
Street Townhouses	1.10
Medium Density	1.16
Stormwater Facility	0.51
Open Space/Passive Recreational Area	1.63
Public Roads	0.92
Grand Total	6.11

The proposed development will be located primarily on the tablelands and outside of the environmental features associated with the Conestogo River Valley, including the floodplain terrace, treed valley slope, and the established 10 m ecological buffer from the woodland dripline. Limited works are proposed within the buffer area to facilitate integration between the graded development area and the existing topography. These works include transitional grading associated with the rear residential lots and installation of a stormwater outfall pipe extending down the treed slope, terminating at a headwall with a rip rap outlet designed to safely diffuse flows.

Development activities are anticipated to include the following:

- Temporary fencing;
- Clearing;
- Pond-filling and soil remediation;
- Grading & servicing;
- Stormwater management facility construction; and
- Construction of homes, paved surfaces, parks, and amenities.



7. IMPACT ASSESSMENT

This section presents a detailed discussion of the potential impacts that could occur based on consideration of the key findings (Section 5) and the proposed development (Section 6). Direct, indirect, and cumulative impacts have been considered and are discussed in the following subsections.

7.1. Direct Impacts

Potential direct impacts associated with the proposal include:

- Removal of the unevaluated wetland;
- Vegetation clearing;
- Removal of significant wildlife habitat;
- Temporary disturbance to wildlife during construction; and
- Transitional grading encroachment into 10m buffer.*

Each of these categories is discussed in the following subsections.

7.1.1. Removal of the Unevaluated Wetland

The proposed development would result in the permanent removal of the 0.2 ha unevaluated wetland including the man-made pond and adjacent meadow marsh. This can be achieved with policy compliance; as discussed in Section 3.4.5, GRCA policy makes allowances for removal of anthropogenic wetlands under certain conditions all of which are met in this instance.

Ecology - Removal of the wetland will result in a negative impact on wildlife habitat. Of specific note, there will be a loss of amphibian breeding and potential turtle overwintering habitat .

Hydrology - No negative hydrologic impacts are anticipated with respect to the removal of the wetland (GEI, 2024). The wetland currently receives surface water inputs from precipitation and overland flow and conveys it to the Conestogo River via an underground pipe. Post-development, surface water management on the site will still be conveyed to the Conestogo River, but quantity and quality can be better managed via the proposed stormwater management facility.

Hydrogeology - The GEI (2024) Hydrogeological study should be referenced with respect to potential impacts on groundwater quantity/ quality. Essentially, the removal of the wetland is not expected to have any negative hydrogeologic impacts because the wetland does not currently function for groundwater recharge or discharge.



7.1.2. Vegetation Clearing

Impacts to Vegetation

Clearing of vegetation on the tablelands is required to facilitate the proposal. Table 9 summarizes the impacted areas anticipated based on the current concept plan (Map 5).

Table 9 Impacted Area by ELC Community Based on Preliminary Developable Lands

Polygon ID	ELC Code	Impacted Area (ha)
1	Dry-Moist Old Field Meadow (CUM1-1)	1.12
2	Mineral Cultural Woodland (CUW1)	0.01
6	Agricultural (AGR)	1.87
7	Anthropogenic (ANTH)	0.06
8	Anthropogenic (ANTH)	1.31
9	Open Aquatic (OAO)	0.09
10	Reed-canary Grass Mineral Meadow Marsh (MAM2-2)	0.09
11	Mineral Cultural Meadow (CUM1)	0.05
12	Anthropogenic (ANTH)	0.02
18	Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3)	0.06
TOTAL		4.68

To further summarize, impacts to natural communities associated with the unevaluated wetland (FOD7-3, and MAM2-2) is limited to 0.15 ha of land (Table 10). The remaining impacts are limited to anthropogenic and cultural communities, which generally serve lower ecological function.

Table 10 Summary of Areas Impacted by Vegetation Clearing

ELC Community Type	Polygon Reference	Impacted Area
Agricultural	6	1.87
Anthropogenic	7, 8,12	1.39
Cultural	1,2,9,11	1.27
Natural	10,18	0.15
TOTAL	1,2,6,7,8,9,10,11,12,18	4.68



Impacts to Trees

A total of 53 trees >10cm DBH are proposed for removal to facilitate the proposed development. An additional one (1) tree is proposed to be injured/impacted due to excavation work occurring within treed driplines. Tree removals are addressed in the Arborist Report & Tree Preservation Plan submitted under separate cover (Dougan, 2025) and summary is provided below.

Table 11 Summary of Impacted Trees and Compensation Requirements (Dougan, 2025).

Tree Action	Tree Count
Preserve	49
Injury	1
Remove	53
TOTAL	103

7.1.3. Removal of Significant Wildlife Habitat

Significant Wildlife Habitat is a natural heritage value recognized by the Province of Ontario and protected under the Provincial Policy Statement. Without due consideration, there is the potential for the proposed development to result in negative impacts to candidate and confirmed SWH. Direct impacts that have been identified with respect to Significant Wildlife Habitat are summarized in Table 12.

Table 12 Summary of SWH Removal Areas

Type	Polygons	Area Impacted (ha)
Confirmed amphibian breeding habitat	9, 10	0.18
Confirmed species of Special Concern, Midland Painted Turtle	9	0.09
Confirmed SWH Total		0.18
Candidate turtle nesting area	1,11	1.17
Candidate turtle wintering	9,10	0.18
Candidate amphibian movement corridor	1,2,9,18	1.28
Candidate bat maternity colony habitat	18	0.06

Type	Polygons	Area Impacted (ha)
Candidate SWH Total		1.42
Confirmed and Candidate SWH Total		1.60

A total of 0.18 ha of confirmed SWH and 1.42 ha of candidate SWH are proposed for removal, totaling 1.60 ha of candidate or confirmed SWH.

Impacts to candidate and confirmed Significant Wildlife Habitat will be addressed by improvement of the overall future condition of the site for wildlife through proposed enhancements outlined in section 8.

7.1.4. Temporary Disturbance to Wildlife During Construction

The clearing, grading, and construction activities may result in a variety of negative impacts associated with disturbance to wildlife and wildlife habitat. Increased noise, light, and dust associated with construction can be problematic to the health and vigor of native plants and wildlife. Wildlife tend to respond to such stressors through behaviour modifications such as avoidance behaviours. Introduction of chemicals into the environment is also possible as a result of construction processes and may lead to reduced fertility/fecundity of native and significant species. Specific effects of these indirect impacts on wildlife could include:

- Reduced habitat quality and native species diversity;
- Increased susceptibility of some species to predation;
- Negative physiological effects in wildlife such as alteration of reproductive behaviors;
- Disruption of breeding birds and their habitat;
- Potential for incidental mortality of small mammals and reptiles due to construction conflicts; and
- Increased dust, noise, artificial lighting, and human presence which may disrupt breeding or other sensitive lifecycle processes.

General recommendations for addressing temporary impacts to wildlife are presented in Section 8.

7.1.5. Transitional Grading Encroachment into 10m Buffer

Revised grading slightly extends the slope transition from the rear lots towards the woodland so the lots can remain reasonably flat and useful. This results in a minor grading encroachment into the 10m buffer. Therefore, this grading encroachment represents only a change in elevation within the previously disturbed agricultural land and does not affect the woodland feature itself or its ecological functions. The 10m buffer will ultimately be naturalized, resulting in an improvement over the current agricultural conditions.



*Grading represents a change in elevation only, not a functional impact to the woodland feature.

7.2. Indirect Impacts

Potential indirect impacts associated with the proposal include:

- Hydrological change (water balance, drainage patterns, water quality,)
- Temporary disturbance to wildlife during construction; and
- Post-Construction modified land use

Each of these categories is discussed in the following subsections.

7.2.1. Hydrological Change

All surface water inputs from the site feed into the Conestogo River; a valued natural resource. Any hydrological alterations that will occur in result of the proposed development has the potential to indirectly impact the river. The GEI Stormwater Management Plan and Functional Servicing Report provide full detail on pre and post hydrological conditions including drainage patterns, water quantity and quality.

During Construction - there is potential for indirect impacts on water quality, with sedimentation of specific concern once the development area is cleared of vegetation. This will be addressed through appropriate erosion and sediment control measures (ref. section 8.2.5).

Post Construction - The proposed stormwater management facility is expected to manage stormwater flows more effectively in terms of water quality and quantity than the current site conditions.

7.2.2. Sedimentation and Erosion

Construction activities on the tablelands may result in increased sediment runoff, thereby affecting the quantity and quality of runoff contributions to the Conestogo River. Impacts associated with sedimentation and erosion can be addressed through mitigation strategies presented in Section 8.2.5.

7.3. Cumulative Impacts

7.3.1. Land Use Transition

The study area is currently zoned Agricultural, and directly abuts Residential and Open Space zoning to the east, bordered by King St to the immediate west. This proposed development will contribute to residential growth as the landscape transitions from agricultural towards increased residential use to accommodate provincial and regional growth targets.

The conversion of agricultural land to residential will inevitably result in land use changes that may affect the adjacent valleylands. Normal use of the dwellings and yards introduce a large and uncertain number of practices, but they are generally associated with recreation, residential landscaping and other passive activities.

Potential secondary effects resulting from residential encroachment include:

- Indirect pollution such as contaminant inputs from road use and maintenance can negatively impact vegetation communities, affecting the health of some plant species, and favoring abundance of salt-tolerant non-native species. This can also indirectly impact wildlife by modifying habitat quality and type adjacent to roadsides;
- Unauthorized extension of mowed, planted, or cleared areas into natural features;
- Haphazard trail creation within natural features;
- Construction of additional private laneways;
- Construction of accessory structures (e.g. fences, pools, sheds, swing sets, composters etc);
- Removal of woody debris from treed areas and wood piling;
- Construction of additional permanent buildings;
- Increased presence of domestic pets;
- Dumping of yard debris, garbage, and building materials;
- Introduction of non-native plant species via gardens and landscaping;
- Increased barriers to wildlife movement; and
- Increase risk of fatal window strikes for birds.

Strategies to address potential encroachment issues can largely be addressed through the establishment of ecological buffers.

8. AVOIDANCE, MITIGATION & ENHANCEMENT MEASURES

Section 7 has provided an assessment of the potential impacts that could occur as a result of the proposed development. This section follows by providing a plan of action to address any impacts perceived as negative or detrimental to natural heritage features or functions. This plan was created based on a hierarchy of decision making, as illustrated in Figure 11.



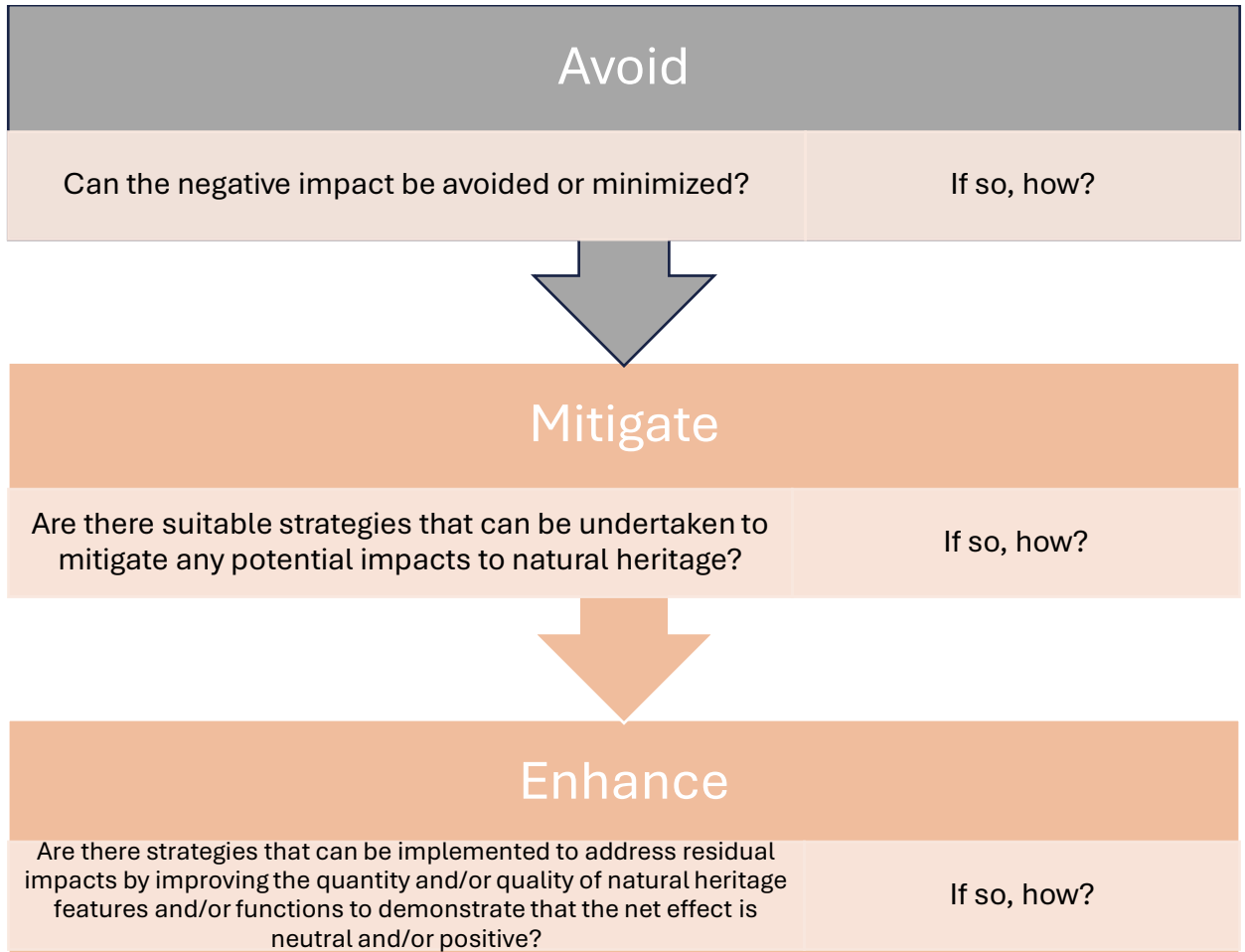


Figure 11. Impact Assessment Hierarchy Approach

The following plan defines the recommendations that represent the best plan for addressing the possible impacts that have been identified and achieving policy compliance.

8.1. Avoidance Strategies

8.1.1. Site Plan Design

The concept plan (Appendix F) has been developed and revised multiple times in consultation with project consultants. The most noteworthy revision has concentrated all development on the tablelands to minimize impacts to natural heritage features (i.e. fish habitat, floodplain, valleylands, and adjacent forest) and allocating a portion of the floodplain to ecological enhancement to ensure long-term resilience of the natural heritage system and corridor associated with the Conestogo River. No development is proposed below top of slope.



8.1.2. Timing Windows for Construction

Tree and vegetation removal and demolition of structures should be avoided between **April 1 and September 30** in order to avoid impacting species protected under the *Endangered Species Act, 2007* and the *Migratory Birds Convention Act, 1994*, as discussed below.

ENDANGERED SPECIES ACT, 2007

Given the potential presence of bat roosting trees which may provide habitat for SAR bat species, proposed tree removals and demolition of structures should not be conducted during the bat maternity roosting season which occurs from **April 1 to September 30**. Due to the isolated nature of trees that are proposed to be impacted (i.e. not within a larger forest or natural area), relatively small number of candidate bat tree removals (9 trees), removal of these trees and structures outside of the bat roosting season (April 1 – September 30) does not trigger the *ESA, 2007*.

MIGRATORY BIRDS CONVENTION ACT, 1994

To ensure compliance with the Migratory Bird Convention Act (MBCA, 1994), any vegetation removal and demolition of structures on the site should be done outside of the breeding bird window which occurs from **April 15 to August 15**. If any vegetation removal is to occur within this window, a qualified avian ecologist should first check the vegetation to be removed to ensure that there are no migratory birds covered by the Act nesting within it.

If construction occurs during the breeding bird window that may impact vegetation and/or trees, nest sweeps of the site should be conducted prior to construction to ensure that unusually early or late nesting is not taking place, or that dependent young, even though fully fledged, are not in the area and unable to disperse

If any birds are found nesting, the avian biologist will recommend a suitable buffer be established around the nest, in which no constructions activities will be permitted until the birds have left nesting sites.

8.2. MITIGATION STRATEGIES

8.2.1. General

The following are general best practices for construction to minimize impacts to wildlife:

- Light pollution can be reduced by minimizing site lighting in areas adjacent to natural features. This can be achieved with the use of minimal or muted lighting, reflectors to minimize spread of light, use of motion sensors to minimize areas lighted all night, and positioning buildings to back onto natural features.
- Limit all construction activities outside of key windows for wildlife;



- Install silt fencing along the limit of disturbance prior to the commencement of work to restrict small mammals and reptiles from entering the construction work area;
- Educate contractors who will be working onsite about potential wildlife presence and how to properly relocate any specimens found within the construction site, with special attention to Species at Risk.

8.2.2. Tree Preservation

An Arborist Report and Tree Protection Plan (TPP) has been developed under separate cover, based on the proposed limit of grading/disturbance (Dougan, 2025). A summary of the mitigation strategies recommended include:

- Tree Protection Fencing (TPF) should be installed pre-construction to mitigate impacts to trees marked as “Injure” or “Preserve” (refer to Arborist Report and Tree Preservation Plan Map 2, Dougan, 2025) in accordance with the detail provided in Appendix B. TPF should be installed no less than 1m from tree dripline where possible, or at the outer limit of development (Appendix B). Areas within the fenced Tree Protection Zones should remain undisturbed and not be used for material or debris storage, access routes, or excavation.
- General best management practices to mitigate pre-construction and construction impacts to trees marked as “preserve” and “injure” should be followed and carried through to detailed design, as recommended in the Arborist Report (Dougan, 2025).

Please refer to the Arborist Report (Dougan, June 2024) for further details.

8.2.3. Ecological Buffer and Post-Development Fencing

Buffers are permanent vegetated areas located between natural features and developed lands. Their role is to provide adequate separation for the structural and ecological integration of natural features and functions, including root protection zones, space for tree fall, and interactions with groundwater and surface water processes. Buffers also serve to reduce habitat loss and fragmentation, and to mitigate edge effects such as noise, light pollution, and other human encroachment associated with adjacent development.

Buffers should be of sufficient width to protect the natural heritage feature and its ecological functions from negative impacts and, where possible, restore or enhance the feature and/or its ecological functions. Typically, buffers are established and maintained as areas of native, self-sustaining vegetation.

In accordance with Regional Official Plan (ROP) Policy 7.C.11:

“An Environmental Impact Statement [...] will identify appropriate buffers to Core Environmental Features to the satisfaction of the Region, in consultation with Area



Municipalities and the Grand River Conservation Authority. Such buffers will not only serve to protect Core Environmental Features from adverse environmental impacts but will also provide opportunities for net habitat enhancement to enhance or, wherever feasible, restore the ecological functions of the Core Environmental Feature. The location, width, composition and use of buffers will be in accordance with the approved Environmental Impact Statement, with buffers being a minimum of 10 metres as measured from the outside boundary of the Core Environmental Feature and established and maintained as appropriate self-sustaining native vegetation.”

1. Environmentally Significant Valley Feature Buffer

A 10 m ecological buffer has been applied from the woodland dripline to provide a transition zone between the Conestogo River valley system and the proposed development located on the tablelands above (see Map 5). The environmentally significant valley feature, including the lower floodplain terrace, treed valley slope, and the 10 m buffer, effectively separates the development area from the river by approximately 115 m. This separation helps to avoid potential negative impacts associated with human encroachment, changes in drainage patterns, and sedimentation or erosion.

Based on the revised grading plan, limited transitional grading will occur within portions of the 10 m buffer where the rear residential lots and stormwater management facility interface with the existing valley topography. The grading represents a slope transition between the graded development area and the irregular native topography of the valley edge and does not extend into the woodland feature itself. Disturbance to woodland vegetation and tree root zones will be avoided where feasible.

The Region of Waterloo Greenlands Network Implementation Guideline recognizes that buffers may serve multiple functions, including mitigating edge effects while facilitating appropriate transitions between development and environmental features. The Guideline notes that buffers may accommodate transitional grading where warranted to connect irregular native topography with adjacent graded development areas (Region of Waterloo, 2016).

To ensure consistency with Regional policy objectives, the buffer will be designed and managed to:

2. Minimize edge effects on the environmental feature;
3. Remain contiguous with the valley feature and maintained as part of the natural heritage system over the long term; and
4. Provide an ecological improvement relative to existing site conditions.

The area currently proposed for buffering is under active agricultural use and therefore subject to regular disturbance. Following grading, the buffer will be restored with



native vegetation to establish a naturalized edge condition between the residential development and the valleylands. This restoration will provide improved filtration of surface runoff, increased habitat structure, and a more stable ecological transition zone compared to the existing agricultural condition.

To further protect the environmental feature from potential encroachment associated with the transition to residential land use, a chain-link fence will be installed along the edge of the buffer to clearly delineate the boundary between residential backyards and the valleylands. The combination of fencing and native vegetation restoration will help minimize edge effects, discourage encroachment, and support the long-term protection of the valleylands and associated floodplain features.

8.2.4. Water Balance

An analysis of pre- to post-development flows was conducted by GEI (2025). According to GEI, post-development flow rates discharging from the site during the 25 mm event and the 2 to 100-year design storm events are less than the pre-development flow rates from the site. In addition, some infiltration galleries have been proposed at Blocks 18-21, as findings have revealed there is sufficient depth to the high groundwater levels. Therefore, under the current report and with these galleries, total estimated recharge is expected to increase by 6.8% post-development while runoff will increase by 48.7% (GEI, 2025).

In terms of discharge to the Conestogo River, there is an increase in post-development runoff volumes discharging from the site however, the stormwater management design has attenuated the post-development peak flow rates from the site (up to and including the 100-year design storm event) to be less than the pre-development flow rates (GEI, 2025).

8.2.5. Erosion and Sediment Control

The following Sediment and Erosion Control Plan is outlined by GEI (2024). These recommendations should be carried out through construction to ensure sedimentation of the river and erosion of the slope are avoided and minimized:

- *Primary sediment control will be achieved with the installation of Light Duty Sediment Fence (OPS 219.110) around the property boundary. The silt fence will eliminate the opportunity for waterborne sediments to be transported from the site.*
- *Upon completion of the grading, any area not subject to active construction within 30 days will be topsoiled and seeded as per OPSS 572.*
- *The stormwater management facility will be rough-graded and used as a temporary sediment pond during servicing and construction.*



- Once catch basins have been installed, the grates will be wrapped in filter cloth. This will be maintained until all building and landscaping has been completed.
- Temporary straw bale check dams will be installed in swales after initial grading has been completed to slow the flow rates and promote the settlement of waterborne sediments before they reach the silt fence.
- Mud-tracking mat(s) will be installed at all construction access points.
- Inspection and maintenance of all silt fencing and the sediment pond will start after installation is complete. These features will be inspected on a weekly basis or after a rainfall event of 13 mm or greater. Maintenance will be carried out, within 48 hours, on any part of the sediment and erosion controls found to need repair.
- Once construction has been substantially completed, the silt fence will be removed, any accumulated sediment will be removed from the temporary sediment pond, and the final grading and landscaping of the stormwater management facility will be completed.
- Further information regarding sediment and erosion control during construction is provided on the Sediment and Erosion Control Plan provided by GEI.
- After construction of the development, erosion and sediment transportation will be minimal.

8.3. Enhancement Strategies

On-site natural heritage enhancement strategies will focus on the following:

- Linkage enhancement;
- Riparian edge enhancement;
- Turtle and amphibian breeding habitat enhancement;
- Habitat structures for wildlife; and
- Tree compensation.

These enhancements are detailed below and conceptually shown on Map 7. All enhancements are proposed to occur within the floodplain area that is predominantly comprised of agriculture, cultural meadow and cultural woodland communities.

8.3.1. Tree Replacement

A detailed tree compensation plan should be prepared at detailed design. According to the Arborist Report and Tree Preservation Plan (TPP) prepared under separate cover (Dougan, 2025), a total of 53 trees are proposed for removal. Tree removals should be replaced at a **2:1 replacement ratio** (Region of Waterloo, 2024); **a total of 106 replacement trees** are required to accommodate the 53 proposed removals. The replacement trees shall be at least 1.8 m in height, of species native to the Region and

appropriate to the local conditions in the opinion of the Region. Please refer to the Arborist Report and Tree Preservation Plan (Dougan, 2025) for details.

8.3.2. Linkage and Riparian Enhancement

The existing condition of the Conestogo Valleylands within the subject property is of relatively low ecological quality, consisting of a narrow cultural thicket community and active agricultural land use within the lower floodplain. To improve ecological connectivity and enhance the linkage function for wildlife such as turtles and amphibians, enhancement within the floodplain is recommended, including diverse planting nodes consisting of entirely native species.

This area would also be used as the primary location for replacement trees along with other native shrubs and groundcover.

Enhancement within this area should target climax communities of lowland deciduous forest/meadow marsh complex, which will support and improve the function of the existing adjacent natural communities by preventing edge effects, increasing habitat patch size, reducing runoff, sedimentation and nutrient loading into the Conestogo River, and increase native biodiversity.

Healthy woodland edges typically include a “mantel” or zone of shrubs and saplings, and “saum” or zone of perennial herbaceous plant cover (Forman & Gordon, 1986). These areas are indicated on Figure 12. A mantel of at least 3 m is desirable to create a dense edge condition. The existing condition of the on-site valleylands do not contain defined mantle or saum, as the lands are largely managed as agriculture.



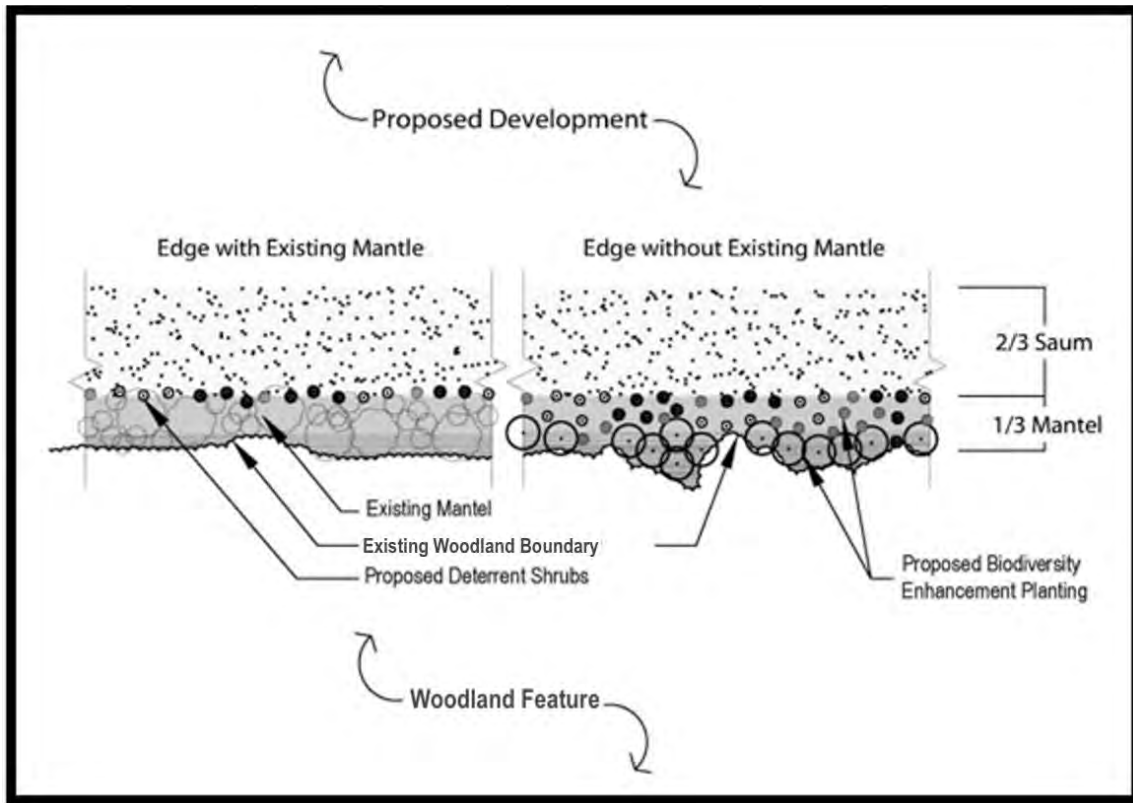


Figure 12: Edge Conditions of Proposed Saum and Mantel.

The forthcoming enhancement design should consider treatment to restore mantle in areas where it is not present such as:

- Provide 10m band of colonial and deterrent shrubs spaced 1.5 m OC with tree whips representing ~30% of planted areas.
- Fast-growing early successional tree and shrub species (Cornus, Populus, Prunus, Sambucus, Rosa, Rubus, Viburnum) planted to speed canopy development and rapidly stabilize conditions (i.e., soil, moisture, nutrients).
- Concentrate deterrent species (generally any densely-growing shrub species, but in particular red/black raspberry, wild roses) along the outer edge of the mantle facing the development to minimize intrusions by domestic pets and humans

Proposed treatment methods to restore saum should also be considered, such as:

- Soil preparation to facilitate restoration of outer band (saum) by native meadow seeding for any disturbed / formerly cultivated soils. Common Milkweed (*Asclepias syriaca*) is recommended to be included in the seed mix to provide additional habitat for Monarch.

Enhancement plantings will provide increased habitat function by improving linkage function within the Conestogo River Valleylands, introducing wildlife forage and cover species and deterring encroachment.

Enhancement along the southern portion of the floodplain will improve the size and quality of riparian vegetation between the Conestogo River and active agricultural lands, which is currently very narrow and disturbed due to ongoing agricultural practices within the floodplain.

8.3.3. Wildlife Rescue and Habitat Enhancement

The on-site man-made pond that is proposed for removal provides potential overwintering habitat for turtles and confirmed amphibian breeding habitat for frogs. It is recommended that enhanced turtle and amphibian habitat is designed and implemented in the undeveloped floodplain, and a wildlife rescue be undertaken to move any turtles or amphibians to the newly designed habitat prior to removal of the existing pond.

Construction of the new pond should occur prior to removal of the existing pond so that rescued wildlife can be moved directly into the new pond, and existing vegetation may be salvaged and transplanted in and around the new pond.

The general steps for the wildlife rescue include:

1. Turtle and frog rescue should occur during rough grading.
2. A copy of a Wildlife Collector's Permit issued by the OMNR must be obtained and available on site prior to any handling of wildlife.
3. The wetland boundary will be isolated by erecting silt fence to contain resident wildlife.
4. The pond will be dewatered.
5. Ecologists will search the dewatered area for turtles and frogs. All animals will be manually collected and placed in large plastic containers for transport to the recipient site (i.e. the new enhancement pond). Personnel will wear rubber gloves and carry nets; animals will be handled only as long as it takes to place them safely in the plastic transport containers and will be moved and released immediately upon capture.
6. Following the transport of all animals, the recipient site will be fenced off to protect the site from intrusion during the remaining construction. The fence will remain in place during the warranty period of the establishing vegetation.

The construction of the wetland habitat enhancement area within the floodplain of the Conestogo River was discussed with GRCA and the Township of Woolwich during the wetland boundary delineation in May 2026, to ensure policy compliance.



The conceptual location of the turtle and amphibian habitat enhancement area is much closer to the Conestogo River than its current location and easier for turtles to access than its current location. The replacement habitat should consist of an overwintering pond with basking objects, and adjacent turtle nesting habitat. Nesting habitat should include adjacent upland habitat that contains sand and gravel with good sun exposure. A nesting "island" should also be constructed within the pond to provide additional nesting area protected from terrestrial predators such as skunks, raccoons and foxes.

The pond should be a minimum of 0.20 ha to replace the size of the existing amphibian breeding and turtle overwintering habitat (ref. Map 6-1, Map 6-3, Map 7) and be deep enough to support overwintering turtles (i.e. the deepest portion should be at least 1.5 m deep). The pond should be planted with a varied selection of emergent, free-floating, and submergent native aquatic plants. Artificial basking objects such as partially submerged logs or rocks should be installed along the edges of the pond to provide ample basking opportunities for turtles and perching opportunities for frogs. The pond should be buffered with a minimum 15 m band of native self-sustaining terrestrial vegetation; where possible, native vegetation should be salvaged from the developed/disturbed areas on the tablelands.

The ultimate design goal will be to create a pond that is a productive, eutrophic habitat with clean shallow water, alkaline to acidic pH, a soft but firm organic bottom, and abundant aquatic vegetation suitable for overwintering and nesting turtles, and breeding amphibians.

Guidance from the Toronto Zoo Adopt-A-Pond Program (i.e., "Turtles of Ontario - A Stewardship Guide" [Pickthorn et al., 2011] and "Turtle Nesting Beach Design" webpage (available online at: <https://www.torontozoo.com/adoptapond/habitat/nesting>) should be referenced during detailed design.

Further details on the wildlife rescue, location and specifications of the new pond and nesting area will be determined during detailed design.

8.3.4. Bat Box

Given the presence of Endangered bats confirmed using the on-site structures proposed for demolition, it is recommended that replacement habitat structures be installed post-construction within the enhancement area, including:

- Three (3) bat rocketboxes or condos certified by BCI (Bat Conservation International) and/or endorsed by MECP. Ideally bat condos should be installed on suitable trees with minimal surrounding clutter at a height of 4-6 m, with southerly exposure to provide sufficient solar heating. Boxes can also be installed on buildings or free-standing poles in close proximity to water (foraging

opportunities) and free of clutter (BC Community Bat Program, 2019). It is recommended the bat rocketboxes or condos be installed within or adjacent to the riparian enhancement area, in close proximity to the river which provides good foraging opportunities. The locations will be determined through detailed design.

8.4. Monitoring

Monitoring objectives for before, during and after construction have been recommended below. The purpose of the monitoring program is to ensure mitigation measures are correctly implemented and maintained, and to evaluate the performance and effectiveness (i.e., adequacy) of mitigation measures. Implementation and execution of the monitoring program would be undertaken as part of future work.

8.4.5. Pre- and During Construction

TREE PROTECTION ZONE MONITORING

In accordance with an approved Tree Preservation Plan, temporary tree protection hoarding should be inspected upon installation before construction begins, and on a monthly basis until construction has been completed. Inspections should be carried out by a qualified Tree Management Professional. Inspections should ensure the integrity of the fencing is adequately maintained and document any encroachments within tree protection zones such as equipment storage, unauthorized tree or vegetation damage/removal, dumping etc. Monitoring reports or email updates, including documentation and photos of any encroachment or fencing issues, should be submitted to the responsible planning authority immediately following each inspection. If damaged fencing is observed, it should be repaired or replaced within 48 hours of inspection.

SEDIMENT & EROSION CONTROL MONITORING

Monitoring of Erosion and Sediment Control Plan (ESC) measures should be undertaken in accordance with an approved ESC Plan and undertaken by a qualified individual. Monitoring reports or email updates, including documentation and photos of any encroachment or fencing issues, should be submitted to the responsible planning authority immediately following each inspection. If damaged fencing is observed, it should be repaired or replaced within 48 hours of inspection.

8.4.6. Post-Construction

ENHANCEMENT MONITORING

Enhancement areas/plantings and wildlife use should be monitored 1, 3, and 5-years after implementation to allow for assessment of success and early detection of any issues that require reparative action. Details of a restoration monitoring plan should be established through a Terms of Reference process in consultation with Agency staff.

9. NET RESULTS

Table 13 below provides a summary of the anticipated net ecological impacts based on the proposal and the natural heritage features present within the study area. This assessment results in an overall net ecological benefit to the features and functions of the natural heritage features present within the study area.



Table 13 Net Results of Ecological Impact Assessment.

Anticipated Impact	Key Natural Heritage Sensitivity	Regulatory Policy	Magnitude, Duration and Frequency of impact	Avoidance/Mitigation Strategy	Residual Impact	Enhancement Strategy	Net Ecological Result
DIRECT: Removal of unevaluated wetland	0.20 ha unevaluated wetland (MAM2-2 and OAO) proposed for removal	Conservation Authorities Act O. Reg. 41/24 GRCA Policies for the Administration of O. Reg 41/24	Magnitude: 0.20 ha Duration: Permanent Frequency: Single occurrence	Conduct a wildlife rescue during pond de-watering to mitigate impacts to wildlife	Permanent removal of wetland habitat	Replace existing wetland size with a new wetland of higher ecological quality in the floodplain	Positive: New wetland will provide higher ecological function than its current location. It will be closer to the Conestogo River, planted with native species, and wildlife linkage will be enhanced to the new wetland.
DIRECT:	0.15 ha of natural vegetation	Conservation Authorities Act	Magnitude: 0.15 ha; 53 trees	Conduct a wildlife rescue during pond	Removal of 0.15 ha of	Replacement and enhancement of	Positive: Improvement in habitat quality

Anticipated Impact	Key Natural Heritage Sensitivity	Regulatory Policy	Magnitude, Duration and Frequency of impact	Avoidance/ Mitigation Strategy	Residual Impact	Enhancement Strategy	Net Ecological Result
Vegetation and tree clearing	proposed for removal (MAM2-2 and FOD7-3) 53 trees proposal for removal	O. Reg. 41/24 GRCA Policies for the Administration of O. Reg 41/24 Township of Woolwich Site Alteration By-Law No. 86-2020 (2020)	Duration: Permanent Frequency: Single occurrence	de-watering to mitigate impacts to wildlife Follow tree mitigation recommendations in Arborist Report (Dougan, 2025) including establishing Tree Protection Zones	natural vegetation Removal of 53 trees	natural vegetation within floodplain (0.35 ha) Planting 106 replacement trees (2:1)	and size (+ 0.20 ha) and 2:1 replacement of trees
DIRECT: Removal of Significant	Confirmed SWH: -0.18 ha Wetland	PPS, 2024 Region of Waterloo	Magnitude: 0.18 ha confirmed SWH	Avoid tree and vegetation removal during critical	Removal of 0.18 ha of confirmed SWH and	Enhanced turtle overwintering habitat (0.20 ha) and nesting	Positive: Habitat will be matched 1:1 in size and



Anticipated Impact	Key Natural Heritage Sensitivity	Regulatory Policy	Magnitude, Duration and Frequency of impact	Avoidance/Mitigation Strategy	Residual Impact	Enhancement Strategy	Net Ecological Result
Wildlife Habitat	Amphibian Breeding Habitat -0.09 ha Habitat for Species of Special Concern (Midland Painted Turtle) Candidate SWH: -1.17 ha Candidate turtle nesting area -0.18 ha Candidate turtle wintering -1.28 ha Candidate	Official Plan, 2015 Township of Woolwich Official Plan, 2022	1.02 ha candidate SWH Duration: Permanent Frequency: Single occurrence	timing windows for migratory birds and Endangered bats (April 1 - September 30) Conduct a wildlife rescue during pond de-watering to mitigate impacts to wildlife	1.02 ha of candidate SWH	habitat (0.03 ha) creation Enhanced amphibian breeding habitat creation (0.20 ha) and linkage corridor (0.35 ha) Installation of three (3) bat rocketboxes for use by bat maternity colonies	consolidated with improved linkage for wildlife movement within the floodplain/valley corridor. Habitat will be further enhanced through native species plantings contributing to habitat buffering and linkage function.

Anticipated Impact	Key Natural Heritage Sensitivity	Regulatory Policy	Magnitude, Duration and Frequency of impact	Avoidance/Mitigation Strategy	Residual Impact	Enhancement Strategy	Net Ecological Result
	amphibian movement corridor -0.06 ha Candidate bat maternity colony habitat						
DIRECT: Temporary disturbance to wildlife during construction	Temporary disturbance to migratory birds and Endangered bats	MBCA, 1994 ESA, 2007	Magnitude: 0.15 ha of vegetation removal; 53 trees Duration: Temporary Frequency: Single occurrence	Avoid tree and vegetation removal during critical timing windows for migratory birds and Endangered bats (April 1 - September 30)	n/a	n/a	Negligible



Anticipated Impact	Key Natural Heritage Sensitivity	Regulatory Policy	Magnitude, Duration and Frequency of impact	Avoidance/Mitigation Strategy	Residual Impact	Enhancement Strategy	Net Ecological Result
INDIRECT: Hydrological Change	Conestogo River Fish Habitat	PPS, 2024 Region of Waterloo Official Plan, 2015 Fisheries Act, 1985 Township of Woolwich Official Plan, 2022	Magnitude: Low Duration: Permanent Frequency: Ongoing	Maintain water balance to Conestogo River (GEI, 2025)	n/a	n/a	Negligible
INDIRECT: Sedimentation and Erosion	Conestogo River Fish Habitat	PPS, 2024 Region of Waterloo Official Plan, 2015 Fisheries Act, 1985 Township of Woolwich Official Plan, 2022	Magnitude: Low Duration: Temporary (during construction) Frequency: Ongoing	Implement an appropriate Sediment and Erosion Control Plan (GEI, 2025) and 10m ecological buffer from	n/a	n/a	Negligible



Anticipated Impact	Key Natural Heritage Sensitivity	Regulatory Policy	Magnitude, Duration and Frequency of impact	Avoidance/ Mitigation Strategy	Residual Impact	Enhancement Strategy	Net Ecological Result
				vegetated top of slope			
CUMULATIVE: Land use transition	Conestogo River Fish Habitat Ecologically Significant Valley Feature	PPS, 2024 Region of Waterloo Official Plan, 2015 Township of Woolwich Official Plan, 2022	Magnitude: Low Duration: Permanent Frequency: Ongoing	Avoid development within the floodplain Maintain a 10m ecological buffer from Ecologically Significant Valley Feature, except for some transitional grading occurring within the 10m buffer	Ongoing anthropogenic use	Replacement and enhancement of natural vegetation within floodplain (0.35 ha) Planting 106 replacement trees (2:1)	Positive: Development is limited to the tablelands which currently provide limited ecological function. Avoidance, mitigation and enhancements will result in improved habitat quality and size (+ 0.20 ha) and 2:1 replacement of trees





10. CONCLUSION & RECOMMENDATIONS

This EIS was prepared for Polocorp in support of a proposed ZBA application at 51-55 Hawkesville Rd, St Jacobs. The EIS was conducted in accordance with the Terms of Reference (Appendix G), including the following targeted desktop and field investigations:

- Background and Policy Review
- Significant Wildlife Habitat (SWH) Screening
- Species at Risk (SAR) Screening
- Ecological Land Classification (ELC)
- Botanical Inventory (3 surveys)
- Tree Inventory and Arborist Assessment
- Breeding Bird Surveys (2 surveys)
- Nocturnal Amphibian Call Surveys (3 surveys)
- Bat Visual Exit Surveys (VES) (2 surveys)
- Incidental Wildlife Observations

Key findings of the site characterization identified the following natural heritage features within the study area:

- Environmentally Significant Valley Feature
- Regulated Floodplain
- Endangered & Threatened Species
- Significant Wildlife Habitat (SWH)
- Unevaluated Wetland
- Ecological Corridors/ Linkages
- Fish Habitat

Direct impacts and their associated avoidance, mitigation and enhancement strategies can be summarized as follows:

- Removal of the unevaluated wetland:
 - o The wetland meets GRCA's policies for permitting development within anthropogenic wetlands, therefore this impact is policy compliant;
 - o Water balance to the Conestogo River will be maintained post-development;
 - o Wetland size and function will be replicated and enhanced post-development.
- Tree and vegetation clearing;



- o Tree and vegetation clearing is limited to the tablelands only. A 10m ecological buffer will preserve the form and function of the valley feature.
- o Tree and vegetation clearing, and the demolition of structures on site should avoid the migratory bird and bat active season (April 1 – September 30);
- o Tree Preservation Zones and other mitigation strategies specified in the Arborist Report should be followed to mitigate impacts to trees (Dougan, 2025);
- o Trees will be replaced at a 2:1 ratio and will consist of native species;
- o A net gain in naturally vegetated area will be demonstrated through enhancement planting within the linkage and riparian enhancement areas.
- Removal of Significant Wildlife Habitat
 - o During pond dewatering, a wildlife rescue will be undertaken to salvage any animals and relocate them to the enhancement pond;
 - o Enhancement areas will be designed to target the establishment of overwintering and nesting habitat for Midland Painted Turtle, wetland amphibian breeding habitat, and bat roosting habitat while improving overall habitat linkage and connectivity within the valleyland.
- Temporary disturbance of wildlife during construction.
 - o Tree and vegetation clearing, and the demolition of structures on site should avoid the migratory bird and bat active season (April 1 – September 30).

Indirect impacts and their associated avoidance, mitigation and enhancement strategies can be summarized as follows:

- Hydrological change
 - o Pre- to post-development flows will be maintained to the Conestogo River and its associated fish habitat (GEI, 2025)
- Sedimentation and erosion
 - o A Sediment and Erosion Control Plan was prepared by GEI (2025) and should be followed through construction.

Cumulative impacts and their associated avoidance, mitigation and enhancement strategies can be summarized as follows:

- Land use transition
 - o A 10m ecological buffer coupled with a post-development chain link fence will prevent anthropogenic sprawl within the valleyland.

Monitoring and adaptive management recommendations include:

- Tree protection and vegetation protection zone monitoring (pre- and during construction); and
- Post-construction enhancement monitoring.



The recommendations within this EIS should be carried forward through detailed design and construction phases.



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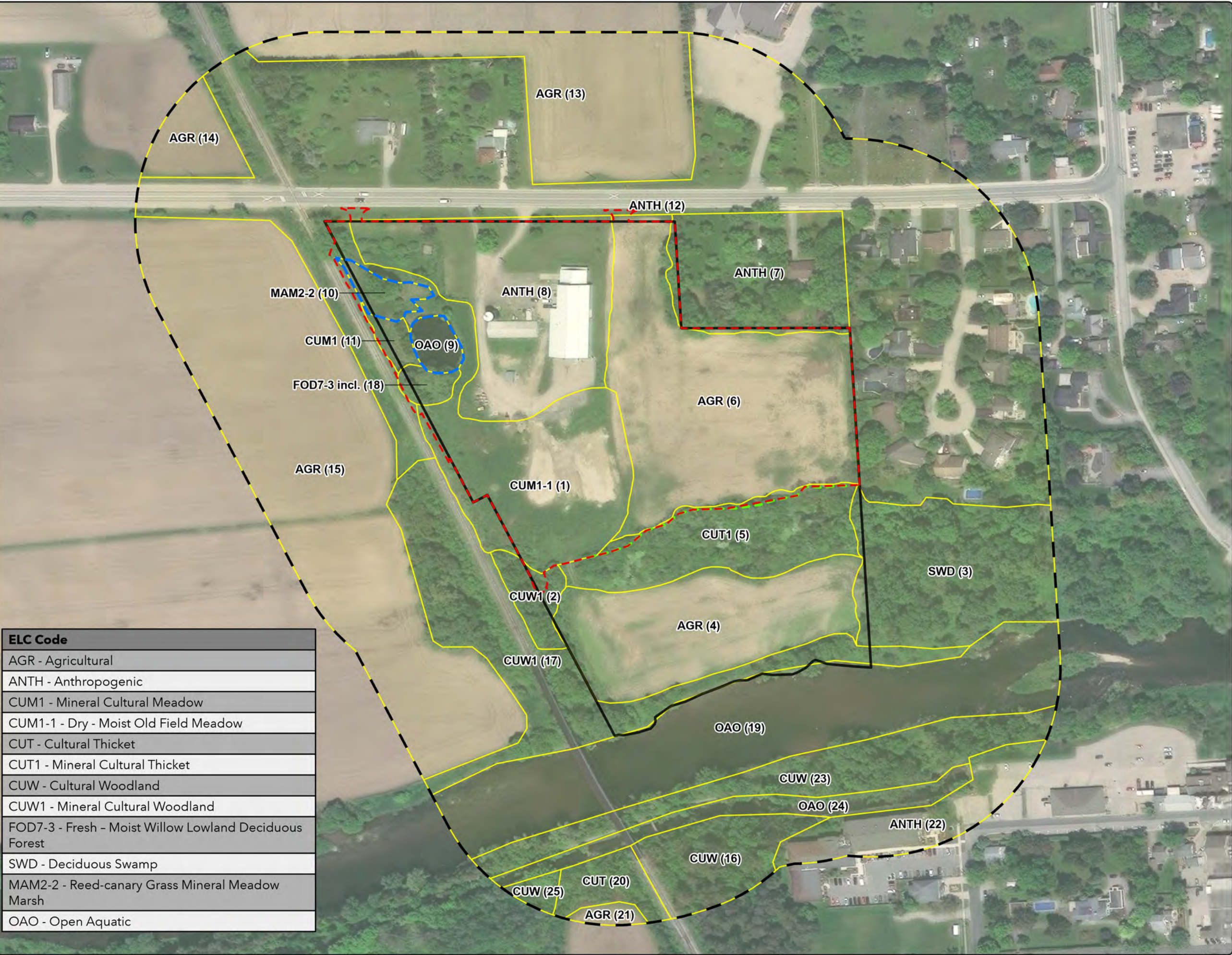
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Map 1: Ecological Land Classification

Hawkesville Road EIS

--- Dripline Delineation (Dougan, 2021) ¹

--- Staked Wetland Boundary (Dougan, 2026) ²

Ecological Land Classification (ELC) (Dougan, 2024)

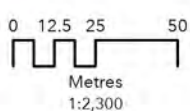
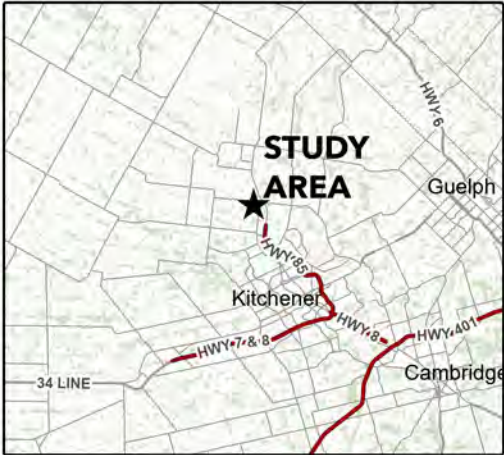
Site Boundary (Polocorp, 2024)

Adjacent Lands (120m)

Limit of Disturbance (Polocorp, 2025)

Note:
1) The dripline delineation was based on treed canopy. The ELC Community (CUT1) has shrub layer dominated by European Buckthorn that extends beyond the feature delineation. Exotic shrubs are not suitable as a dripline indicator. The discrepancy between ELC and Dripline is intentional based on the function of the two lines.

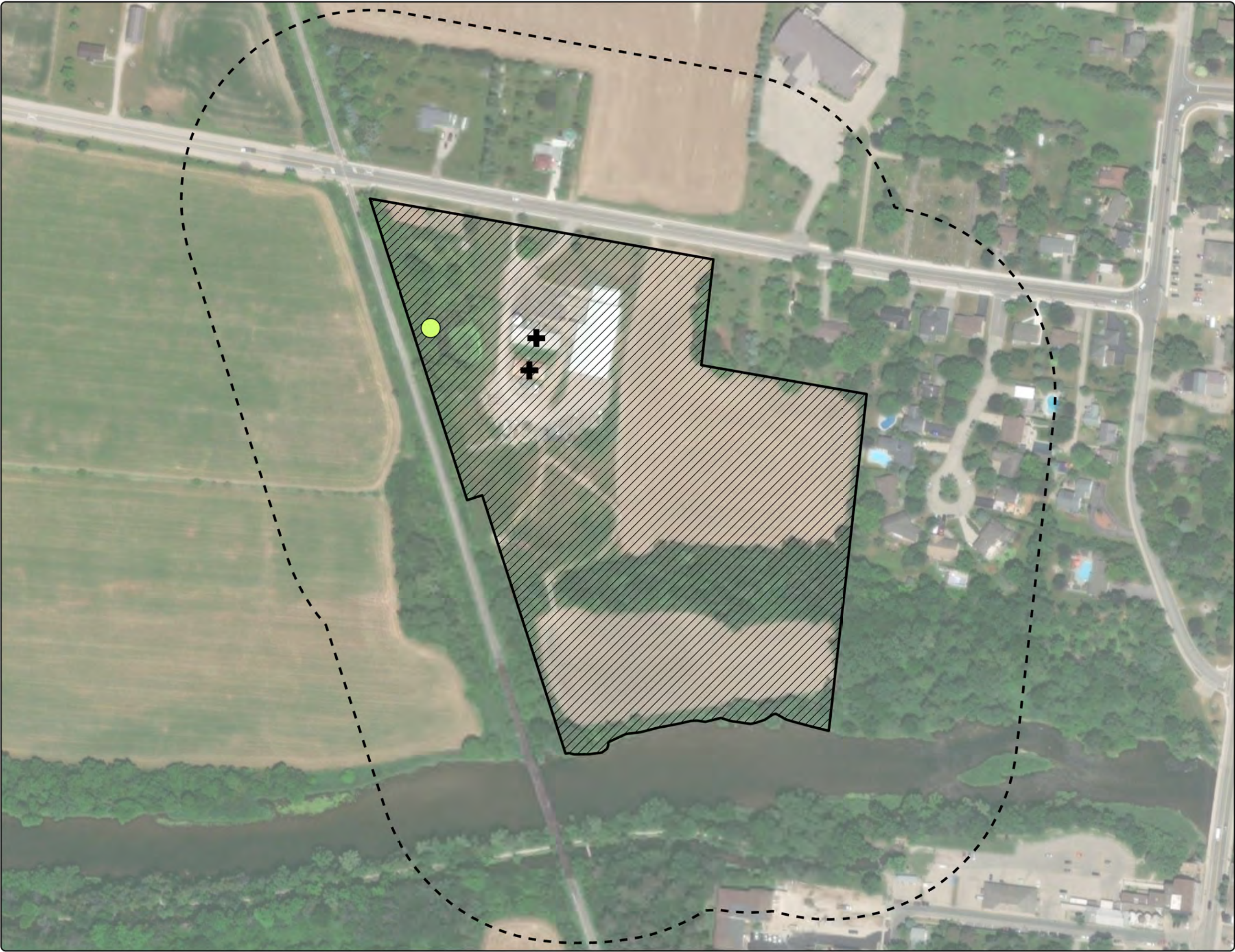
2) Wetland Boundary was staked by Dougan and GRCA May 5th 2026.



N
NAD 1983 UTM Zone 17N

Orthoimagery Source: Esri, USGS, Vantor
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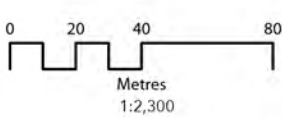




Map 2: Survey Coverage

Hawkessville Rd EIS Phase 1

- Site Boundary (Polocorp, 2024)
- Adjacent Lands (120m)
- Bat Visual Exit Survey
- Nocturnal Amphibian Call Survey
- Breeding Bird Area Search, Ecological Land Classification, Incidental Wildlife



Orthoimagery Source: Maxar

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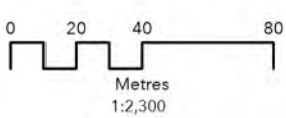




Map 3: Significant Observations

Hawkesville Rd EIS Phase 1

- Site Boundary (Polocorp, 2024)
- Adjacent Lands (120m)
- Species-at-risk Observation (GBIF, 2024)
- Species-at-risk Observation (Dogan, 2024)
- Dripline Delineation (Dogan, 2021)

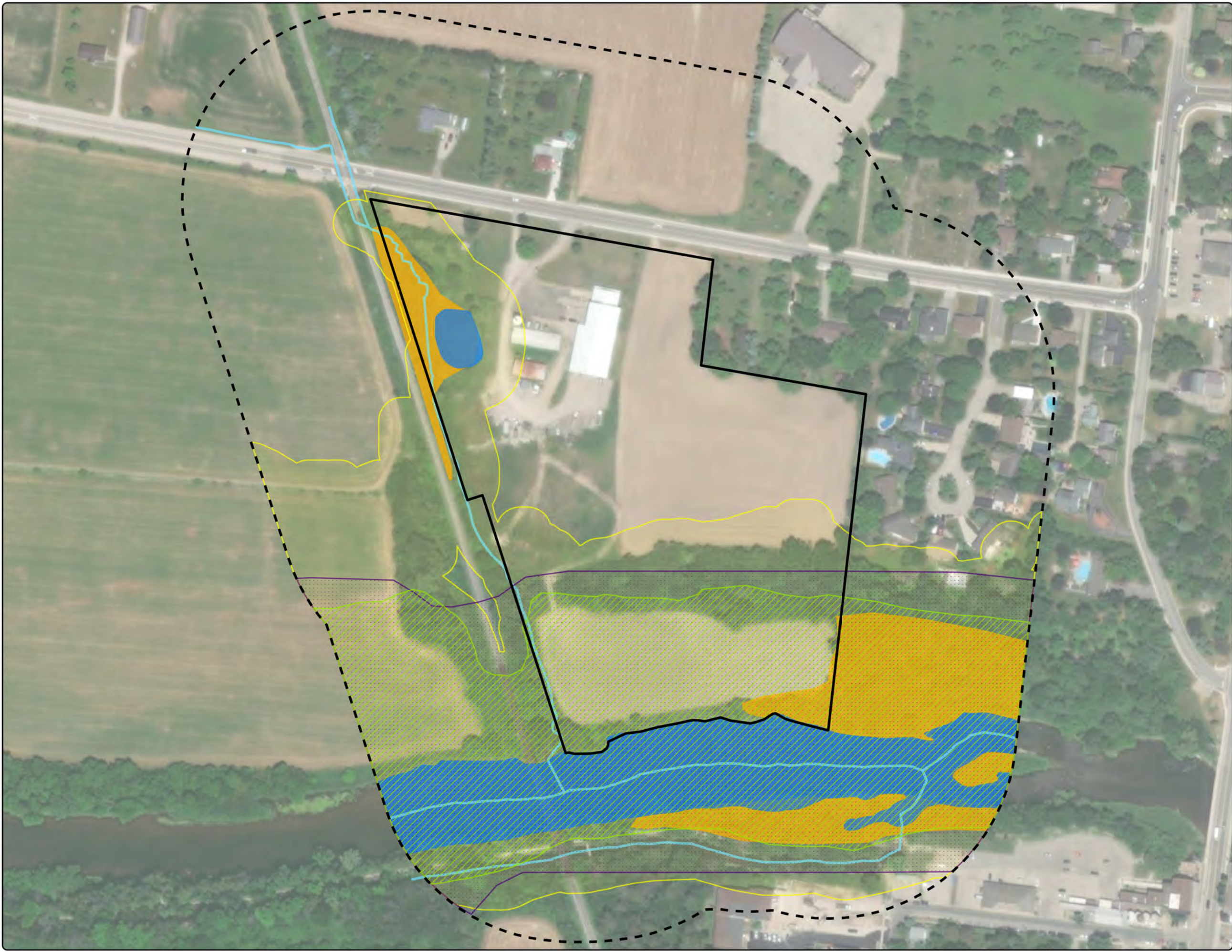


Orthoimagery Source: Maxar, Microsoft

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CLIENT: Polocorp
DATE: 10, January 2025
DRAWN BY: J. Lacsamana / E. Heizer

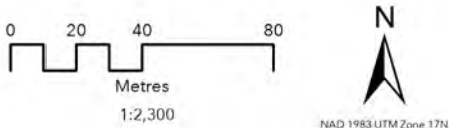


Map 4: Existing Policy

Hawkesville Rd EIS Phase 1

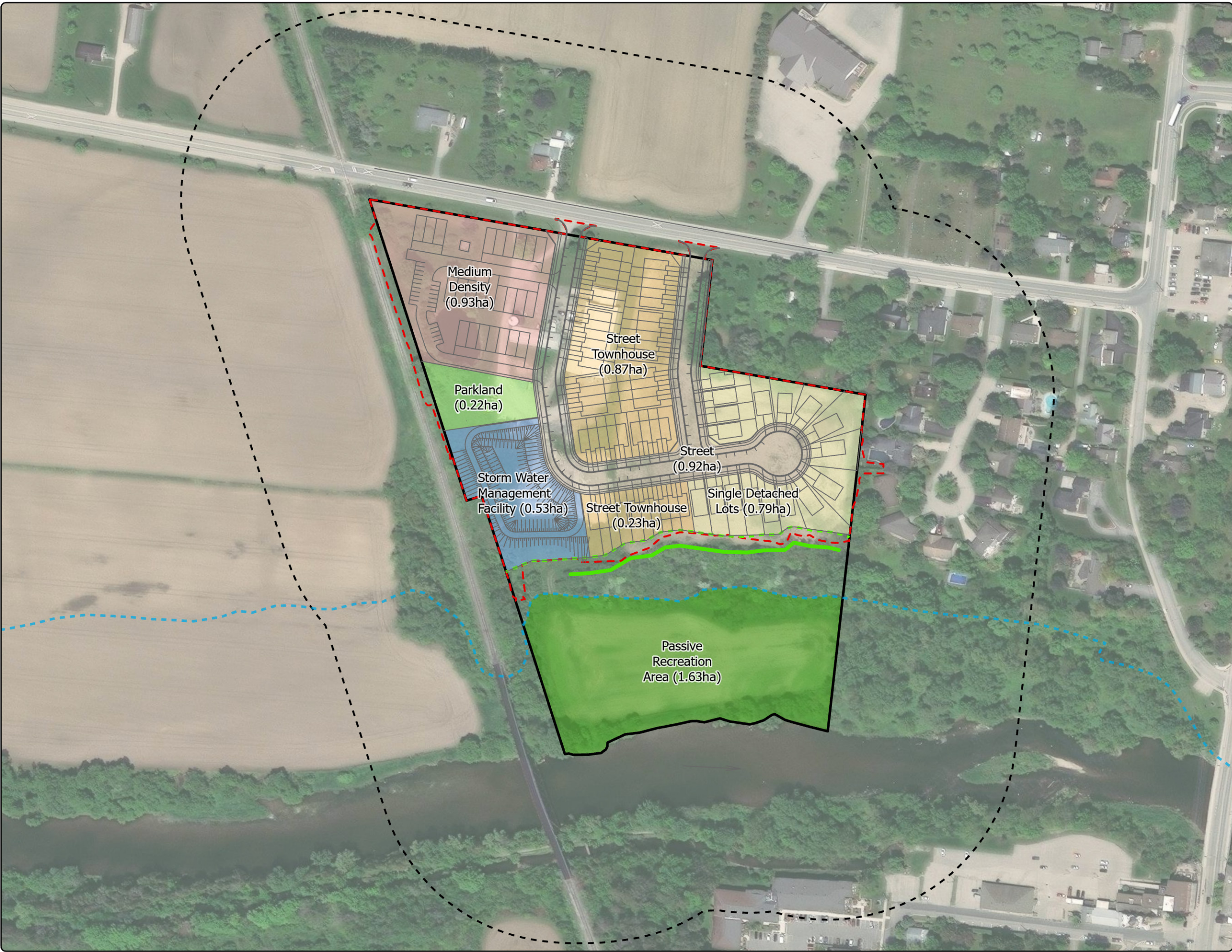
- Site Boundary (Polocorp,2024)
- Adjacent Lands (120m)
- MNRF Watercourse¹
- MNRF Waterbody¹
- MNRF Wetland¹
- GRCA Regulatory Floodplain²
- GRCA Regulation Limit²
- RWOP Core Environmental Feature (Approximate) (Map 4, 2015)³

Notes:
1. MNRF: Ministry of Natural Resources & Forestry
2. GRCA: Grand River Conservation Authority
3. RWOP: Region of Waterloo Official Plan



Orthoimagery Source: Maxar
The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation. MNRF data provided by Queen's Printer of Ontario. Use of the data in any derivative product does not constitute an endorsement by the MNRF or the Ontario Government of such products.





Map 5: Impact Assessment

Hawkesville Rd EIS Phase 1

- Site Boundary (Polocorp, 2024)
- Adjacent Lands (120m)
- Site Plan (Polocorp, June 2026)
- Limit of Disturbance (Polocorp, June 2026)

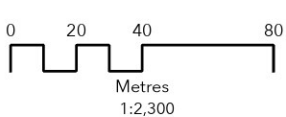
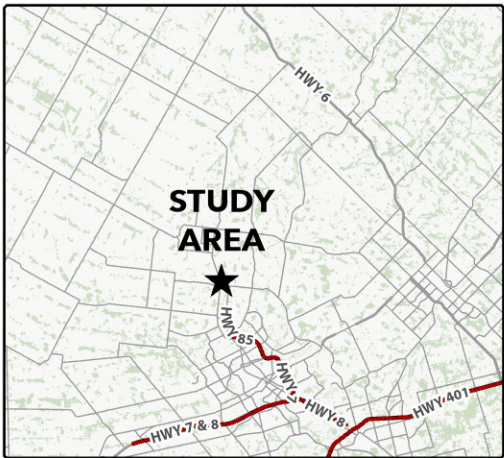
Proposed Development Blocks

- Passive Recreation Area
- Storm Water Management Facility
- Parkland
- Medium Density
- Single Detached Lots
- Street Townhouse

Dripline Delineation (Dougan, 2021)

10m Buffer

GRCA Floodplain Limit

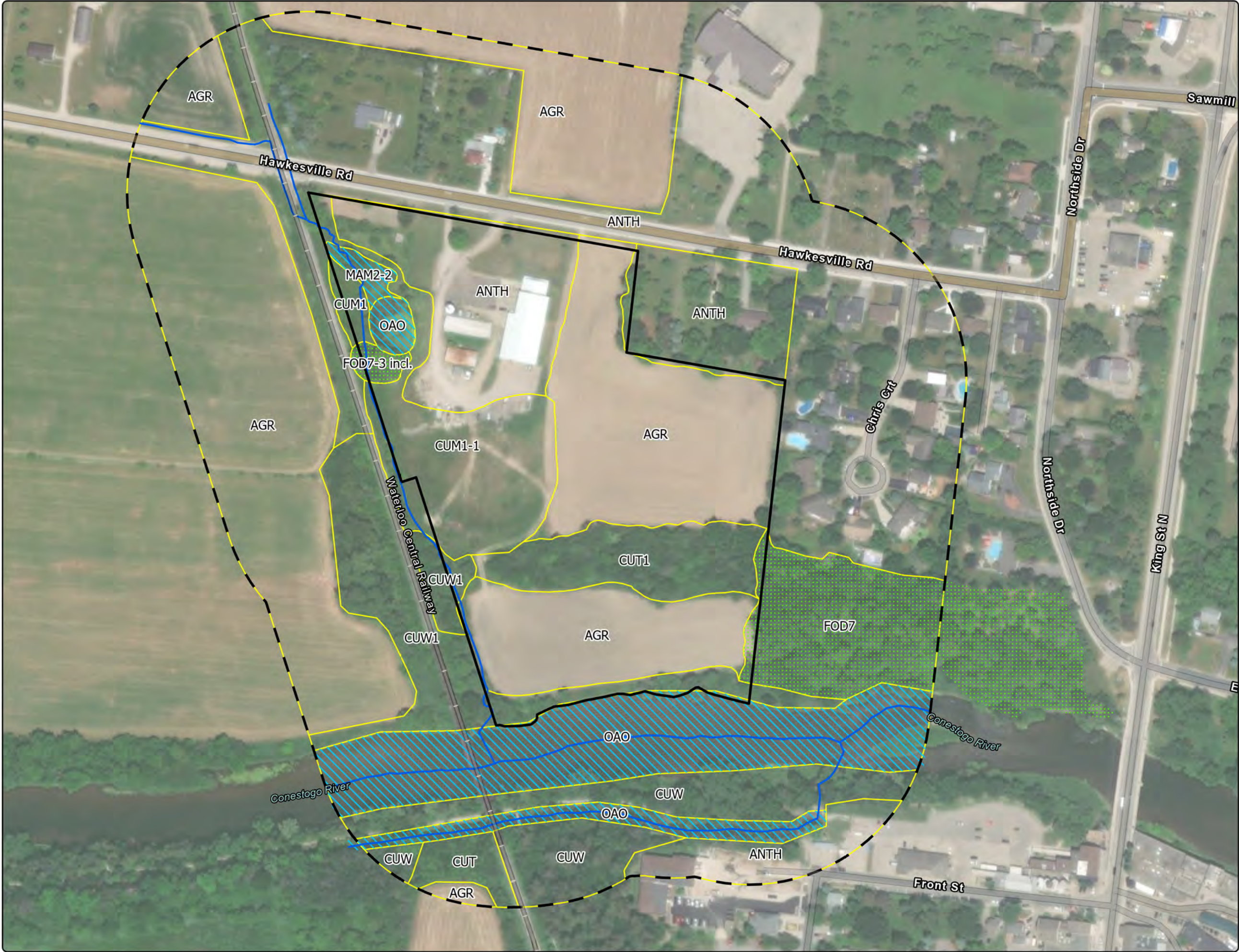


Orthoimagery Source: Vantor

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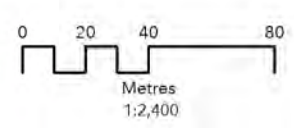
PROJECT: DA21-059-02
CLIENT: Polocorp
DATE: 20, January 2025
DRAWN BY: J.Sauder



Map 6-1: Significant Wildlife Habitat - Seasonal Concentration Areas of Animals

Hawkesville Rd EIS

- Subject Property
- Study Area 120m Adjacent Lands
- Ontario Hydro Network Watercourses
- Ecological Land Classification
- Candidate Turtle Wintering
- Candidate Bat Maternity Colonies

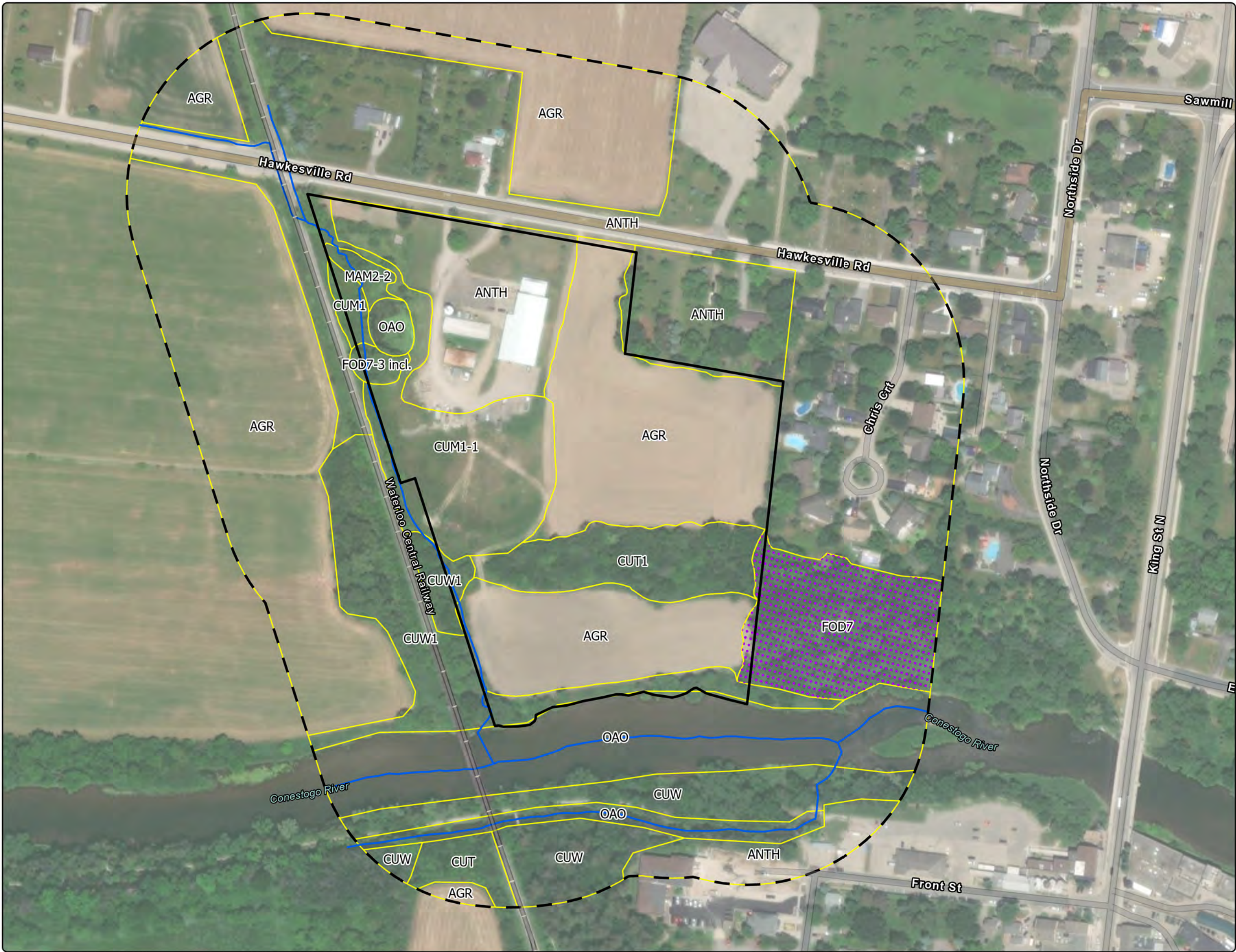


Orthoimagery Source: Maxar, Microsoft, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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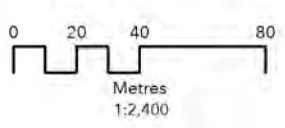
PROJECT: DA21-059-02
CLIENT: Polocorp
DATE: 13, January 2025
DRAWN BY: J.Sauder



Map 6-2: Significant Wildlife Habitat - Rare Vegetation Communities

Hawkesville Rd EIS

- Subject Property
- Study Area 120m Adjacent Lands
- Ontario Hydro Network Watercourses
- Ecological Land Classification
- Candidate Other Rare Vegetation Communities

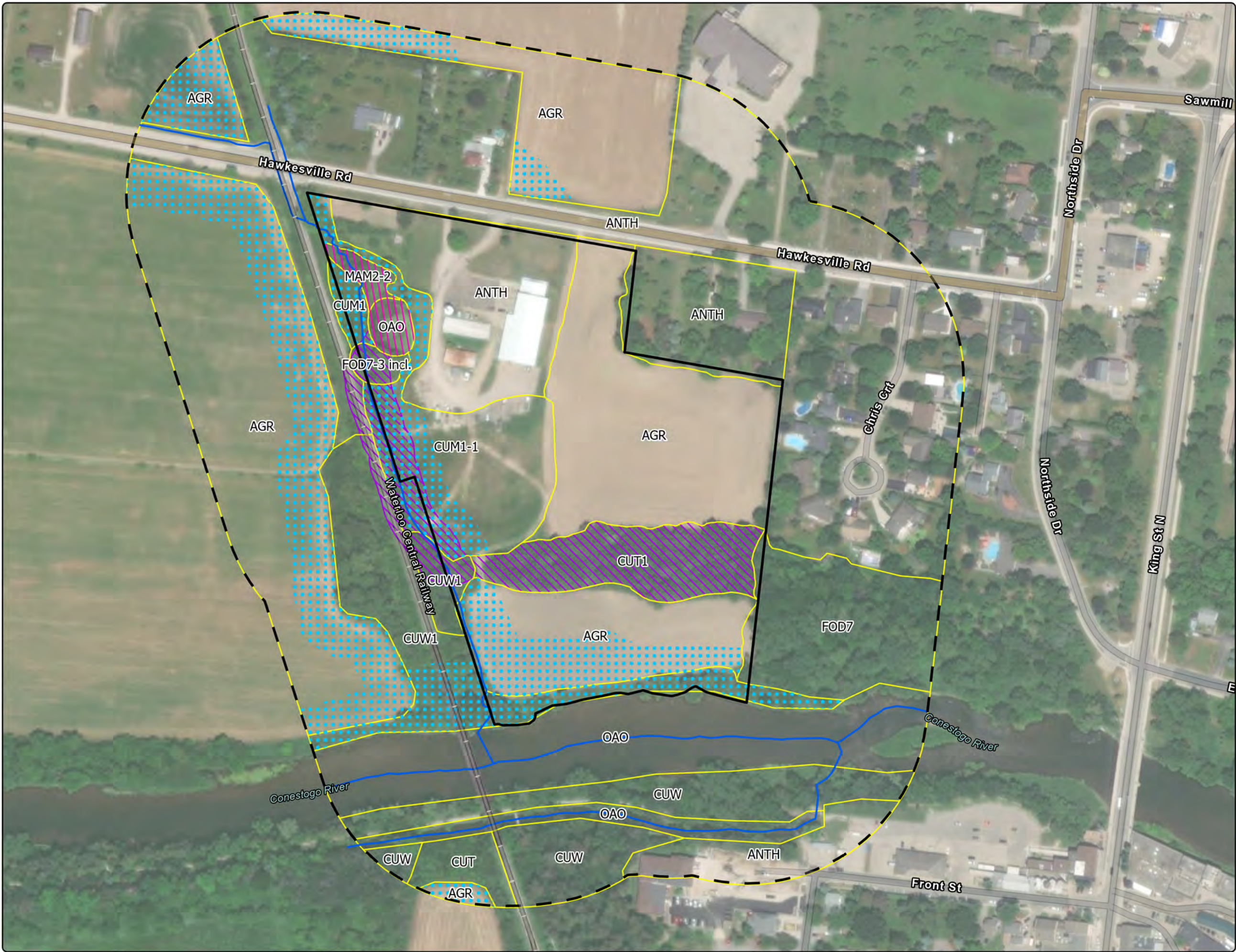


(NAD 1983 UTM Zone 17N)

Orthoimagery Source: Maxar, Microsoft, Sources: Esri, TomTom, Garmin, FAI, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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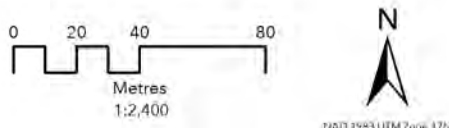




Map 6-3: Significant Wildlife Habitat - Specialized Habitat for Wildlife

Hawkesville Rd EIS

- Subject Property
- Study Area 120m Adjacent Lands
- Ontario Hydro Network Watercourses
- Ecological Land Classification
- Confirmed Amphibian Breeding Habitat (Wetland)
- Candidate Amphibian Movement Corridor
- Candidate Turtle Nesting Areas

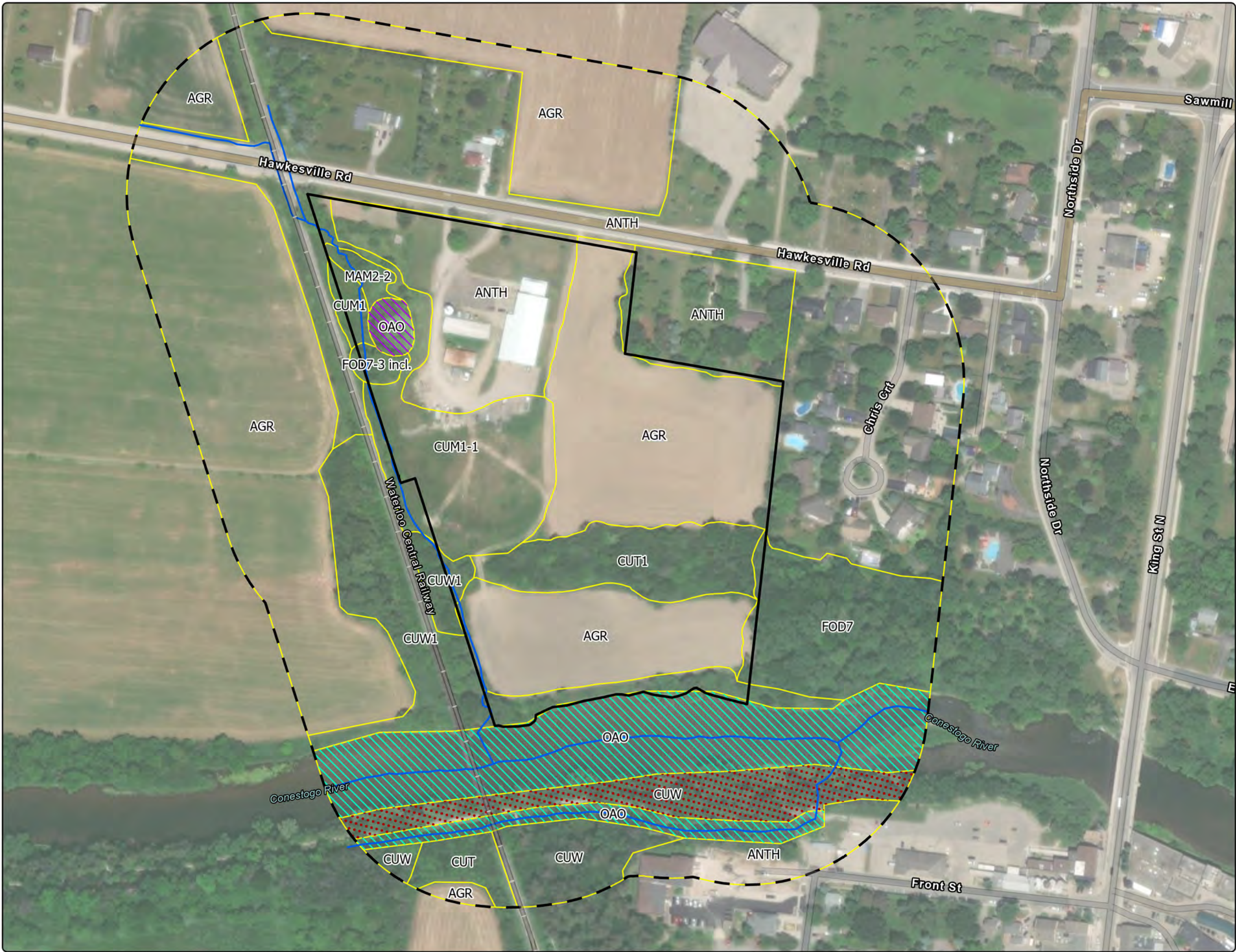


Orthoimagery Source: Maxar, Microsoft, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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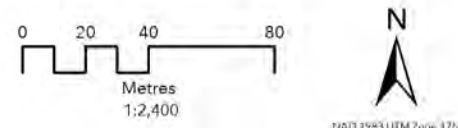
PROJECT: DA21-059-02
CLIENT: Polocorp
DATE: 13, January 2025
DRAWN BY: J.Sauder



Map 6-4: Significant Wildlife Habitat - Habitat for Species of Conservation Concern

Hawkesville Rd EIS

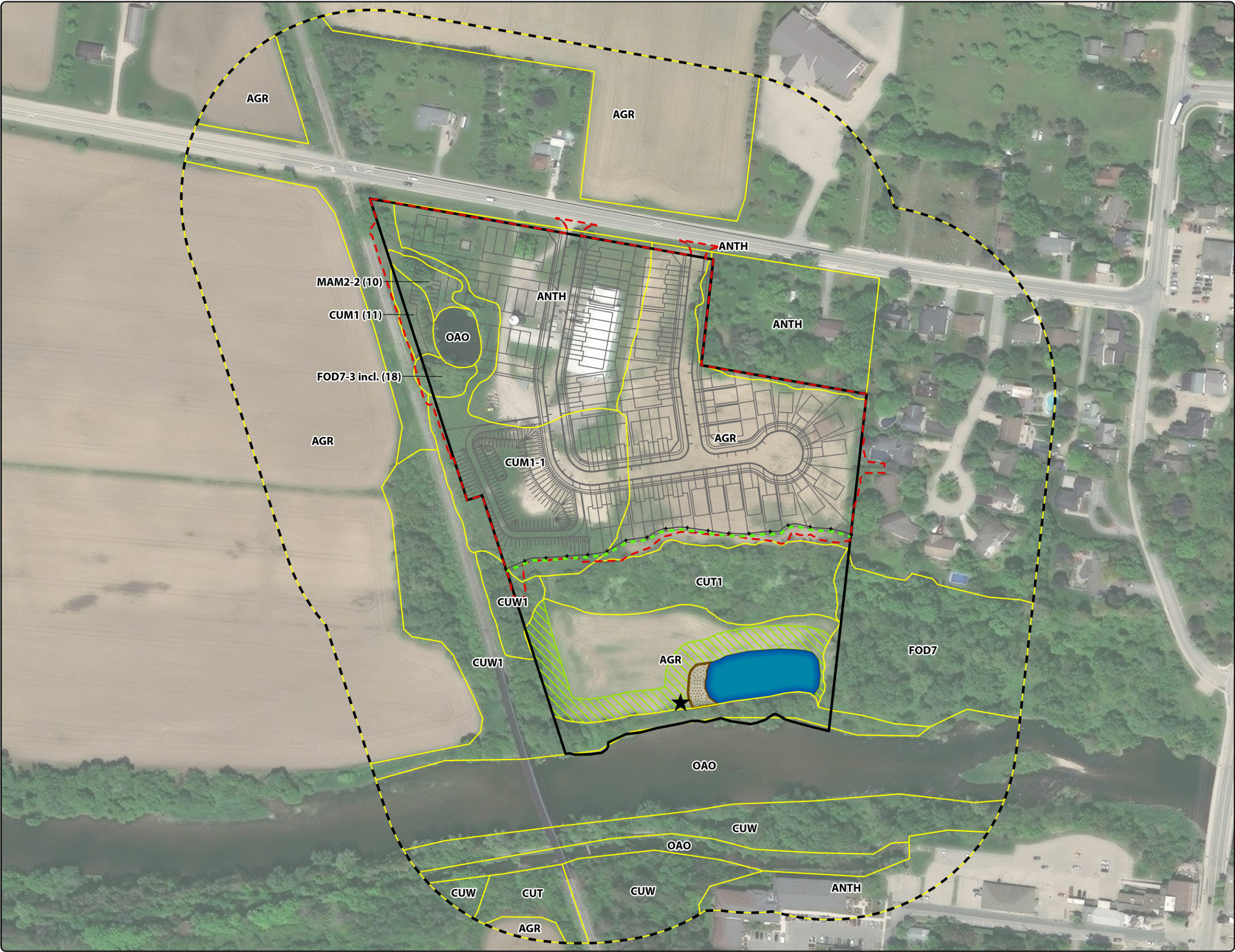
- Subject Property
- Study Area 120m Adjacent Lands
- Ontario Hydro Network Watercourses
- Ecological Land Classification
- Confirmed Special Concern and Rare Wildlife - Midland Painted Turtle
- Candidate Special Concern and Rare Wildlife - Snapping Turtle
- Candidate Special Concern and Rare Wildlife - Bald Eagle, Eastern Wood-Pewee, Rusty Blackbird, Common Nighthawk



Orthoimagery Source: Maxar, Microsoft, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation. MNRF data provided by Queen's Printer of Ontario. Use of the data in any derivative product does not constitute an endorsement by the MNRF or the Ontario Government of such products.

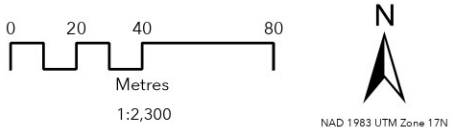
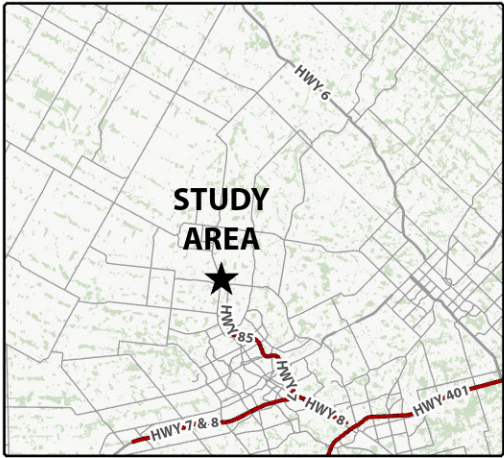




Map 7: Mitigation and Enhancement Strategies

Hawkesville Rd EIS Phase 1

- Site Boundary (Polocorp, 2024)
- Adjacent Lands (120m)
- Limit of Disturbance (Polocorp, June 2026)
- Site Plan (Polocorp, June 2026)
- Chain Link Fence
- 10m Buffer
- Conceptual Linkage and Riparian Enhancement (0.35ha)
- Conceptual Turtle Overwintering and Amphibian Breeding Habitat Enhancement (0.20ha)
- Conceptual Turtle Nesting Habitat Enhancement (0.03ha)
- Conceptual Bat Rocketbox/Condo Location



Orthoimagery Source: Vantor

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation. MNRF data provided by Queen's Printer of Ontario. Use of the data in any derivative product does not constitute an endorsement by the MNRF or the Ontario Government of such products.



A large, stylized graphic of a plant with five leaves, rendered in a light gray color. The leaves are arranged in a symmetrical, fan-like pattern, with one leaf at the top and two pairs branching out downwards. The text is centered over the upper portion of this graphic.

APPENDIX A - Consolidated Background Species Records

Appendix A. Consolidated Background Species Records

Species Records		Status			Background Source				
Scientific Name	Common Name	S Rank	SARO	SARA	GBIF	iNaturalist	NHIC	DFO	NC
<i>Agelaius phoeniceus</i>	Red-winged blackbird	S4			X				X
<i>Anas platyrhynchos</i>	Mallard	S5			X	X			
<i>Anemone virginiana</i>	Tall thimbleweed	S5			X				
<i>Ardea herodias</i>	Great blue heron	S4B			X				
<i>Bombycilla cedrorum</i>	Cedar waxwing	S5B			X				
<i>Branta canadensis</i>	Canada goose	S5			X				
<i>Bubo scandiacus</i>	Snowy owl	SNA				X			
<i>Buteo jamaicensis</i>	Red-tailed hawk	S5				X			
<i>Cardinalis cardinalis</i>	Northern cardinal	S5			X				
<i>Charadrius vociferus</i>	Killdeer	S5B, S5N			X				
<i>Chelidonium majus</i>	Greater celandine	SNA			X				X
<i>Chelydra serpentina</i>	Snapping Turtle	S3	SC	SC			X	X	
<i>Coccinella novemnotata</i>	Nine-spotted Lady Beetle	SH	END	END			X		
<i>Coccinella transversoguttata</i>	Transverse Lady Beetle	SH					X		
<i>Columba livia</i>	Rock dove	SNA			X				X
<i>Corvus brachyrhynchos</i>	American crow	S5B			X				
<i>Cyanocitta cristata</i>	Blue jay	S5			X				
<i>Dolichonyx oryzivorus</i>	Bobolink	S4B	THR	THR			X		
<i>Dryobates pubescens</i>	Downy woodpecker	S5			X				
<i>Echinocystis lobata</i>	Wild cucumber	S5			X	X			
<i>Falco sparverius</i>	American kestrel	S4			X				X
<i>Fraxinus nigra</i>	Black Ash	S4	END	END	X				X
<i>Hylocichla mustelina</i>	Wood Thrush	S4B	SC	THR			X		
<i>Juglans cinerea</i>	Butternut	S2?	END	END			X		
<i>Lampsilis fasciola</i>	Wavy-rayed Lampmussel	S2	THR	SC			X	X	
<i>Meleagris gallopavo</i>	Wild turkey	S5			X				X
<i>Melospiza melodia</i>	Song sparrow	S5B			X				X
<i>Mergus merganser</i>	Common merganser	S5B, S5N			X				
<i>Moxostoma duquesnei</i>	Black Redhorse	S2	THR	THR				X	
<i>Moxostoma valenciennesi</i>	Greater Redhorse	S3					X		
<i>Notropis photogenis</i>	Silver Shiner	S2	THR	THR			X		
<i>Phalaris arundinacea</i>	Reed canary grass	S5				X			
<i>Poecile atricapillus</i>	Black-capped chickadee	S5			X				X
<i>Quiscalus quiscula</i>	Common grackle	S5B			X				
<i>Sitta carolinensis</i>	White-breastedn nuthatch	S5			X				
<i>Spinus tristis</i>	American goldfinch	S5B			X	X			
<i>Sturnus vulgaris</i>	European starling	SNA			X				X
<i>Troglodytes aedon</i>	House wren	S5B			X				
<i>Turdus migratorius</i>	American robin	S5B			X				
<i>Villosa iris</i>	Rainbow Mussel	S2S3	THR	SC			X	X	

SARO - Species at Risk in Ontario

SARA - Species at Risk Act (Canada)

GBIF - Global Biodiversity Information Facility

NHIC - Natural Heritage Information Centre

DFO - Department of Fisheries and Oceans (Canada)

NC - Nature Counts

A large, stylized graphic of a plant with five leaves. The leaves are arranged in a symmetrical, fan-like pattern. The top leaf is a light gray, while the four leaves below it are a slightly darker gray. The leaves are simple, elongated shapes with pointed tips and smooth, curved edges.

APPENDIX B - Vascular Plant List by Polygon

Appendix B. Vascular Plant List by Polygon

Scientific Name	Common Name	SARO	SARA	COSEWIC	Native Status	NHIC Tracks	Waterloo	CC	CW	SRank	1	2	3	4	5	6	8	9	10	11	12
<i>Acer negundo</i>	Manitoba Maple	---	---	---	N	N	---	0	0 S5	X	X	X	---	X	---	---	---	X	X	X	
<i>Acer saccharinum</i>	Silver Maple	---	---	---	N	N	---	5	-3 S5	---	---	---	---	---	---	---	---	X	---	---	
<i>Acer saccharum</i>	Sugar Maple	---	---	---	N	N	---	4	3 S5	---	---	X	---	---	---	X	---	---	---	---	
<i>Agrostis gigantea</i>	Redtop	---	---	---	I	N	---	---	-3 SNA	X	---	---	---	X	---	---	X	X	---	---	
<i>Agrostis stolonifera</i>	Creeping Bentgrass	---	---	---	I	N	---	---	-3 SNA	---	X	---	---	X	---	---	X	---	---	---	
<i>Alliaria petiolata</i>	Garlic Mustard	---	---	---	I	N	---	---	0 SNA	X	X	X	---	X	---	---	---	X	X	X	
<i>Ambrosia artemisiifolia</i>	Common Ragweed	---	---	---	N	N	---	0	3 S5	X	---	---	---	---	---	---	---	---	---	---	
<i>Arctium minus</i>	Common Burdock	---	---	---	I	N	---	---	3 SNA	X	X	---	---	X	---	---	---	X	X	X	
<i>Artemisia biennis</i>	Biennial Wormwood	---	---	---	I	N	---	---	-3 SNA	X	X	---	---	---	---	---	---	---	---	---	
<i>Asclepias syriaca</i>	Common Milkweed	---	---	---	N	N	---	0	5 S5	X	---	---	---	---	---	---	---	---	---	---	
<i>Atriplex dioica</i>	Saline Saltbush	---	---	---	N	Y	---	---	-3 S2?	---	---	X	---	---	---	---	---	---	---	---	
<i>Barbarea vulgaris</i>	Bitter Wintercress	---	---	---	I	N	---	---	0 SNA	X	---	---	---	---	---	---	---	X	X	X	
<i>Betula pendula</i>	Weeping Birch	---	---	---	I	N	---	---	0 SNA	---	---	---	---	---	X	---	---	---	---	---	
<i>Bidens frondosa</i>	Devil's Beggarticks	---	---	---	N	N	---	3	-3 S5	---	X	---	---	---	---	---	X	X	---	---	
<i>Bromus inermis</i>	Smooth Brome	---	---	---	I	N	---	---	5 SNA	---	X	---	---	X	---	---	---	---	---	---	
<i>Calystegia sepium</i>	Hedge False Bindweed	---	---	---	N	N	---	2	0 S5	X	X	---	---	---	---	---	---	---	---	---	
<i>Calystegia sp</i>	Bindweed Species	---	---	---	G	---	---	---	---	---	---	---	---	X	---	---	---	---	---	---	
<i>Carex gracilescens</i>	Slender Loose-flowered Sedge	---	---	---	N	N	---	7	5 S4	---	---	---	---	X	---	---	---	---	---	---	
<i>Carex sp</i>	(<i>Carex saxatilis</i> X <i>Carex vesicaria</i>)	---	---	---	N	---	---	---	-5 S5	---	---	---	---	---	---	---	---	---	X	---	
<i>Carex vulpinoidea</i>	Fox Sedge	---	---	---	N	N	---	3	-5 S5	---	---	---	---	---	---	---	X	X	---	---	
<i>Chelidonium majus</i>	Greater Celandine	---	---	---	I	N	---	---	5 SNA	---	---	---	---	X	---	---	---	---	---	X	
<i>Circaea canadensis</i>	Broad-leaved Enchanter's Nightshade	---	---	---	N	N	---	2	3 S5	---	---	---	---	X	---	---	---	---	---	---	
<i>Cirsium arvense</i>	Canada Thistle	---	---	---	I	N	---	---	3 SNA	X	X	---	---	X	---	---	---	X	---	---	
<i>Cirsium vulgare</i>	Bull Thistle	---	---	---	I	N	---	---	3 SNA	---	---	---	---	---	---	---	---	---	X	X	
<i>Cornus sericea</i>	Red-osier Dogwood	---	---	---	N	N	---	2	-3 S5	---	X	---	---	X	---	---	---	X	---	---	
<i>Crataegus punctata</i>	Dotted Hawthorn	---	---	---	N	N	---	4	5 S5	---	---	X	---	X	---	---	---	---	---	---	
<i>Dactylis glomerata</i>	Orchard Grass	---	---	---	I	N	---	---	3 SNA	---	---	---	---	X	---	---	---	---	---	---	
<i>Daucus carota</i>	Wild Carrot	---	---	---	I	N	---	---	5 SNA	X	X	---	---	---	---	---	---	---	---	---	
<i>Digitaria sp</i>	Crabgrass Species	---	---	---	G	---	---	---	---	---	X	---	---	---	---	---	---	---	---	---	
<i>Dipsacus fullonum</i>	Common Teasel	---	---	---	I	N	---	---	3 SNA	X	X	---	X	---	X	---	---	X	X	X	
<i>Echinocystis lobata</i>	Wild Cucumber	---	---	---	N	N	---	3	-3 S5	---	---	X	---	---	---	---	---	X	X	---	
<i>Elymus repens</i>	Quackgrass	---	---	---	I	N	---	---	3 SNA	X	---	---	---	---	---	---	---	---	---	---	
<i>Epilobium hirsutum</i>	Hairy Willowherb	---	---	---	I	N	---	---	-3 SNA	---	X	---	---	---	---	---	X	X	---	---	
<i>Equisetum arvense</i>	Field Horsetail	---	---	---	N	N	---	0	0 S5	---	---	---	---	---	---	---	---	X	---	---	
<i>Erigeron annuus</i>	Annual Fleabane	---	---	---	N	N	---	0	3 S5	X	---	---	---	---	---	---	---	X	---	---	
<i>Erigeron canadensis</i>	Canada Horseweed	---	---	---	N	N	---	---	S5	---	---	---	---	X	---	---	---	---	---	---	
<i>Erigeron philadelphicus</i>	Philadelphia Fleabane	---	---	---	N	N	---	1	-3 S5	---	---	---	---	X	---	---	---	---	---	---	
<i>Erigeron sp</i>	Fleabane Species	---	---	---	N	N	---	---	S5	---	X	---	---	---	---	---	---	---	---	---	
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	---	---	---	N	N	---	2	0 S5	X	---	---	---	---	---	---	---	X	---	---	
<i>Eutrochium maculatum</i>	Spotted Joe Pye Weed	---	---	---	N	N	---	3	-5 S5	---	---	---	---	X	---	---	---	X	---	---	
<i>Fraxinus americana</i>	White Ash	---	---	---	N	N	---	4	3 S4	---	---	X	---	2	---	X	---	---	---	---	
<i>Galium aparine</i>	Common Bedstraw	---	---	---	N	N	---	4	3 S5	---	---	X	---	X	---	---	---	X	---	X	
<i>Galium mollugo</i>	Smooth Bedstraw	---	---	---	I	N	---	---	5 SNA	X	---	---	---	---	---	---	---	X	X	X	
<i>Galium palustre</i>	Common Marsh Bedstraw	---	---	---	N	N	---	5	-5 S5	---	---	---	---	---	---	---	X	X	---	---	
<i>Galium sp</i>	Rough Bedstraw	---	---	---	N	---	---	6	-5 S5	---	X	---	---	---	---	---	---	---	---	---	
<i>Geranium robertianum</i>	Herb-Robert	---	---	---	N	N	---	2	3 S5	---	---	X	---	---	---	---	---	---	---	---	
<i>Geum canadense</i>	Canada Avens	---	---	---	N	N	---	3	0 S5	---	---	X	---	---	---	---	---	---	---	---	
<i>Geum laciniatum</i>	Rough Avens	---	---	---	N	N	---	10	3 S4	---	---	---	---	X	---	---	---	---	---	---	
<i>Geum sp</i>	Avens Species	---	---	---	G	---	---	---	---	---	---	---	---	---	---	---	X	X	---	X	
<i>Geum urbanum</i>	Wood Avens	---	---	---	I	N	---	---	5 SNA	---	X	---	---	---	---	---	---	---	---	---	

Appendix B. Vascular Plant List by Polygon

<i>Glechoma hederacea</i>	Ground-ivy	---	---	---	I	N	---	---	5 SNA	---	---	X	---	---	---	---	---	---	---
<i>Glechoma hederacea</i>	Ground-ivy	---	---	---	I	N	---	---	3 SNA	---	X	---	---	X	---	---	X	---	X
<i>Hesperis matronalis</i>	Dame's Rocket	---	---	---	I	N	---	---	3 SNA	X	X	X	---	X	---	---	---	X	X
<i>Hydrophyllum virginianum</i>	Virginia Waterleaf	---	---	---	N	N	---	6	0 S5	---	---	---	---	---	---	---	X	---	---
<i>Impatiens capensis</i>	Spotted Jewelweed	---	---	---	N	N	---	4	-3 S5	---	X	---	---	---	---	---	X	X	X
<i>Impatiens glandulifera</i>	Purple Jewelweed	---	---	---	I	N	---	---	-3 SNA	---	X	---	---	---	---	---	---	---	---
<i>Juglans cinerea</i>	Butternut	END	END	END	N	Y	---	6	3 S2?	---	---	---	---	---	---	---	X	---	---
<i>Juglans nigra</i>	Black Walnut	---	---	---	N	N	R+*	5	3 S4?	---	X	X	---	X	---	---	X	---	---
<i>Juncus dudleyi</i>	Dudley's Rush	---	---	---	N	N	---	1	-3 S5	---	---	---	---	---	---	---	X	X	---
<i>Juncus sp</i>	Rush Species	---	---	---	G	---	---	---	---	---	X	---	---	---	---	---	---	---	---
<i>Lamium purpureum</i>	Purple Dead-nettle	---	---	---	I	N	---	---	5 SNA	X	---	---	---	---	---	---	---	---	---
<i>Leonurus cardiaca</i>	Common Motherwort	---	---	---	I	N	---	---	5 SNA	---	X	---	---	X	---	---	---	X	X
<i>Lolium arundinaceum</i>	Tall Ryegrass	---	---	---	I	N	---	---	3 SNA	---	X	---	---	---	---	---	---	---	---
<i>Lonicera morrowii</i>	Morrow's Honeysuckle	---	---	---	I	N	---	---	3 SNA	---	X	---	---	---	---	---	---	---	---
<i>Lonicera sp</i>	Honeysuckle Species	---	---	---	G	---	---	---	---	---	X	---	X	---	---	---	---	---	---
<i>Lotus corniculatus</i>	Garden Bird's-foot Trefoil	---	---	---	I	N	---	---	3 SNA	X	X	---	---	---	---	---	---	---	---
<i>Lycopus uniflorus</i>	Northern Water-horehound	---	---	---	N	N	---	5	-5 S5	---	---	---	---	---	---	---	X	X	---
<i>Lysimachia nummularia</i>	Creeping Yellow Loosestrife	---	---	---	I	N	---	---	-3 SNA	---	---	X	---	X	---	---	---	---	---
<i>Malus pumila</i>	Common Apple	---	---	---	I	N	---	---	5 SNA	---	X	X	---	X	---	X	---	---	---
<i>Medicago lupulina</i>	Black Medick	---	---	---	I	N	---	---	3 SNA	X	---	---	---	---	---	---	---	---	---
<i>Medicago sativa</i>	Alfalfa	---	---	---	I	N	---	---	5 SNA	X	---	---	X	---	X	---	---	---	---
<i>Mentha canadensis</i>	Canada Mint	---	---	---	N	N	---	3	-3 S5	---	---	---	---	---	---	---	X	---	---
<i>Miscanthus sacchariflorus</i>	Amur Silvergrass	---	---	---	I	N	---	---	5 SNA	X	---	---	---	---	---	---	---	---	---
<i>Nepeta cataria</i>	Catnip	---	---	---	I	N	---	---	3 SNA	X	X	---	---	---	---	---	---	---	---
<i>Oxalis sp</i>	Wood Sorrel Species	---	---	---	G	---	---	---	---	X	---	---	---	---	---	---	---	---	---
<i>Panicum capillare</i>	Common Panicgrass	---	---	---	N	N	---	0	0 S5	---	X	---	---	---	---	---	---	---	---
<i>Panicum virgatum</i>	Old Switch Panicgrass	---	---	---	N	N	---	6	0 S4	---	X	---	---	---	---	---	---	---	---
<i>Parthenocissus quinquefolia</i>	Virginia Creeper	---	---	---	N	N	R+	6	3 S4?	---	X	---	---	---	---	---	---	---	---
<i>Persicaria maculosa</i>	Spotted Lady's-thumb	---	---	---	I	N	---	---	-3 SNA	X	---	---	---	---	---	---	---	---	---
<i>Phalaris arundinacea</i>	Reed Canarygrass	---	---	---	N	N	---	0	-3 S5	X	X	X	---	X	---	---	X	X	X
<i>Phragmites australis</i>	Common Reed	---	---	---	N	N	---	0	-3 SU	X	---	---	---	---	---	---	---	---	---
<i>Plantago lanceolata</i>	English Plantain	---	---	---	I	N	---	---	3 SNA	X	X	---	---	---	---	---	---	---	---
<i>Plantago major</i>	Common Plantain	---	---	---	I	N	---	---	3 SNA	X	---	---	---	---	---	---	---	---	---
<i>Poa pratensis</i>	Kentucky Bluegrass	---	---	---	N	P	---	0	3 S5	X	---	---	---	---	---	---	---	---	---
<i>Populus deltoides</i>	Eastern Cottonwood	---	---	---	N	P	---	4	0 S5	X	---	---	---	---	---	---	---	---	---
<i>Ranunculus repens</i>	Creeping Buttercup	---	---	---	I	N	---	---	0 SNA	---	X	---	---	---	---	---	---	---	---
<i>Raphanus raphanistrum</i>	Wild Radish	---	---	---	I	N	---	---	5 SNA	X	---	---	---	---	---	---	---	---	---
<i>Rhamnus cathartica</i>	European Buckthorn	---	---	---	I	N	---	---	0 SNA	---	X	X	---	X	---	---	X	---	X
<i>Rhus typhina</i>	Staghorn Sumac	---	---	---	N	N	---	1	3 S5	---	X	---	---	---	---	---	---	---	X
<i>Rosa canina</i>	Dog Rose	---	---	---	I	N	---	---	5 SNA	---	X	---	---	---	---	---	---	---	---
<i>Rubus idaeus ssp. strigosus</i>	North American Red Raspberry	---	---	---	N	N	---	2	3 S5	---	X	---	---	X	---	---	---	---	---
<i>Rumex crispus</i>	Curled Dock	---	---	---	I	N	---	---	0 SNA	X	X	---	---	X	---	---	---	---	---
<i>Salix alba</i>	White Willow	---	---	---	I	N	---	---	-3 SNA	---	---	---	---	---	---	---	X	---	---
<i>Salix amygdaloides</i>	Peach-leaved Willow	---	---	---	N	N	---	6	-3 S5	---	---	---	---	X	---	---	---	---	---
<i>Salix bebbiana</i>	Bebb's Willow	---	---	---	N	N	---	4	-3 S5	---	---	---	---	---	---	---	X	---	---
<i>Salix discolor</i>	Pussy Willow	---	---	---	N	N	---	3	-3 S5	---	---	---	---	X	---	---	---	---	---
<i>Salix serissima</i>	Autumn Willow	---	---	---	N	N	R	6	-5 S5	---	---	---	---	---	---	---	X	---	---
<i>Salix sp</i>	Willow Species	---	---	---	G	---	---	---	---	X	---	---	---	X	---	---	---	---	---
<i>Salix x fragilis</i>	(<i>Salix alba</i> X <i>Salix euxina</i>)	---	---	---	I	N	---	---	SNA	---	X	X	---	X	---	---	---	---	X
<i>Sambucus canadensis</i>	Common Elderberry	---	---	---	N	N	---	5	-3 S5	---	X	---	---	---	---	---	---	---	---
<i>Scirpus atrovinctus</i>	Black-girdled Bulrush	---	---	---	N	N	---	5	-5 S5	---	---	---	---	---	---	---	X	---	---
<i>Securigera varia</i>	Purple Crown-vetch	---	---	---	I	N	---	---	SNA	X	---	---	---	---	---	---	---	---	---

Appendix B. Vascular Plant List by Polygon

<i>Securigera varia</i>	Purple Crown-vetch	---	---	---	I	N	---	---	5	SNA	X	---	---	---	---	---	---	X	---	---
<i>Setaria sp</i>	Foxtail Species	---	---	---	G		---	---	---	---	X	---	---	X	---	X	---	---	---	---
<i>Silene coronaria</i>	Rose Campion	---	---	---	I	N	---	---	---	SNA	X	---	---	---	---	---	---	---	---	---
<i>Solanum dulcamara</i>	Bittersweet Nightshade	---	---	---	I	N	---	---	0	SNA	---	X	---	---	---	---	---	---	---	---
<i>Solanum nigrum</i>	Black Nightshade	---	---	---	I	N	---	---	0	SNA	X	---	---	---	---	---	---	---	---	---
<i>Solanum sp</i>	Nightshade Species	---	---	---	G		---	---	---	---	---	---	---	X	---	---	---	---	---	---
<i>Solidago canadensis</i>	Canada Goldenrod	---	---	---	N	N	---	1	3	S5	X	X	---	---	X	---	---	X	---	---
<i>Solidago gigantea</i>	Giant Goldenrod	---	---	---	N	P	---	4	-3	S5	---	---	X	---	X	---	---	---	---	---
<i>Sonchus arvensis</i>	Field Sow-thistle	---	---	---	I	N	---	---	3	SNA	X	X	---	---	---	---	---	---	---	---
<i>Symphyotrichum lanceolatum</i>	Panicled Aster	---	---	---	N	P	---	3	-3	S5	X	X	---	---	X	---	---	X	X	---
<i>Symphyotrichum lateriflorum</i>	Calico Aster	---	---	---	N	P	---	3	0	S5	---	---	---	---	X	---	---	---	---	---
<i>Symphyotrichum novae-angliae</i>	New England Aster	---	---	---	N	N	---	2	-3	S5	X	X	---	---	---	---	---	X	---	---
<i>Symphyotrichum pilosum</i>	Old Field Aster	---	---	---	N	N	---	---	3	S5	X	---	---	---	---	---	---	---	---	---
<i>Symphyotrichum puniceum</i>	Purple-stemmed Aster	---	---	---	N	N	---	6	-5	S5	---	X	---	---	---	---	---	X	X	---
<i>Tanacetum vulgare</i>	Common Tansy	---	---	---	I	N	---	---	5	SNA	X	X	---	---	---	---	---	---	---	---
<i>Taraxacum officinale</i>	Common Dandelion	---	---	---	I	N	---	---	3	SNA	X	---	---	---	X	---	---	X	X	---
<i>Teucrium canadense</i>	Canada Germander	---	---	---	N	N	---	6	-3	S4S5	---	---	---	---	X	---	---	---	---	---
<i>Torilis japonica</i>	Erect Hedge-parsley	---	---	---	I	N	---	---	3	SNA	X	---	---	---	---	---	---	---	---	---
<i>Trifolium pratense</i>	Red Clover	---	---	---	I	N	---	---	3	SNA	X	---	---	---	---	---	---	---	---	---
<i>Trifolium repens</i>	White Clover	---	---	---	I	N	---	---	3	SNA	X	X	---	---	---	---	---	---	---	---
<i>Tripleurospermum inodorum</i>	Scentless Chamomile	---	---	---	I	N	---	---	0	SNA	---	X	---	---	---	---	---	---	---	---
<i>Tussilago farfara</i>	Coltsfoot	---	---	---	I	N	---	---	3	SNA	---	X	---	---	---	---	---	---	---	---
<i>Typha angustifolia</i>	Narrow-leaved Cattail	---	---	---	I	N	---	---	-5	SNA	---	---	---	---	---	---	---	X	X	---
<i>Typha latifolia</i>	Broad-leaved Cattail	---	---	---	N	N	---	1	-5	S5	---	---	---	---	---	---	---	X	X	---
<i>Urtica dioica</i>	Stinging Nettle	---	---	---	N	N	---	---	0	SNA	---	---	---	---	X	---	---	---	X	X
<i>Verbascum thapsus</i>	Common Mullein	---	---	---	I	N	---	---	5	SNA	X	---	---	---	---	---	---	---	---	---
<i>Verbena hastata</i>	Blue Vervain	---	---	---	N	N	---	4	-3	S5	---	X	---	---	---	---	---	X	X	---
<i>Viola sororia</i>	Woolly Blue Violet	---	---	---	N	N	---	4	0	S5	---	---	---	---	---	---	---	---	---	X
<i>Viola sp</i>	Violet Species	---	---	---	G		---	---	---	---	---	---	---	X	---	---	---	---	---	---
<i>Vitis riparia</i>	Riverbank Grape	---	---	---	N	N	---	0	0	S5	X	X	---	---	X	---	---	X	---	---
<i>Wolffia brasiliensis</i>	Brazilian Watermeal	---	---	---	N	Y	---	4	-5	S2?	---	---	---	---	---	---	---	X	---	---

APPENDIX C - Tree Inventory



Tree Data Table

Tree Tag #	Tree Status	Common Name	Scientific Name	DBH1 (cm)	DBH2 (cm)	DBH3 (cm)	DBH4 (cm)	DBH5 (cm)	DBH6 (cm)	Crown Reserve (m)	Height (m)	Structural Condition	Biological Health	Preservation Priority	Native Status	GPS Horizontal Accuracy (m)	NAD83 UTM	X Coordinate	Zone 17N	Y Coordinate
201	Alive	Black Walnut	Juglans nigra	31	0	0	0	0	0	10	05-10 m	Medium	High	Medium	I	-0.55996744326307	43.542631294641	14	43.542631294641	14
202	Alive	Common Apple	Malus pumila	28	0	0	0	0	0	8	05-10 m	Medium	Medium	Medium	I	0.12432618388738552	-80.55860898033334		43.54242310583333	
203	Alive	Common Apple	Malus pumila	35	0	0	0	0	0	6	05-10 m	Low	Medium	Low	I	0.1265898890117216	-80.55820242		43.542535895000015	
204	Alive	Black Walnut	Juglans nigra	20	22	0	0	0	0	7	10-15 m	High	High	High	I	0.13232157798333574	-80.55794389166667		43.542599298333336	
205	Alive	Crack Willow	Salix eximia	60	0	0	0	0	0	6	05-10 m	Low	Low	Low	I	0.206932356097480	-80.55793156666666		43.54266748999999	
206	Alive	White Ash	Fraxinus americana	45	0	0	0	0	0	10	10-15 m	Low	Low	Low	N	0.0668057965343308	-80.55766528333334		43.542664550000005	
207	Alive	White Ash	Fraxinus americana	17	0	0	0	0	0	3	05-10 m	Low	Low	Low	N	-80.55759100666667	-80.55426865766667		43.54268657666667	
208	Alive	Dotted Hawthorn	Crataegus punctata	18	18	18	15	15	0	7	05-10 m	Medium	High	High	N	-80.5573995256742124	-80.5542677263333324		43.5426772633333324	
209	Alive	Black Walnut	Juglans nigra	16	14	0	0	0	0	5	05-10 m	High	High	High	N	0.0437931528500001	-80.55751528500001		43.542681865	
210	Alive	White Ash	Fraxinus americana	25	22	0	0	0	0	5	10-15 m	Medium	Low	Low	N	0.0336003952328288	-80.55466493220084		43.54266493220084	
211	Alive	Crack Willow	Salix eximia	80	0	0	0	0	0	9	10-15 m	Low	Medium	Low	I	-80.55689061500001	-80.5426565085395535		43.5426565085395535	
212	Alive	Black Walnut	Juglans nigra	33	0	0	0	0	0	8	10-15 m	Medium	Medium	Medium	N	-80.55666177945878	-80.54265923056301		43.54265923056301	
212	Alive	Black Walnut	Juglans nigra	45	40	0	0	0	0	12	15-20 m	High	High	High	N	0.0724223223399962	-80.5568965		43.54265787666667	
214	Alive	Black Walnut	Juglans nigra	30	0	0	0	0	0	6	10-15 m	High	Medium	Medium	N	0.1241320963175202	-80.5565434		43.5426636833333	
215	Alive	Manitoba Maple	Acer negundo	37	0	0	0	0	0	9	05-10 m	Low	Low	Low	N	0.036891733491393436	-80.55652549833333		43.54266437500001	
216	Alive	Manitoba Maple	Acer negundo	25	0	0	0	0	0	4	05-10 m	Low	Low	Low	N	-80.5564223794588	-80.542622138581194		43.542622138581194	
217	Alive	Bitternut Hickory	Carya cordiformis	58	0	0	0	0	0	15	15-20 m	High	High	High	N	0.0702748884034769	-80.54260521666668		43.54260521666668	
218	Alive	Juglans nigra	Juglans nigra	39	0	0	0	0	0	10	10-15 m	High	High	High	N	0.024083189157584593	-80.54636048000002		43.54266071000001	
219	Alive	Black Walnut	Juglans nigra	24	0	0	0	0	0	7	05-10 m	High	High	High	N	0.04326661530556787	-80.562749833334		43.542645545	
220	Alive	Black Walnut	Juglans nigra	35	35	0	0	0	0	9	10-15 m	Medium	High	High	N	-80.55626934236491	-80.54279084229961		43.54279084229961	
221	Alive	Dotted Hawthorn	Crataegus punctata	18	18	18	18	0	0	6	05-10 m	Medium	Medium	Medium	N	0.08207990011563999	-80.55609797333332		43.5435109533333	
222	Alive	Sweet Cherry	Prunus avium	35	12	0	0	0	0	8	05-10 m	Low	Low	Low	I	0.0520377224270447	-80.54535344803333		43.54535344803333	
223	Alive	Silver Maple	Acer saccharinum	90	0	0	0	0	0	16	15-20 m	High	High	High	N	-80.556654685	-80.54362963133334		43.54362963133334	
24	Alive	Norway Maple	Acer platanoides	21	0	0	0	0	0	5	05-10 m	High	High	High	I	-80.55672325	-80.543656260000006		43.543656260000006	
225	Alive	Norway Maple	Acer platanoides	16	0	0	0	0	0	4	05-10 m	High	High	High	I	0.05420352093147061	-80.55676685166667		43.54365572833333	
226	Alive	Norway Maples	Acer platanoides	28	0	0	0	0	0	6	05-10 m	High	High	High	I	0.0664392093402518	-80.55687348333333		43.54367011833333	
227	Alive	Norway Maple	Acer platanoides	21	19	0	0	0	0	6	05-10 m	High	High	High	I	0.05517245689653488	-80.55694427833333		43.54368334333334	
228	Alive	Sugar Maple	Acer saccharum	46	0	0	0	0	0	9	10-15 m	Medium	High	High	N	-80.55715117666666	-80.55715117666666		43.543713685	
229	Alive	Silver Maple	Acer saccharinum	73	0	0	0	0	0	16	10-15 m	High	High	High	N	0.0680147042925278	-80.55719653333334		43.54372486666666	
230	Alive	Scots Pine	Pinus sylvestris	30	0	0	0	0	0	6	05-10 m	High	Medium	Medium	I	0.1224132467166668	-80.55470154071083333		43.54370154071083333	
231	Alive	Blue Spruce	Picea pungens	20	0	0	0	0	0	5	05-10 m	Medium	Medium	Medium	I	0.1211657165336682	-80.55698272666667		43.54374208833332	
232	Alive	Blue Spruce	Picea pungens	24	0	0	0	0	0	4	05-10 m	High	Medium	Medium	I	0.09970456358662827	-80.55696295999998		43.54376316666667	
233	Alive	Blue Spruce	Picea pungens	15	0	0	0	0	0	4	10-15 m	Medium	Medium	Medium	I	0.32521377584598105	-80.55700097500001		43.54377802	
234	Alive	Scots Pine	Pinus sylvestris	30	0	0	0	0	0	6	10-15 m	High	Medium	Medium	I	0.4569168414492948	-80.55703410999999		43.54377088333334	
235	Alive	Scots Pine	Pinus sylvestris	22	0	0	0	0	0	5	10-15 m	High	Medium	Medium	I	0.43101550607138317	-80.55705070166667		43.543723449999994	
236	Alive	Scots Pine	Pinus sylvestris	18	0	0	0	0	0	5	10-15 m	High	Medium	Medium	I	-80.55706927666667	-80.54379950666666		43.54379950666666	
237	Alive	Scots Pine	Pinus sylvestris	31	0	0	0	0	0	8	10-15 m	High	Medium	Medium	I	-80.5570439	-80.543793474999994		43.543793474999994	
238	Alive	Scots Pine	Pinus sylvestris	18	0	0	0	0	0	6	10-15 m	High	Medium	Medium	I	0.8687652159949007	-80.55703026666667		43.54379521666664	
239	Alive	Scots Pine	Pinus sylvestris	239	0	0	0	0	0	8	10-15 m	High	Medium	Medium	I	0.1937240381766412	-80.55704391666667		43.54380683166668	
24	Alive	Scots Pine	Pinus sylvestris	19	0	0	0	0	0	1	05-10 m	High	Low	Low	I	0.352636399646322664	-80.55700278166668		43.543805511666676	
241	Alive	Blue Spruce	Picea pungens	35	0	0	0	0	0	7	10-15 m	High	High	High	I	-80.55696837333333	-80.543815275		43.543815275	
242	Alive	Blue Spruce	Picea pungens	22	0	0	0	0	0	0	10-15 m	High	High	High	I	0.0924175308449618	-80.55691327333333		43.54381714999999	
243	Alive	Blue Spruce	Picea pungens	21	0	0	0	0	0	3	10-15 m	High	Medium	Medium	I	0.338753973660724	-80.55699437000001		43.54382612666666	
244	Alive	Scots Pine	Pinus sylvestris	23	0	0	0	0	0	5	10-15 m	Medium	Medium	Medium	I	0.1880957203128237	-80.55702353000001		43.543826399999994	
245	Alive	Scots Pine	Pinus sylvestris	20	0	0	0	0	0	3	10-15 m	High	Medium	Medium	I	-80.55703708866667	-80.54383139166666		43.54383139166666	
246	Alive	Scots Pine	Pinus sylvestris	32	0	0	0	0	0	0	10-15 m	Medium	Medium	Medium	I	0.4609002385083585	-80.55705258333333		43.54383594666666	
247	Alive	Scots Pine	Pinus sylvestris	17	0	0	0	0	0	0	05-10 m	High	Medium	Medium	I	0.2267096074999999	-80.55696959833332		43.54383594666666	
248	Alive	Scots Pine	Pinus sylvestris	21	0	0	0	0	0	4	10-15 m	High	Medium	Medium	I	2.0011732465246141	-80.55703348666665		43.54384701666667	
249	Alive	Scots Pine	Pinus sylvestris	21	0	0	0	0	0	3	10-15 m	High	Medium	Medium	I	0.2571089263327899	-80.55704005333335		43.54388098333336	
250	Alive	Blue Spruce	Picea pungens	18	0	0	0	0	0	4	10-15 m	High	Medium	Medium	I	0.46531064892177143	-80.557009515		43.54387024666667	
251	Alive	Blue Spruce	Picea pungens	28	0	0	0	0	0	5	10-15 m	High	Medium	Medium	I	0.7375228810009897	-80.55696959833332		43.54387024666667	
254	Alive	Blue Spruce	Picea pungens	23	0	0	0	0	0	5	10-15 m	High	Medium	Medium	I	0.170294638333324	-80.55691646833335		43.54387024666667	
265	Alive	Blue Spruce	Picea pungens	17	0	0	0	0	0	5	05-10 m	High	Medium	Medium	I	0.0882364701911644	-80.55693899999999		43.54389260333334	
266	Alive	Blue Spruce	Picea pungens	25	0	0	0	0	0	6	10-15 m	Medium	Medium	Medium	I	0.3539099297538116	-80.55698402500002		43.54389933333333	
267	Alive	Scots Pine	Pinus sylvestris	19	0	0	0	0	0	3	05-10 m	Medium	Medium	Medium	I	0.6180887170177998	-80.55702645833333		43.54387653333334	
268	Alive	Scots Pine	Pinus sylvestris	25	0	0	0	0	0	7	10-15 m	High	Medium	Medium	I	0.875600228931726	-80.55703026666667		43.54390416666667	
269	Alive	Scots Pine	Pinus sylvestris	28	0	0	0	0	0	7	10-15 m	High	High	Medium	I	-80.55705088333334	-80.54391284500001		43.54391284500001	
270	Alive	Scots Pine	Pinus sylvestris	25	0	0	0	0	0	6	05-10 m	High	Medium	Medium	I	1.4496020143473864	-80.54392263166667		43.54392263166667	
252	Alive	Silver Maple	Acer saccharinum	68	0	0	0	0	0	10	10-15 m	High	High	High	N	1.1311821250355754	-80.55682208333333		43.54376491666664	
253	Alive	White Ash	Fraxinus americana	19	0	0	0	0	0	1	05-10 m	Low	Low	Low	N	-80.55788078	-80.54428591666666		43.54428591666666	
254	Alive	White Ash	Fraxinus americana	13	0	0	0	0	0	1	05-10 m	Low	Low	Low	N	0.017888543819998316	-80.55787319		43.54428281	
255	Alive	White Ash	Fraxinus americana	13	0	0	0	0	0	4	03-05 m	Low	Low	Low	N	-80.5578785617833334	-80.54434495666656		43.54434495666656	
256	Alive	White Ash	Fraxinus americana	20	0	0	0	0	0	1	05-10 m	Low	Low	Low	N	-80.55783361	-80.544403465		43.544403465	
257	Alive	Norway Maple	Acer platanoides	19	0	0	0	0	0	6	05-10 m	High	High	High	I	0.09403100947758107	-80.55821399999999		43.54445305166668	
258	Alive	Norway Maple	Acer platanoides	23	0	0	0	0	0	7	05-10 m	High	High	High	I	0.03189084753803295	-80.55881313333332		43.54462676666676	
259	Alive	Norway Maple	A																	

APPENDIX D - Fauna Observations



Scientific Name ¹	Common Name ¹	Species Group	Breeding Evidence (Birds only) ²	SARA Status ³	COSEWIC ⁴	ESA Status ⁵	SRank ⁶	Area Sensitivity ⁷	Waterloo Region ⁸
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	BIRDS	NE	---	---	---	S4	---	---
All families of fishes	Unidentified fishes	FISHES	---	---	---	---	---	---	---
<i>Anas platyrhynchos</i>	Mallard	BIRDS	V	---	---	---	S5	---	---
<i>Anaxyrus americanus</i>	American Toad	AMPHIBIANS	---	---	---	---	S5	---	---
<i>Ardea herodias</i>	Great Blue Heron	BIRDS	X	---	---	---	S4	---	U
<i>Bombycilla cedrorum</i>	Cedar Waxwing	BIRDS	P	---	---	---	S5B	---	---
<i>Branta canadensis</i>	Canada Goose	BIRDS	H	---	---	---	S5	---	---
<i>Buteo jamaicensis</i>	Red-tailed Hawk	BIRDS	X	---	NAR	NAR	S5	---	---
<i>Canis latrans</i>	Coyote	MAMMALS	---	---	---	---	S5	---	S
<i>Cardinalis cardinalis</i>	Northern Cardinal	BIRDS	T	---	---	---	S5	---	---
<i>Catostomus commersonii</i>	White Sucker	FISHES	---	---	---	---	---	---	---
<i>Charadrius vociferus</i>	Killdeer	BIRDS	FY	---	---	---	S5B,S5N	---	---
<i>Chrysemys picta marginata</i>	Midland Painted Turtle	REPTILES	---	SC	---	SC	S4	---	---
<i>Colaptes auratus</i>	Northern Flicker	BIRDS	H	---	---	---	S4B	---	---
<i>Columba livia</i>	Rock Pigeon	BIRDS	P	---	---	---	SNA	---	---
<i>Contopus virens</i>	Eastern Wood-Pewee	BIRDS	S	SC	SC	SC	S4B	---	---
<i>Cyanocitta cristata</i>	Blue Jay	BIRDS	H	---	---	---	S5	---	---
<i>Dryobates pubescens</i>	Downy Woodpecker	BIRDS	H	---	---	---	S5	---	---
<i>Dryobates villosus</i>	Hairy Woodpecker	BIRDS	H	---	---	---	S5	AS	U
<i>Dumetella carolinensis</i>	Gray Catbird	BIRDS	S	---	---	---	S4B	---	---
<i>Eptesicus fuscus</i>	Big Brown Bat	MAMMALS	---	---	---	---	S4	---	---
<i>Geothlypis trichas</i>	Common Yellowthroat	BIRDS	T	---	---	---	S5B	---	---
<i>Haemorhous mexicanus</i>	House Finch	BIRDS	H	---	---	---	SNA	---	---
<i>Hirundo rustica</i>	Barn Swallow	BIRDS	P	THR	SC	SC	S4B	---	---
<i>Icterus galbula</i>	Baltimore Oriole	BIRDS	P	---	---	---	S4B	---	---
<i>Lasiorycteris noctivagans</i>	Silver-haired Bat	MAMMALS	---	---	---	---	S4	---	---
<i>Lasiurus cinereus</i>	Northern Hoary Bat	MAMMALS	---	---	---	---	S4	---	---
<i>Lithobates catesbeianus</i>	American Bullfrog	AMPHIBIANS	---	---	---	---	S4	AS	R
<i>Lithobates clamitans</i>	Green Frog	AMPHIBIANS	---	---	---	---	S5	---	---
<i>Lithobates pipiens</i>	Northern Leopard Frog	AMPHIBIANS	---	---	NAR	---	S5	---	---
<i>Marmota monax</i>	Woodchuck	MAMMALS	---	---	---	---	S5	---	---
<i>Megaceryle alcyon</i>	Belted Kingfisher	BIRDS	CF	---	---	---	S4B	---	U
<i>Melanerpes carolinus</i>	Red-bellied Woodpecker	BIRDS	X	---	---	---	S4	---	R
<i>Meleagris gallopavo</i>	Wild Turkey	BIRDS	H	---	---	---	S5	---	---
<i>Melospiza georgiana</i>	Swamp Sparrow	BIRDS	S	---	---	---	S5B	---	U
<i>Melospiza melodia</i>	Song Sparrow	BIRDS	DD	---	---	---	S5B	---	---
<i>Micropterus dolomieu</i>	Smallmouth Bass	FISHES	---	---	---	---	---	---	---
<i>Molothrus ater</i>	Brown-headed Cowbird	BIRDS	FY	---	---	---	S4B	---	---
<i>Mustela vison</i>	American Mink	MAMMALS	---	---	---	---	S4	---	---
<i>Myiarchus crinitus</i>	Great Crested Flycatcher	BIRDS	S	---	---	---	S4B	---	---
<i>Myotis lucifugus</i>	Little Brown Myotis	MAMMALS	---	END	END	END	S3	---	---
<i>Odocoileus virginianus</i>	White-tailed Deer	MAMMALS	---	---	---	---	S5	---	---
<i>Passer domesticus</i>	House Sparrow	BIRDS	AE	---	---	---	SNA	---	---
<i>Passerina cyanea</i>	Indigo Bunting	BIRDS	S	---	---	---	S4B	---	---
<i>Petrochelidon pyrrhonota</i>	Cliff Swallow	BIRDS	H	---	---	---	S4B	---	---
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak	BIRDS	S	---	---	---	S4B	---	---
<i>Poecile atricapillus</i>	Black-capped Chickadee	BIRDS	FY	---	---	---	S5	---	---
<i>Quiscalus quiscula</i>	Common Grackle	BIRDS	CF	---	---	---	S5B	---	---
<i>Setophaga petechia</i>	Yellow Warbler	BIRDS	T	---	---	---	S5B	---	---
<i>Sitta carolinensis</i>	White-breasted Nuthatch	BIRDS	S	---	---	---	S5	AS	---
<i>Spinus pinus</i>	Pine Siskin	BIRDS	X	---	---	---	S4B	---	R
<i>Spinus tristis</i>	American Goldfinch	BIRDS	P	---	---	---	S5B	---	---
<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow	BIRDS	H	---	---	---	S4B	---	---
<i>Sturnus vulgaris</i>	European Starling	BIRDS	FY	---	---	---	SNA	---	---
<i>Tachycineta bicolor</i>	Tree Swallow	BIRDS	X	---	---	---	S4B	---	---
<i>Turdus migratorius</i>	American Robin	BIRDS	AE	---	---	---	S5B	---	---
<i>Tyrannus tyrannus</i>	Eastern Kingbird	BIRDS	S	---	---	---	S4B	---	---
<i>Vireo gilvus</i>	Warbling Vireo	BIRDS	P	---	---	---	S5B	---	U
<i>Vireo olivaceus</i>	Red-eyed Vireo	BIRDS	S	---	---	---	S5B	---	---
<i>Zenaidura macroura</i>	Mourning Dove	BIRDS	P	---	---	---	S5	---	---

1. **Common names, scientific names and taxonomic order** consistent with the American Ornithologists' Union's "Check-list of North American Birds. 7th edition" (AOU, 1998) and the American Ornithologists' Society's 64th supplement (Chesser *et al.*, 2023).

2. **OBBA (Ontario Breeding Bird Atlas), 2021.** Breeding Evidence Codes. Observed: **X** Species observed in its breeding season (no breeding evidence); Possible: **H** Species observed in its breeding season in suitable nesting habitat **C**, **S** Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season; Probable: **M** At least 7 individuals singing or producing other sounds associated with breeding, heard during the same visit to a single square and in suitable nesting habitat during the species' breeding season, **P** Pair observed in suitable nesting habitat in breeding season; **T** Permanent territory presumed through registration of territorial song, or the occurrence of an adult bird, at the same place, in breeding habitat, on at least two days a week or more apart, during breeding season, **D** Courtship display, including interaction between a male and female or two males; **V** Visiting probable nest site, **A** Agitated behaviour or anxiety call of an adult, **B** Brood Patch on adult female or cloacal protuberance on adult male, **N** Nest-building or excavation of nest hole, by a wren or woodpecker; Confirmed: **DD** Distraction display or injury feigning, **NB** Nest-building or excavation of nest hole (excluding wrens/ woodpeckers), **NU** Used nest or egg shells found (occupied or laid within the period of the survey), **PF** Recently fledged young incapable of sustained life, **AE** Adults leaving or entering nest site in circumstances indicating occupied nest, **FS** Adult carrying fecal sack, **CF** Adult carrying food for young, **NE** Nest containing eggs, **NY** Nest with young seen or heard.

3. **Federal (SARA) Status:** Status as depicted in Schedules 1, 2 or 3 in the Species at Risk Act (S.C. 2002, c. 29): **NAR** Not At Risk; **SC** Special Concern; **THR** Threatened; **END** Endangered; **EXP** Extirpated; **END-R** Endangered (Regulated)

4. **COSEWIC:** **NAR** Not At Risk; **SC** Special Concern; **THR** Threatened; **END** Endangered; **EXP** Extirpated; **END-R** Endangered (Regulated)

5. **Provincial (ESA) Status:** Status as per the Species at Risk in Ontario (SARO) List which is the official list of endangered, threatened, special concern and extirpated animals and plants in Ontario. It is provided in Ontario Regulation 230/08 under the Endangered Species Act, 2007, S.O. 2007, c. 6 (Government of Ontario, 2007). Provincial status information is also available on the "Species at Risk in Ontario" website (OMECP, 2023). **NAR** Not At Risk; **SC** Special Concern; **THR** Threatened; **END** Endangered; **EXP** Extirpated; **END-R** Endangered (Regulated)

6. **Provincial Rarity Ranks (S Ranks)** are evaluated & assigned by the Natural Heritage Information Centre (NHIC, 2023). Subnational conservation status definitions defined by NatureServe (2023). **SX** Presumed Extirpated; **SH** Possibly Extirpated (Historical); **S1** Critically Imperiled; **S2** Imperiled; **S3** Vulnerable; **S4** Apparently Secure; **S5** Secure; **SNR** Unranked; **SU** Unrankable (conflicting information about status or trends); **SNA** A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

7. **Area sensitivity designations** based on OMNR (2000). **AS** = Area Sensitive; **n/a** = not applicable

8. **RMW (Regional Municipality of Waterloo), 1985a.** Appendix 3: Reptiles and Amphibians in Environmentally Sensitive Policy Areas Technical Appendix. Approved by Council: 1986.

RMW, 1985b. Appendix 4: Mammals in Environmentally Sensitive Policy Areas Technical Appendix. Approved by Council: 1986.

RMW, 1996. Revisions to Waterloo Region's Significant Species List: Breeding Birds Component. Report to Planning and Culture Committee PC-96-021. Approved by Council: April 25, 1996.

RM Waterloo Region Codes: **R** - Rare, **U** - Uncommon, **S** - Scarce, **P** - potential, not known to breed in RMW but would be considered significant if it did.

APPENDIX E - SWH

Assessment



SWH Type	SWH description and criteria (MNR, 2015)	Methods used to assess SWH	Results of Desktop Habitat Assessment	Results of Field Investigations
Seasonal Concentration Areas of Animals				
Waterfowl Stopover and Staging Areas (Terrestrial)	Fields with sheet water during mid-Mar to May. <u>ELC¹ Ecosites</u> : CUM1 & CUT1 plus evidence of annual spring flooding; does not include agricultural fields, unless spring sheet water is available. <u>Qualifying spp.</u> : ABDU ² , AMBD, AMWI, BWTE, GADW, GWTE, MALL, NOPI, NSHO &, WODU. <u>Confirmed SWH</u> : Any mixed species groups of 100+ birds.	Air photo interpretation, possibly followed by ELC confirmation and spring bird surveys conducted between mid-March to May according to “ <i>Bird and Bird Habitats: Guidelines for Wind Power Projects</i> ” (OMNR, 2010).	SWH Candidate. Large fields are present in the Study Area. Habitat use to be determined during field investigations.	SWH Absent. Qualifying fields appear unlikely to flood during spring.
Waterfowl Stopover and Staging Areas (Aquatic)	Ponds, marshes, lakes, bays, coastal inlets, and watercourses are 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. <u>ELC Ecosites</u> : MAS1 –MAS3, SAS1, SAM1, SAF1, & SWD1 –SWD7. <u>Qualifying species</u> : ABDU, AMWI, BLSC, BRAN, BUFF, BWTE, CACG, CANG, CANV, COGO, COME, GADW, GRSC, GWTE, HOME, LESC, LTDU, NOPI, NSHO, RBME, REDH, RNDU, RUDU, SNGO, SUSO & WWSC. <u>Confirmed SWH</u> : 100+ of listed species for 7 days; areas with annual staging of Canvasback, Redhead, and Ruddy Duck.	Air photo interpretation, possibly followed by ELC confirmation, and spring or fall migratory bird surveys conducted according to “ <i>Bird and Bird Habitats: Guidelines for Wind Power Projects</i> ” (OMNR, 2010).	SWH Absent. Qualifying wetland habitats appear to be absent in the Study Area.	
Shorebird Migratory Stopover Area	Shorelines of lakes, rivers and wetlands, incl. beach areas, bars & seasonally flooded, muddy and un-vegetated shoreline habitats. Also groynes and other forms of armour rock lakeshores. Habitat is extremely rare; typically has a long history of use. Does not include sewage treatment ponds or SWM ponds. <u>ELC Ecosites</u> : BB01, BB02, BBS1, BBS2, BBT1, BBT2, SDO1, SDS2, SDT1, & MAM1 –MAM5. <u>Qualifying spp.</u> : AGPL, BASA, BBPL, DUNL, GRYE, HUGO, LESA, LEYE, MAGO, PESA, PUSA, RNPH, RUTU, SAND, SBDO, SEPL, SESA, SOSA, SPSA, STSA, WHIM, & WRSA. <u>Confirmed SWH</u> : 3+ qualifying spp. and 1000+ “shorebird use days ³ ” during spring or fall; sites with > 100 WHIM used for 3+ years.	Air photo interpretation, possibly followed by ELC confirmation, and migratory bird surveys conducted during spring (May 1 – mid-June) or fall (early July –October) according to “ <i>Bird and Bird Habitats: Guidelines for Wind Power Projects</i> ” (OMNR, 2010).	SWH Candidate. There is MAM2-1 present in the Study Area, however muddy and unvegetated shoreline habitat appears to be absent. To be verified during field investigations.	SWH Absent. Potentially suitable river shoreline appears to mostly vegetated, and unsuitable for concentrations of migratory shorebird staging.
Raptor Wintering Area	Hawks/Owls: Combination of upland fields and woodland providing roosting, foraging & resting habitat. Sites are 20+ ha, but least disturbed sites (i.e., idle/fallow or lightly grazed fields/meadows) need only be >15 ha with adjacent woodlands. Field should be wind swept with low snow depth. <u>ELC Community Series</u> : FOD, FOM, FOC & CUM, CUT, CUS, & CUW. Bald Eagle: Eagle sites have open water & large trees/snags for roosting. <u>ELC Community Series</u> : FOD, FOM, FOC, SWD or SWC on shoreline areas next to large rivers or adjacent to lakes with open water. <u>Qualifying spp.</u> : AMKE, BAEA, NOHA, RLHA, RTHA, SEOW, & SNOW. <u>Confirmed SWH</u> : 1 SEOW, 1 BAEA, or 10+ birds of 2 listed spp. Also must be used regularly (3 in 5 years) for 20+ days by the above number of birds.	Air photo interpretation, possibly followed by ELC confirmation, and multi-year winter bird surveys conducted according to “ <i>Bird and Bird Habitats: Guidelines for Wind Power Projects</i> ” (OMNR, 2010).	SWH Absent. Qualifying upland habitat in the Study Area is of insufficient size to support concentrations of wintering raptors.	
Bat Hibernacula	May be found in caves, mine shafts, underground foundations and karsts. (Note: active mine shafts or buildings are not SWH). <u>ELC Ecosites</u> : CCR1, CCR2, CCA1, & CCA2. <u>Qualifying spp.</u> : Big Brown Bat & Tri-colored Bat. <u>Confirmed SWH</u> : All sites with confirmed hibernating bats.	Check with MNDMNRF. Air photo interpretation, followed by ELC survey, and possibly bat surveys conducted during the peak swarming period (Aug. – Sept.) according to “ <i>Bats and Bat Habitats: Guidelines for Wind Power Projects</i> ” (OMNR, 2011).	SWH Absent. Available aerial photo and topographic mapping suggests there are no areas of exposed bedrock suitable for hibernation. To be verified during field investigations.	SWH Absent. No areas of exposed bedrock suitable for hibernation.
Bat Maternity	Found in tree cavities & vegetation in mature deciduous or mixed forest stands	Air photo interpretation of vegetation	SWH Candidate. Qualifying forested ELC	SWH Candidate. Present in off-site

¹ Ecological Land Classification (ELC) information/codes are based on the **Ecological Land Classification for Southern Ontario: First Approximation and Its Application** (Lee et al., 1998).

² Four-letter codes for birds are based on the 2023 list prepared by Peter Pyle and David F. DeSante (The Institute for Bird Populations).

³ Shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period.

SWH Type	SWH description and criteria (MNRF, 2015)	Methods used to assess SWH	Results of Desktop Habitat Assessment	Results of Field Investigations
Colonies	with 10+ large diameter (25+ cm dbh) snag trees/ha. Also found in buildings, but buildings are not SWH. Females prefer snags in early stages of decay (Class 1 -3). <u>ELC Ecosites</u> : All Ecosites in FOD, FOM, SWD, & SWM Community Series. <u>Qualifying spp.</u> : Big Brown Bat & Silver-haired Bat. <u>Confirmed SWH</u> : Colonies with 10+ Big Brown Bats or 5+ Silver-haired Bats.	communities. ELC confirmation, and specialized bat habitat surveys conducted according to <i>"Bats and Bat Habitats: Guidelines for Wind Power Projects"</i> (OMNR, 2011).	communities are present in the Study Area.	forest (Polygon 7). Targeted snag density surveys and acoustic surveys were not completed to confirm presence.
Turtle Wintering Areas	Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen; usually in the same area as their core habitat, where water is deep enough not to freeze and have soft mud substrates. Does not include man-made ponds such as sewage lagoons/stormwater ponds. Snapping/Midland Painted Turtles : Includes SW, MA, OA, & SA <u>ELC Community Classes</u> and FEO and BOO <u>ELC Community Series</u> . Northern Map Turtle : open water areas (e.g. deeper rivers, streams) and lakes with current can be used. <u>Qualifying spp.</u> : Midland Painted Turtle, Northern Map Turtle & Snapping Turtle. <u>Confirmed SWH</u> : 5+ 'Painted' or 1+ Snapping/Northern Map Turtles.	Air photo interpretation, to help guide spring (March – May) and/or fall (Sept. – Oct.) basking turtle surveys	SWH Candidate . Within the Study Area there is a wetland area with open water present, as well as the Conestoga River.	SWH Candidate . Targeted turtle basking surveys were not completed; however incidental records of Midland Painted Turtle were observed in the on-site dug pond (Polygon 9). Under the precautionary principle, it is assumed that turtles overwinter in this polygon, as well as the Conestoga River.
Reptile Hibernaculum	Snakes : <u>Any ELC ecosite</u> except very wet ones; talus, rock barren, crevice, cave, and alvar sites may be directly related. Occurs below frost lines in burrows, rock crevices/fissures & other natural or naturalized locations. <u>Qualifying spp.</u> : E. Gartersnake, N. Watersnake, Red-bellied Snake, DeKay's Brownsnake, Smooth Greensnake, Ring-necked Snake, E. Milksnake, E. Ribbonsnake. <u>Confirmed SWH</u> : Presence of a hibernaculum/congregations near potential hibernaculum used by 5+ individuals of a snake spp., <u>or</u> 2+ snake species, <u>or</u> presence of 1+ Special Concern spp. (i.e., E. Ribbonsnake). Comom Five-lined Skink : Prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures. <u>ELC Community Series</u> : FOD & FOM; <u>ELC Ecosites</u> : FOC1 & FOC3. <u>Confirmed SWH</u> : Presence of any active hibernaculum.	Air photo interpretation, to help guide visual encounter surveys conducted on sunny warm days in spring (i.e., Apr/May) and/or autumn (i.e., Sept/Oct).	SWH Candidate . A mix of natural and cultural habitats are present, including forest/agricultural edge. To be determined during dedicated surveys.	SWH Absent . No rock outcrops or exposed bedrock indicating suitable hibernacula habitat were detected. No snakes were detected incidentally.
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)	Any sites/areas with exposed, eroding soil banks, sandy hills, borrow pits, steep slopes, sand piles, & cliff faces that are undisturbed or naturally eroding, that is <u>not</u> a licensed/permitted aggregate area. Excludes man-made structures such as bridges or buildings or recently (2 years) disturbed soil areas, e.g. berms, embankments, soil/aggregate stockpiles. <u>ELC Ecosites</u> : CUM1, CUT1, CUS1, BLO1, BLS1, BLT1, CLO1, CLS1, & CLT1. <u>Qualifying spp.</u> : Cliff Swallow & Northern Rough-winged Swallow. <u>Confirmed SWH</u> : 8+ CLSW or NRWS nesting pairs or any combination.	Air photo interpretation, ELC surveys, and possibly breeding bird surveys conducted during the breeding season according to <i>"Bird and Bird Habitats: Guidelines for Wind Power Projects"</i> (OMNR, 2010).	SWH Candidate . Qualifying ELC ecosites are present within the Study Area (CUM1). Suitability to be determined during field investigations.	SWH Absent . No exposed, eroding soil banks, sandy hills, borrow pits, steep slopes, sand piles, & cliff faces that are undisturbed or naturally eroding were observed on site. Cliff Swallow was observed but only foraging over the river, close to a railway bridge which could provide suitable man-made nesting habitat.
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)	Nests in live or dead standing trees in wetlands, lakes, islands and peninsulas. Shrubs and occasionally emergent vegetation are also used. <u>ELC Ecosites</u> : SWM2; SWM3; SWM5; SWM6; SWD1 –SWD7; & FET1. <u>Qualifying spp.</u> : Great Blue Heron, Black-crowned Night-Heron, Great Egret & Green Heron. <u>Confirmed SWH</u> : Presence of 5+ active Great Blue Heron nests or other listed species.	Air photo interpretation, ELC surveys, breeding bird surveys (April to August) or site visits outside the nesting season for evidence of the presence of fresh guano, dead young, and/or eggshells.	SWH Absent . Qualifying ELC vegetation communities do not appear to be present.	
Colonially - Nesting Bird Breeding Habitat (Ground)	Gulls/Terns : On rocky islands/peninsulas (natural or artificial) in a lake or large river, or in marshy areas. Brewer's Blackbird : Open fields/pastures with scattered trees/shrubs in close proximity to streams/ditches. <u>ELC Ecosites/Community Series</u> : MAM1 – MAM6, MAS1 – MAS3, CUM, CUT, & CUS. <u>Qualifying spp.</u> : HERG, GBBG, LIGU, RBGU, COTE, CATE & BRBL. <u>Confirmed SWH</u> : 25+ active HERG or RBGU nests; 5+ COTE nests; 2+ CATE nests; 1+	Air photo interpretation, ELC surveys, and possibly breeding bird surveys conducted in May/June according to <i>"Bird and Bird Habitats: Guidelines for Wind Power Projects"</i> (OMNR, 2010).	SWH Absent . Rocky islands or peninsulas in large lakes or rivers are absent. Open fields and pastures with scattered trees and shrubs near water are present, however the site is outside of the natural range of Brewer's Blackbird. To be	

SWH Type	SWH description and criteria (MNR, 2015)	Methods used to assess SWH	Results of Desktop Habitat Assessment	Results of Field Investigations
	GBBG/LIGU nests; or 5+ Brewer’s Blackbird pairs.		determined during field investigations.	
Migratory Butterfly Stopover Areas	Sites are a combination of field and forest, 10+ ha in size, ≤ 5 km of Lake Erie or Lake Ontario, should not be disturbed, and include an abundance of preferred nectar plants/ woodland edge (for shelter). Includes one Community Series from each of the following Community Class groups: <u>Field</u> : CUM, CUS, CUT. <u>Forest</u> : FOC, FOD, FOM, CUP. <u>Qualifying spp.</u> : Painted Lady, Red Admiral & Monarch. <u>Confirmed SWH</u> : 5000+ “Monarch Use Days” ⁴ (i.e., MUD), or 3000+ MUD with the presence of Painted Lady or Red Admiral.	GIS analysis to measure distance from the Lake Ontario shoreline, and if applicable, size of qualifying ELC communities, as well as frequently conducted observational studies during the fall migration (i.e., Aug./Oct.).	SWH Absent. The Study Area is > 5 km from the Lake Ontario/Erie shoreline.	
Landbird Migratory Stopover Areas	Woodlots >10 ha in size and ≤ 5 km of Lake Ontario, If multiple woodlands are located along the shoreline, those ≤ 2 km are more significant. Sites have a variety of habitats: forest, grassland & wetland complexes. <u>ELC Community Series</u> : FOC, FOM, FOD, SWC, SWM & SWD. <u>Qualifying spp.</u> : All migratory songbirds and all migrant raptors. <u>Confirmed SWH</u> : 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.	GIS analysis to measure distance from the Lake Ontario shoreline and if applicable, size of woodlots. Migratory bird surveys would be completed during spring (April – May) and/or fall (Aug – Oct) migration using standardized assessment techniques. Evaluation methods to follow “ <i>Bird and Bird Habitats: Guidelines for Wind Power Projects</i> ” (OMNR, 2010).	SWH Absent. The Study Area is > 5 km from the Lake Ontario/Erie shoreline.	
Deer Yarding Area	Habitat to be determined by MNMNR. Deer yards are 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. The Stratum I area, considered the core of a deer yard, 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%. <u>ELC Community Series</u> : FOM, FOC, SWM and SWC, and <u>ELC Ecosites</u> : CUP2, CUP3, FOD3 and CUT. However, woodlots with high densities of deer due to artificial feeding are not significant. <u>Qualifying spp.</u> : White-tailed Deer. <u>Confirmed SWH</u> : Identified and mapped by MNMNR District Offices; snow depth must be > 40 cm for more than 60 days in a typical winter to be considered SWH.	Review of Land Information Ontario (LIO) database and potential confirmation with MNMNR District office, as deer yards are identified and mapped by MNMNR using the methods outlined in “ <i>Selected Wildlife and Habitat Features: Inventory Manual</i> ” (OMNR, 1998).	SWH Absent. LIO database did not reveal any deer yarding areas in the study area.	
Deer Winter Congregation Areas	Typically includes woodlots >100 ha in size, but conifer plantations much smaller than 50 ha may also be used. Winter deer movement in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large #'s in suitable woodlands. If deer are constrained by snow depth, assess for Deer Yarding Area SWH. <u>All Forested Ecosites with these ELC Community Series</u> : FOC, FOM, FOD, SWC, SWM, and SWD. However, woodlots with high densities of deer due to artificial feeding are not significant. <u>Qualifying spp.</u> : White-tailed Deer. <u>Confirmed SWH</u> : Areas considered significant will be mapped by MNMNR. Woodlots that are >100 ha in size are significant unless determined not to be significant by MNMNR. Woodlots <100 ha may be considered as significant based on MNMNR studies or assessment.	Land Information Ontario (LIO) database query and consultation with MNMNR District office, as use of a woodlot by White-tailed Deer is determined by MNMNR. Studies are completed during winter (Jan/Feb) when >20 cm of snow is on the ground using aerial survey techniques, ground or road surveys or a pellet count deer density survey.	SWH Absent. LIO database did not reveal any deer winter congregation areas in the study area.	
Rare Vegetation Communities				
Cliffs and Talus Slopes	Cliffs are vertical to near vertical bedrock > 3 m in height. Talus slopes are rock rubble at the base of a cliff. Most cliffs & talus slopes occur along the Niagara Escarpment. <u>ELC Community Series</u> : TAO, TAS, TAT, CLO, CLS, CLT. Most occur along the Niagara Escarpment. <u>Confirmed SWH</u> : Any ELC Vegetation	Air photo interpretation and ELC surveys to ELC Vegetation Type.	SWH Absent. The terrain within the Study Area is flat to gently undulating, precluding the possibility of any cliffs or	

⁴ “Monarch Use Days” (i.e., MUD) is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site.

SWH Type	SWH description and criteria (MNRF, 2015)	Methods used to assess SWH	Results of Desktop Habitat Assessment	Results of Field Investigations
	Type for Cliffs of Talus Slopes.		talus slopes.	
Sand Barren	Typically consists of exposed sand and generally sparsely vegetated (due to 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 continuous meadow, thicket-like, or more closed and treed. Treed cover is always ≤ 60%. Sites must be 0.5+ ha in size. <u>ELC Ecosites</u> : SBO1, SBS1, & SBT1. <u>Confirmed SWH</u> : Any ELC Vegetation Type for Sand Barren with < 50% exotic vegetative cover spp.	Air photo interpretation and ELC surveys to ELC Vegetation Type.	SWH Absent. No areas of exposed sand with sparsely vegetated cover were observed on available aerial photography.	
Alvar	Typically, a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Must be 0.5+ ha in size. Vegetation cover varies from patchy to barren with < 60% tree cover. Must be ≥ 0.5 ha in size. <u>ELC Ecosites</u> : ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2. <u>Indicator spp.</u> : <i>Carex crawei</i> , <i>Panicum philadelphicum</i> , <i>Eleocharis compressa</i> , <i>Scutellaria parvula</i> , & <i>Trichostema brachiatum</i> . <u>Confirmed SWH</u> : Sites with 4+ of 5 alvar indicator species, in excellent condition, fit in with adjacent landscape, & with < 50% of the vegetative cover exotic spp.	Air photo interpretation, ELC surveys to ELC Ecosite, and botanical surveys.	SWH Absent. No areas of shallow, exposed limestone bedrock were visible on available aerial photography or are likely to be present.	
Old Growth Forest	Woodland area 30+ ha in size with 10+ ha of interior habitat (assuming 100 m buffer from edge of forest) and characterized by heavy mortality or turnover of overstorey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and abundance of snags and downed woody debris. <u>ELC Community Series</u> : FOD, FOC, FOM, SWC, SWD, SWM. <u>Confirmed SWH</u> : Dominant tree species are > 140 years old, and the candidate area has not experienced recognizable forestry activities.	Air photo interpretation and ELC surveys.	SWH Absent. The forested area within the Study Area is not of sufficient size.	
Savannah	A savannah is a tallgrass prairie habitat that has 25 - 60% tree cover and is natural or restored. There is no minimum size; does not include remnant sites such as railway right of ways. <u>ELC Ecosites</u> : TPS1, TPS2, TPW1, TPW2, & CUS2. <u>Confirmed SWH</u> : Presence of 1+ Savannah indicator sp. listed in Appendix N (OMNR, 2000) using Savannah plant list from Ecoregion 6E. Sites should be composed of <50% exotic/introduced species.	Air photo interpretation, ELC surveys to ELC Ecosite, and botanical surveys.	SWH Absent. No areas of tree cover between 25 and 60% were observed on available aerial photography.	
Tallgrass Prairie	A Tallgrass Prairie has ground cover dominated by prairie grasses, with < 25% tree cover. There is no minimum size to site, and it must be restored or in a natural state. Remnant sites (e.g. railway right of ways) are not SWH. <u>ELC Ecosites</u> : TPO1 & TPO2. <u>Confirmed SWH</u> : 1+ Prairie indicator species listed in Appendix N (OMNR, 2000) & using Prairie plant list from Ecoregion 6E. Sites should be composed of <50% exotic/introduced species.	Air photo interpretation, ELC surveys to ELC Ecosite, and botanical surveys.	SWH Absent. No areas of ground cover dominated by prairie grasses, with < 25% tree cover were observed.	
Other Rare Vegetation Communities	May include beaches, fens, forest, marsh, barrens, dunes, swamps, etc. <u>ELC Ecosites</u> : Any ELC Ecosite that has a possible ELC Vegetation Type that is Provincially Rare (i.e., S1, S2, or S3) according to Appendix M of the SWHTG (OMNR, 2000) is Candidate SWH. <u>Confirmed SWH</u> : Field studies confirming ELC Vegetation Type is a rare vegetation community according to Appendix M of the SWHTG (OMNR, 2000), or updated lists.	Air photo interpretation and ELC surveys to ELC Vegetation Type.	SWH Candidate. Qualifying ELC ecosite (FOD 7) is present within the Study Area. To be confirmed during field investigations.	SWH Candidate. FOD7 (offsite woodland) is candidate rare vegetation community as FOD 7-4 (Moist - Fresh Black Walnut Deciduous Forest Type) is a Provincially Rare vegetation type (S2S3). Access was limited within this polygon and could not be confirmed.
Specialized Habitat for Wildlife				
Waterfowl Nesting	All upland habitats located adjacent to these wetland <u>ELC Ecosites</u> are	Air photo interpretation, ELC surveys, and	SWH Absent. The MAM2-1 present within	

SWH Type	SWH description and criteria (MNRF, 2015)	Methods used to assess SWH	Results of Desktop Habitat Assessment	Results of Field Investigations
Area	Candidate SWH: MAS1 – MAS3, SAS1, SAM1, SAF1, MAM1 – MAM6, SWT1, SWT2, & SWD1 – SWD4. A waterfowl nesting area extends 120 m from (1) a wetland (> 0.5 ha) <u>or</u> , (2) a wetland (>0.5 ha) and any small wetlands (0.5 ha) within 120 m, <u>or</u> (3) 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 120+ m in width. <u>Qualifying spp.</u> : ABDU, BWTE, GWTE, GADW, HOME, MALL, NOPI, NSHO & WODU. <u>Confirmed SWH</u> : 3+ nesting pairs of listed species (excluding MALL); <u>or</u> 10+ nesting pairs of listed species (including MALL); <u>or</u> any active ABDU nest.	nesting studies completed between April and June according to “ <i>Bird and Bird Habitats: Guidelines for Wind Power Projects</i> ” (OMNR, 2010).	the Study is of insufficient size.	
Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat	Nests are in forest communities directly adjacent to riparian areas - rivers, lakes, ponds & wetlands. Nests located on man-made objects are not SWH (e.g., telephone poles and constructed nesting platforms). <u>Qualifying spp.</u> : Osprey, Bald Eagle. <u>ELC Community Series</u> : FOD, FOM, FOC, SWD, SWM and SWC. <u>Confirmed SWH</u> : 1+ active nests. However, to be significant, a site must be used annually. If found inactive, must be known inactive 3+ years (or suspected 5+ years) before considered not significant.	Air photo interpretation, ELC surveys, and observational studies conducted between mid-March and mid-August according to “ <i>Bird and Bird Habitats: Guidelines for Wind Power Projects</i> ” (OMNR, 2010).	SWH Candidate. Qualifying ELC vegetation communities appear to be present, with forest communities appearing directly adjacent to Conestoga River.	SWH Absent. Qualifying species were not detected, and no active or inactive nests were observed.
Woodland Raptor Nesting Habitat	All natural or conifer woodland/forest stands that are 30+ ha in size with 10+ ha interior habitat (determined using 200 m buffer). Stick nests found within the tops or crotches of trees in a variety of intermediate-aged to mature forests. <u>ELC Ecosites</u> : All forested ELC ecosites & CUP3; <u>ELC Community Series</u> : SWC, SWM, & SWD. <u>Qualifying spp.</u> : AGOS, BADO, BWHA, COHA, RSHA, & SSHA. <u>Confirmed SWH</u> : 1+ active nests of listed species.	Air photo interpretation, GIS analysis, ELC surveys, and nesting surveys conducted mid-March to end of May, using call broadcasts to help locate territorial raptors and facilitate the discovery of nests by narrowing sown the search area.	SWH Absent. Forested vegetation communities within the Study Area are less than 30 ha in size.	
Turtle Nesting Areas	Nesting areas must provide exposed mineral soil (i.e., sand and gravel) to dig in and be located in open, sunny areas. Best sites are close to water and away from roads. Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, & rivers are most frequently used. Municipal/provincial road embankments and shoulders are <u>not</u> SWH. Sites are adjacent (< 100 m) or within these <u>ELC Ecosites</u> : MAS1 – MAS3, SAS1, SAM1, SAF1, BOO1, & FEO1. <u>Qualifying spp.</u> : Midland Painted Turtle, Northern Map Turtle, & Snapping Turtle. <u>Confirmed SWH</u> : 5+ nesting Midland Painted Turtles, or 1+ Snapping/Northern Map Turtles.	Air photo interpretation, ELC surveys, and dedicated turtle nesting activity surveys/turtle nest search surveys conducted between the last week of May and first week of July.	SWH Candidate. Agricultural fields and CUM are present within 100 m of watercourses and open water. To be confirmed during field investigations.	SWH Candidate. Targeted turtle nesting surveys were not conducted to determine habitat use. However, based on the observation of multiple Midland Painted Turtles in the on-site pond and suitable open habitat present on the site, SWH is assumed candidate under the precautionary principle.
Seeps and Springs	Seeps/Springs are areas where ground water comes to the surface. Any forested ecosite (with <25% meadow/field)/pasture) within headwater area of stream/river system. <u>Indicator spp.</u> : WITU, RUGR, SPGR, White-tailed Deer, and salamander spp. <u>Confirmed SWH</u> : Presence of 2+ seeps/springs. The area of the Ecosites or Ecoelements is the SWH.	Air photo interpretation, ELC surveys, and wildlife habitat assessment. Review of site-specific hydrogeologic information.	SWH Absent. Forested areas within study area are not within headwater area of stream or river.	
Amphibian Breeding Habitat (Woodland)	Presence of wetland, pond or woodland pool (incl. vernal pool) 500+ m ² (i.e., 25 m dia.) within or adjacent (≤ 120 m) to a woodland (any size). All <u>ELC Ecosites</u> associated within FOC, FOM, FOD, SWC, SWM, & SWD Community Series. <u>Qualifying spp.</u> : Eastern Newt, Blue-spotted Salamander, Spotted Salamander, Gray Treefrog, Spring Peeper, Western Chorus Frog, & Wood Frog. <u>Confirmed SWH</u> : breeding population of any listed newts/ salamanders; or 2+ listed frogs with at least 20 individuals (adults or egg masses); or 2+ listed frog sp. with Call Level Code 3.	Air photo interpretation, GIS analysis of wetland size, and a combination of observational study (for salamanders <u>and</u> frogs) and nocturnal call counts (for frogs & toads) during the spring (March – June). Call counts typically occur in April, May & June) as per the Marsh Monitoring Program (BSC, 2009).	SWH Candidate. Qualifying ELC vegetation communities appear to be present.	SWH Absent. Indicator species thresholds were not met during targeted nocturnal amphibian call surveys were conducted.
Amphibian Breeding Habitat (Wetlands)	These wetland ecosites (500+ m ² in size, i.e., 25 m dia.) are typically 120+ m from woodlands. However, larger wetlands containing predominantly aquatic species (e.g. American Bullfrog) may be adjacent to woodlands. <u>ELC Community Class</u> : SW, MA, FE, BO, OA, & SA. <u>Qualifying spp.</u> : Eastern Newt,	Air photo interpretation, GIS analysis of wetland size, proximity to woodland ecosites, ELC surveys, and a combination of observational study (for salamanders <u>and</u> frogs) and nocturnal	SWH Candidate. Qualifying ELC vegetation communities appear to be present.	SWH Confirmed. Nocturnal amphibian call surveys confirmed the presence of Amphibian Breeding Habitat (Wetland) within the on-site pond and wetland

SWH Type	SWH description and criteria (MNRF, 2015)	Methods used to assess SWH	Results of Desktop Habitat Assessment	Results of Field Investigations
	Blue-spotted..., Spotted..., & Four-toed Salamander, American Toad, Gray Treefrog, Western Chorus Frog, Northern Leopard Frog, Pickerel Frog, Green Frog, Mink Frog & Bullfrog. <u>Confirmed SWH</u> : breeding population of any listed newts/salamanders; or 2+ listed frogs with at least 20 individuals (adults or egg masses); or 2+ listed frog sp. with Call Level Code 3.	call counts (for frogs & toads) during the spring (March – June). Call counts typically occur in April, May & June, as per the Marsh Monitoring Program (BSC, 2009).		community. A total of 4 indicator species and over 20 individuals were recorded, including American Bullfrog.
Woodland Area-Sensitive Bird Breeding Habitat	Habitats where forest interior birds are breeding, Typically mature (60+ years) stands or woodlots 30+ ha in size with forest interior habitat (measured 200+ m from edge). <u>ELC Community Series</u> : FOC, FOM, FOD, SWC, SWM & SWD. <u>Qualifying spp.</u> : BHVI, BLBW, BTBW, BTNW, CAWA, CERW, NOPA, OVEN, RBNU, SCTA, VEER, WIWR, & YBSA. <u>Confirmed SWH</u> : Presence of 3+ nests/breeding pairs of qualifying spp., <u>or</u> any breeding by CAWA or CERW.	GIS analysis of size of woodlot/forest, as well as interior forest habitat. ELC survey confirmation and breeding bird surveys conducted according to “ <i>Bird and Bird Habitats: Guidelines for Wind Power Projects</i> ” (OMNR, 2010).	SWH Absent. Qualifying large, mature forest stands appear to be absent.	
Habitats for Species of Conservation Concern (not including END or THR species)				
Marsh Breeding Bird Habitat	Candidate wetland habitats must contain shallow water & aquatic emergent vegetation. Although nesting usually occurs in wetlands, Green Heron may nest in upland shrubs or trees. <u>ELC Ecosites</u> : MAM1 – MAM6, SAS1, SAM1, SAF1, FEO1, BOO1, <u>and</u> SW, MA, CUM1 sites (for Green Heron). <u>Qualifying spp.</u> : AMBI, AMCO, BLTE, COGA, COLO, GRHE, MAWR, PBGR, SACR, SEWR, SORA, TRUS, VIRA & YERA. <u>Confirmed SWH</u> : 5+ nesting pairs of MAWR/SEWR; <u>or</u> any 5+ listed spp.; <u>or</u> 1+ pairs of SACR; <u>or</u> any wetland with 1+ nesting BLTE, GRHE, TRUS, or YERA.	Air photo interpretation, ELC surveys and breeding bird surveys conducted in late May/June, according to “ <i>Bird and Bird Habitats: Guidelines for Wind Power Projects</i> ” (OMNR, 2010).	SWH Candidate. Although possibly too small, qualifying wetland communities appear to be present. To be confirmed during field investigations.	SWH Absent. None of the qualifying species were detected within the study area.
Open Country Bird Breeding Habitat	Grassland areas (incl. natural & cultural fields & meadows) >30 ha., but not Class 1 or 2 agricultural lands, or areas actively used for farming (i.e., row cropping or intensive hay or livestock pasturing) in the last 5 years. Sites should have a history of longevity of 5+ years. <u>ELC Ecosites</u> : CUM1 & CUM2. <u>Qualifying spp.</u> : GRSP, NOHA, SAVS, SEOW, UPSA, & VESP. <u>Confirmed SWH</u> : Nesting of 2+ listed spp. or any SEOW.	Air photo interpretation, ELC, GIS analysis of the size of natural & cultural fields & meadows, and review of agricultural land classification mapping. If necessary, breeding bird surveys conducted in late May/June according to “ <i>Bird and Bird Habitats: Guidelines for Wind Power Projects</i> ” (OMNR, 2010).	SWH Absent. Non-agricultural grassland communities >30 ha are absent from the Study Area.	
Shrub/Early Successional Bird Breeding Habitat	Large field areas succeeding to shrub and thicket habitats >10 ha in size, but not class 1 or 2 agricultural lands, or being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years). <u>ELC Ecosites</u> : CUT1, CUT2, CUS1, CUS2, CUW1, & CUW2. <u>Qualifying spp.</u> : BRTH, BBCU, CCSP, EATO, FISP, GWWA, WIFL, & YBCH. <u>Confirmed SWH</u> : Nesting/breeding of BRTH or CCSP <u>and</u> then 2+ qualifying spp.; <u>or</u> any GWWA/YBCH breeding.	Air photo interpretation, ELC, GIS analysis of the size of the qualifying cultural communities, and review of agricultural land classification mapping. If necessary, breeding bird surveys conducted in late May/June according to “ <i>Bird and Bird Habitats: Guidelines for Wind Power Projects</i> ” (OMNR, 2010).	SWH Absent. Shrub/early successional communities > 10 ha are absent from Study Area.	
Terrestrial Crayfish	Often occur in wet meadows and edges of shallow marshes, mudflats (no minimum size) where they construct burrows. However, can be found far from water. <u>ELC Ecosites</u> : MAM1 – MAM6, MAS1 – MAS3, and CUM1 with inclusions of above MAM or swamp ecosites. <u>ELC Community Series</u> : SWD, SWM, & SWT. <u>Qualifying spp.</u> : Digger Crayfish (<i>Creaserinus fodiens</i>) and Great Plains Mudbug (<i>Lacunicambarus nebrascensis</i>). <u>Confirmed SWH</u> : Presence of either qualifying sp. or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites.	Air photo interpretation, ELC surveys, and searches for crayfish chimneys from April to August (although early spring is best, when vegetation is lowest).	SWH Candidate. A qualifying wetland community appears to be present. To be confirmed during field investigations.	SWH Absent. No crayfish or chimneys were detected during field studies.
Special Concern and Rare Wildlife Species	May occur in any habitat type. <u>Qualifying spp.</u> : All plant and animal species designated “Special Concern” or provincially rare (i.e., S1, S2, S3, and SH). <u>Confirmed SWH</u> : Presence of any qualifying plant or animal species/habitat.	Review of aerial photography and background information sources (e.g., NHIC Make-a-Map rare species query results). ELC surveys, botanical surveys, and seasonally appropriate breeding bird surveys, and other wildlife habitat	SWH Candidate. Numerous Special Concern species have been observed in background information. To be confirmed during field investigations.	SWH Confirmed. Midland Painted Turtle observed incidentally on the site with suitable habitat present (polygon 9).

SWH Type	SWH description and criteria (MNR, 2015)	Methods used to assess SWH	Results of Desktop Habitat Assessment	Results of Field Investigations
		assessments.		SWH Candidate. (background records within suitable habitat): • Snapping turtle • Bald eagle • Eastern wood peewee • Rusty blackbird • Common Nighthawk
Animal Movement Corridors				
Amphibian Movement Corridors	Corridors between breeding habitat and summer habitat may be in all ecosites associated with water. However, an assessment is only required if Confirmed or Candidate Amphibian Breeding Habitat SWH is present based on these Criterion Schedules or the Significant Wildlife Habitat Technical Guide (OMNR, 2000). <u>Qualifying spp.</u> : Eastern Newt, Blue-spotted Salamander, Spotted Salamander, Four-toed Salamander, American Toad, Gray Treefrog, Western Chorus Frog, Northern Leopard Frog, Pickerel Frog, Green Frog, Mink Frog & Bullfrog. <u>Confirmed SWH</u> : No thresholds for numbers/diversity. However, corridors should consist of several layers of native vegetation, have 15+ m of veg on both sides of waterway, or up to 200 m of woodland habitat (with gaps < 20 m), and must provide a connection between summer & breeding habitat. They should also be unbroken by roads, waterways or bodies.	Air photo interpretation and ELC when amphibian call count surveys (typically during April, May & June) and observational study confirm Amphibian Breeding Habitat SWH is present.	SWH Candidate. Qualifying wetland communities appear to be present. To be confirmed during field investigations.	SWH Candidate. Due to confirmed Amphibian Breeding Habitat (wetland), amphibian movement corridors are likely present on site to connect breeding habitat and terrestrial summer habitat. The conceptual candidate corridor shown on Map 6-5 is the shortest vegetated route from the on-site breeding pond to off-site forested habitat (polygon 7).
Deer Movement Corridors	Movement corridors may be found in all forested ecosites and must be determined when Deer Wintering Habitat is confirmed as SWH. They have potential to occur within Stratum II Winter Congregation Areas; MNRMNR to confirm if such occurs. Typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). <u>ELC Ecosites</u> : All forested ecosites. <u>Qualifying sp.</u> : White-tailed Deer. <u>Confirmed SWH</u> : Studies confirming usage.	Review of Land Information Ontario (LIO) database, consultation with MNRMNR, and studies conducted at the time of year when deer are migrating or moving to and from winter concentration areas.	SWH Absent. There are no corridors leading to a nearby Stratum II area that are unbroken by roads and residential areas, and 200+ m wide with gaps < 20 m; riparian corridors didn't have 15+ m of vegetation on both sides of waterway.	
Exceptions for Ecoregion 6E – Exceptions are candidate wildlife habitats that will have different criteria than what is proposed in the above schedules for an area within an Eco-region. These are based on Eco-Districts and municipalities can apply the exception for the eco-district within their planning area.				
Eco-District 6E-14 (i.e., Bruce Peninsula) – Mast Producing Areas for Black Bears	Candidate forested habitats need to be large enough to provide cover and protection for Black Bears. These are woodland ecosites >30 ha with mast-producing tree species, either soft (cherry) or hard (oak and beech). <u>Qualifying sp.</u> : Black Bear. <u>ELC Community Series</u> : All Forested habitat within FOM & FOD. <u>Confirmed SWH</u> : All woodlands > 30ha with a 50% composition of these ELC Vegetation Types are considered SWH: FOM1-1, FOM2-1, FOM3-, FOD1-1, FOD1-2, FOD2-1, FOD2-, FOD2-3, FOD2-, FOD4-1, FOD5-, FOD5-3, FOD5-7, & FOD6-5.	Review of Eco-District mapping. If necessary, GIS analysis of the size of woodland area, review of Land Information Ontario (LIO) database, consultation with MNRMNR, air photo interpretation, ELC/botanical surveys, and seasonally appropriate wildlife surveys.	SWH Absent. Site is not located in Ecodistrict 6E-14 (i.e., the Bruce Peninsula).	
Eco-District 6E-17 (i.e., on Manitoulin Island) – Sharp-tailed Grouse Lek	Leks or 'dancing grounds' consist of bare, grassy, or sparse shrubland, often on a hill or rise in topography; used annually. Grasslands (field/meadow) are >15 ha when adjacent to shrubland and >30 ha when adjacent to deciduous woodland, and undisturbed with low intensities of agriculture (light grazing or late haying). Conifer trees within 500 m are not tolerated. <u>Qualifying sp.</u> : Sharp-tailed Grouse. <u>ELC Community Series</u> : CUM, CUS & CUT. <u>Confirmed SWH</u> : Any site with confirmed Sharp-tailed Grouse courtship activities.	Review of Eco-District mapping. If necessary, GIS analysis of the size of woodland area, review of Land Information Ontario (LIO) database, consultation with MNRMNR, air photo interpretation, ELC/botanical surveys, and studies confirming lek habitat completed from late March to June.	SWH Absent. Site is not located in Ecodistrict 6E-17 (i.e., Manitoulin Island).	

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APPENDIX F - SAR Screening



SPECIES LIST	SAR Designation (if different = federal / provincial)	Status in Ontario	Key Habitats Used By Species	Status at 51-52 Hawkesville Road Study Area (within 120 metres)
AMPHIBIANS				
Jefferson Salamander (<i>Ambystoma jeffersonianum</i>)	Endangered	Southern Ontario, mainly along the Niagara Escarpment	Inhabits deciduous and mixed deciduous forests with suitable breeding areas which generally consist of ephemeral (temporary) bodies of water that are fed by spring runoff, groundwater, or springs.	No suitable habitat present.
FISH				
Silver Shiner (<i>Chelydra seroentina</i>)	Threatened	Found in the Thames and Grand Rivers, and in Bronte and Sixteen Mile Creeks	Generally prefer moderate to large, deep, relatively clear streams with swift currents, and moderate to high gradients	NHIC records exist for the general area. Suitable habitat exists within Conestoga River.
Black Redhorse (<i>Moxostoma duquesnei</i>)	Threatened	Found only in southwestern Ontario at a few locations in the Bayfield River, Maitland River, Ausable River, Grand River, Thames River, and Spencer Creek watersheds.	Found in medium-sized rivers and streams that are usually less than two metres deep	NHIC records exist for the general area. Suitable habitat exists within Conestoga River.
BIRDS				
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	Special Concern (provincial only)	Widespread in southern Ontario	Prefers deciduous and mixed-deciduous forest; and habitat close to water bodies such as lakes and rivers; they roost in super canopy trees such as pine.	Deciduous forests on site and on land adjacent to Conestoga River provide potentially suitable habitat. Species was not observed during targeted breeding bird or incidental surveys.
Bank Swallow (<i>Riparia riparia</i>)	Threatened	Widespread in southern Ontario	Low areas along rivers, streams, coasts or reservoirs; nest in natural bluffs and eroding streamside banks, also sand and gravel quarries and road cuts	No suitable breeding habitat found on site or in adjacent lands. None detected during breeding bird surveys.
Barn Swallow (<i>Hirundo rustica</i>)	Threatened / Special Concern	Widespread in southern Ontario	Prefers farmland, lake/river shorelines, wooded clearings, urban populated areas, rocky cliffs, and wetlands. They nest inside or outside buildings; under bridges and in road culverts; on rock faces and in caves, etc.	NHIC records exist for the general area. This species was observed foraging on site in 2024. No active nesting was observed during 2024 surveys. Old nests were observed in structures on the subject property.
Black Tern (<i>Chidonias niger</i>)	Special Concern	Scattered in southern Ontario; breed mainly along edges of the Great Lakes	Prefers farmland; lake/river shorelines; wooded clearings; urban populated areas; rocky cliffs; and wetlands. They nest inside or outside buildings; under bridges and in road culverts; on rock faces and in caves etc.	Some potentially suitable habitat present in agricultural fields and land adjacent to Conestoga River. Species was not detected during breeding bird surveys.
Bobolink (<i>Dolichonyx oryzivorus</i>)	Threatened	Widespread in southern Ontario	Generally prefers open grasslands and hay fields. During migration and in winter, uses freshwater marshes and grasslands.	NHIC records exist for the general area. No suitable habitat present - The agricultural lands are planted with row crops and are generally too small to support this species. This species was not detected during breeding bird surveys.
Canada Warbler (<i>Wilsonia canadensis</i>)	Threatened / Special Concern	Absent in southwestern Ontario; primarily breeds in Southern Shield	Generally prefers wet coniferous, deciduous and mixed forest types, with a dense shrub layer. Nests on the ground, on logs or hummocks, and uses dense shrub layer to conceal the nest.	No suitable habitat found on site or in adjacent lands. None detected during breeding bird surveys.
Cerulean Warbler (<i>Setophaga cerulea</i> ; formerly <i>Dendroica cerulea</i>)	Threatened	Populations form two bands: one from Lake Huron to Lake Ontario, and another from the Bruce Peninsula to the Ottawa River	Generally prefers mature wet coniferous, deciduous and mixed forest types, with a dense shrub layer. Nests on the ground, on logs or hummocks, and uses dense shrub layer to conceal the nest.	No suitable habitat found on site or in adjacent lands. None detected during breeding bird surveys.

Appendix F. SAR Screening

Chimney Swift (<i>Chaetura pelagica</i>)	Threatened	Widespread in southern Ontario	Historically found in deciduous and coniferous, usually wet forest types, all with a well developed, dense shrub layer; now most are found in urban areas in large uncapped chimneys.	No suitable habitat found on site or in adjacent lands. None detected during breeding bird surveys.
Common Nighthawk (<i>Chordeiles minor</i>)	Special Concern	Widespread in southern Ontario	Generally prefers open, vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and river banks. This species also inhabits mixed and coniferous forests. Can also be found in urban areas (nests on flat roof-tops).	Potentially suitable habitat present. Species was not detected during breeding bird surveys.
Eastern Meadowlark (<i>Sturnella Magna</i>)	Threatened	Widespread in southern Ontario	Generally prefers grassy pastures, meadows and hay fields. Nests are always on the ground and usually hidden in or under grass clumps.	No suitable habitat present - The agricultural lands are planted with row crops and are generally too small to support this species. This species was not detected during breeding bird surveys.
Eastern Wood-Pewee (<i>Contopus virens</i>)	Special Concern	Widespread in southern Ontario	Found in deciduous, mixed woods, or pine plantations; also found in mature woodlands, urban shade trees, roadsides, and orchards; usually found in clearings and forest edges.	Suitable habitat present in the valleylands. One individual was detected during the second breeding bird visit, outside of the study area north of Hawkesville Rd. No individuals were recorded within the study area.
Eastern Whip-poor-will (<i>Caprimulgus vociferus</i>)	Threatened	Eastern Whip-poor-wills were once widespread throughout the central Great Lakes region of Ontario, their distribution in this area is now fragmented	generally prefer semi-open deciduous forests or patchy forests with clearings; areas with little ground cover are also preferred; In winter they occupy primarily mixed woods near open areas.	No suitable habitat found on site. None detected during breeding bird surveys
Golden-winged Warbler (<i>Vermivora chrysoptera</i>)	Threatened / Special Concern	Local; primarily central-eastern Ontario	Generally prefers areas of early successional vegetation, found primarily on field edges, hydro or utility right-of-ways, or recently logged areas.	Potentially suitable habitat present in the study area. This species was not detected during breeding bird surveys.
Henslow's Sparrow (<i>Ammodramus henslowii</i>)	Endangered	Henslow's Sparrow breeds in the northeastern and east-central United States, and reaches its northeastern limit in Ontario	generally found in old fields, pastures and wet meadows. They prefer areas with dense, tall grasses, and thatch, or decaying plant material	Some potentially suitable habitat present within the study area. None detected during breeding bird surveys.
Least Bittern (<i>Ixobrychus exilis</i>)	Threatened	Least Bittern is mostly found south of the Canadian Shield, especially in the central and eastern part of the province	generally located near pools of open water in relatively large marshes and swamps that are dominated by cattail and other robust emergent plants	No suitable habitat within the study area.
Louisiana Waterthrush (<i>Seiurus motacilla</i>)	Threatened	Louisiana Waterthrush breeds only in southern Ontario, along the Niagara Escarpment, in woodlands along Lake Erie and scattered locations elsewhere	generally inhabits mature forests along steeply sloped ravines adjacent to running water. It prefers clear, cold streams and densely wooded swamps	No suitable habitat within the study area.
Northern Bobwhite (<i>Colinus virginianus</i>)	Endangered	Northern Bobwhite is near its northern range limit in southern Ontario	generally inhabits a variety of edge and grassland type - habitats including non-intensively farmed agricultural lands.	No suitable habitat within the study area.
Peregrine Falcon (<i>Falco peregrinus</i>)	Special Concern	Peregrine Falcons now nest in and around Toronto and several other southern Ontario cities, the majority of Ontario's breeding population is found around Lake Superior in northwestern Ontario	generally nest on tall, steep cliff ledges adjacent to large waterbodies; some birds adapt to urban environments and nest on ledges of tall buildings, even in densely populated downtown areas.	No suitable habitat within the study area.
Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>)	Endangered	Widespread but rare in southern Ontario	Generally prefers open oak and beech forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, urban parks, golf courses, cemeteries, as well as along beaver ponds and brooks.	Some potentially suitable habitat present within the study area. None detected during breeding bird surveys.

Short-eared Owl (<i>Asio flammeus</i>)	Threatened	In Ontario, this species is widely distributed. Most breeding season observations occur in the James Bay and Hudson Bay Lowlands, while it has become increasingly rare and irregular in southern Ontario	Generally prefers a wide variety of open habitats, including grasslands, peat bogs, marshes, sand-sage concentrations, old pastures and agricultural fields	No suitable habitat found on site. This species is predominately located near James Bay and Hudson Bay Lowlands. The species has become an increasingly rare and irregular breeder in southern Ontario
Wood Thrush (<i>Hylocichla mustelina</i>)	Threatened / Special Concern	Widespread in southern Ontario	Breeds in mature deciduous and mixed forests, most commonly those with American beech, sweet gum, red maple, black gum, eastern hemlock, flowering dogwood, American hornbeam, oaks, or pines; nests less successfully in fragmented forests and suburban parks with enough large trees for a territory; ideal habitat includes trees over 50 feet tall, a moderate understory of saplings/shrubs, an open floor with moist soil and decaying leaf litter, and water nearby.	NHIC records exist for the general area. Potentially suitable habitat within the study area. None detected during breeding bird surveys.
Yellow-breasted Chat (<i>Icteria virens</i>)	Endangered	Breeds mainly Point Pelee and Pelee Island	Generally prefers dense thickets around wood edges, riparian areas, and in overgrown clearings.	No suitable habitat found on site or in adjacent lands. This species predominately breeds at Point Pelee and Pelee island. None detected during breeding bird surveys.
INSECTS				
Monarch (<i>Danaus plexippus</i>)	Endangered / Special Concern	Widespread in southern Ontario	Exist primarily wherever milkweed and wildflowers exist, such as abandoned farmland, along roadsides, and other open spaces.	Potential habitat present within the study area. This species was not detected during field surveys.
Nine-spotted Lady Beetle (<i>Coccinella novemnotata</i>)	Endangered	Was once found throughout southern Ontario and as far north as the eastern shores of Lake Superior. Since the mid-1990s, there have been no records of this species in Ontario	Lives in a wide variety of areas including agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows, riparian areas, and isolated natural areas.	Historic NHIC records exist for the general area. Species unlikely to be present within the study area and was not detected during field surveys.
Transverse Lady Beetle (<i>Coccinella transversoguttata</i>)	Special Concern / Endangered	Once a wide-ranging species that has been recorded throughout Canada and the United States, but is now either absent or below detection levels in many of its former habitats. In Ontario, all records are considered to be historical.	A habitat generalist, this species is able to live in a wide range of habitats, including agricultural areas, suburban gardens, parks, coniferous forests, deciduous forests, prairie grasslands, meadows and riparian areas.	Historic NHIC records exist for the general area. Species unlikely to be present within the study area and was not detected during field surveys.
West Virginia White (<i>Pieris virginiensis</i>)	Special Concern (provincial only)	50 sites in south and central Ontario; primarily western Lake Ontario region	Generally prefer moist, deciduous woodlands; the larvae feed only on the leaves of the two-leaved toothwort (<i>Cardamine diphylla</i>), which is a small, spring-blooming plant of the forest floor.	No suitable habitat within the study area. Species and its hostplant were not detected during field surveys.
MAMMALS				
Eastern Small-footed Myotis (<i>Myotis leibii</i>)	Endangered (provincial only)	Widespread in southern Ontario	Overwintering habitat: caves and mines that remain above 0 degrees Celsius; Maternal roosts: primarily under loose rocks on exposed rock outcrops, crevices and cliffs, and occasionally in buildings, under bridges and highway overpasses, and under tree bark.	Suitable habitat present within the study area (structures and woodlands). Species not detected during targeted Visual Exit Surveys of on-site structures.
Little Brown Myotis (<i>Myotis lucifugus</i>)	Endangered	Widespread in southern Ontario	Overwintering habitat: caves and mines that remain above 0 C; Maternal roosts: Often associated with buildings (attics, barns, etc.). Occasionally found in trees (25-44 cm dbh).	Suitable habitat present within the study area (structures and woodlands). Species was detected during targeted Visual Exit Surveys of on-site structures.
Northern Myotis (<i>Myotis septentrionalis</i>)	Endangered	Widespread in southern Ontario	Overwintering habitat: caves and mines that remain above 0 C; Maternal roosts: often associated with cavities of large diameter trees (25-44 cm dbh). Occasionally found in structures (attics, barns, etc.)	Suitable habitat present within the study area (structures and woodlands). Species not detected during targeted Visual Exit Surveys of on-site structures.
MOLLUSCS (FRESHWATER MUSSELS)				

Rainbow Mussel (<i>Villosa iris</i>)	Endangered / Threatened	Ausable, Bayfield, Detroit, Grand, Maitland, Moira, Niagara, Salmon, Saugeen, Sydenham, Thames, & Trent Rivers; Lake St. Clair; may no longer be in L. Erie & St. Clair, Detroit & Niagara R.	Most abundant in shallow, well oxygenated reaches of small- to medium-sized rivers and sometimes lakes, on substrates of cobble, gravel, sand and occasionally mud.	NHIC records exist for general area. Suitable habitat is limited to within adjacent Conestoga River.
Wavy-rayed Lampmussel (<i>Lampsilis fasciola</i>)	Special Concern / Threatened	Grand, Upper Thames, Maitland, & Ausable Rivers; Lake St. Clair & Lake St. Clair River delta	Clear water in small to medium rivers; shallow riffle areas with clean gravel or sand bottoms	NHIC records exist for general area. Suitable habitat is limited to within adjacent Conestoga River.
REPTILES				
Blanding's Turtle (<i>Emydonidea blandingii</i>)	Threatened	Widespread in south, central, and eastern Ontario	Generally occurs in freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes and swamps. Prefers shallow water that is rich in nutrients, organic soil and dense vegetation. Adults are generally found in open or partially vegetated sites, and juveniles prefer areas that contain thick aquatic vegetation including sphagnum, water lilies and algae. They dig their nest in a variety of loose substrates, including sand, organic soil, gravel and cobblestone. Overwintering occurs in permanent pools that average about one metre in depth, or in slow-flowing streams.	Associated with shallow water bodies such as marshes, swamps, and shallow lakes and slow moving rivers with muddy bottoms and abundant vegetation. Small wetland on site and nearby Conestoga River may present suitable habitat. No NHIC or MECP records from area (the locations of most populations in this region of Ontario are known). Given the isolated nature of this site, surrounded by anthropogenic and agricultural habitats, it is unlikely that a population of this species persists in the area.
Eastern Ribbonsnake (<i>Thamnophis sauritus</i>)	Special Concern	In Ontario, this snake occurs throughout southern and eastern Ontario and is locally common in parts of the Bruce Peninsula, Georgian Bay and eastern Ontario	Generally occur along the edges of shallow ponds, streams, marshes, swamps, or bogs bordered by dense vegetation that provides cover. Abundant exposure to sunlight is also required, and adjacent upland areas may be used for nesting.	Potentially suitable habitat found on site or in adjacent lands. No background records or on-site observation of this species.
Milksnake (<i>Lampropeltis triangulum</i>)	Special Concern	In Ontario, Milksnakes are found throughout the southern region, from the Great Lakes to the Ottawa Valley, and north to Georgian Bay and Manitoulin Island	Generally occur in rural areas, where it is most frequently reported in and around buildings, especially old structures. It is also found in a wide variety of habitats, from prairies, pastures, and hayfields, to rocky hillsides and a wide variety of forest types. They must also be in proximity of water, and suitable locations for basking and egg-laying.	Potentially suitable habitat found on site or in adjacent lands. No background records or on-site observation of this species.
Northern Map Turtle (<i>Graptemys geographica</i>)	Special Concern	In southern Ontario, it lives primarily on the shores of Georgian Bay, Lake St. Clair, Lake Erie and Lake Ontario	Generally inhabits both lakes and rivers, showing a preference for slow moving currents, muddy bottoms, and abundant aquatic vegetation. These turtles need suitable basking sites (such as rocks and logs) and exposure to the sun for at least part of the day.	Conestoga River provides potentially suitable habitat. No background records or on-site observation of this species.
Queensnake (<i>Regina septemvittata</i>)	Endangered	In Ontario, the Queensnake is found only in the southwest in Middlesex, Brant, Huron and Essex counties, and on the Bruce Peninsula. There are fewer than 25 sites where it is known to occur in these areas	Generally require a permanent body of water, flowing or still, with a temperature remaining at or above 18.3°C throughout most of the active season; abundant cover, such as flat rocks submerged and/or on the bank; and an abundance of crayfish. Other important habitat features may include rocky, gravelly, or slate stream-bed substrates, swift to moderate current, and woodland surroundings.	Conestoga River provides potentially suitable habitat. No background records or on-site observation of this species.
Midland Painted Turtle (<i>Chrysemys picta marginata</i>)	Special Concern (federal only)	Very widespread and common in southern Ontario	Painted turtles inhabit waterbodies, such as ponds, marshes, lakes and slow-moving creeks, that have a soft bottom and provide abundant basking sites and aquatic vegetation. These turtles often bask on shorelines or on logs and rocks that protrude from the water. The midland painted turtle hibernates on the bottom of waterbodies.	NHIC records exist for the general area. The on-site pond and Conestoga River present suitable habitat. Species was observed incidentally in the on-site pond during field investigations.
Snapping Turtle (<i>Chelydra serpentina</i>)	Special Concern	Very widespread and common in southern Ontario	Generally inhabit shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravelly or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits.	NHIC records exist for the general area. The on-site pond and Conestoga River present suitable habitat. Species was observed incidentally in the on-site pond during field investigations.

VASCULAR PLANTS				
Black Ash (<i>Fraxinus nigra</i>)	Threatened / Endangered	Black Ash occurs throughout most of Ontario, except the Far North	Black Ash is predominantly a wetland species found in swamps, floodplains and fens.	Potential habitat is present within the Conestoga River floodplain on adjacent lands. NHIC record exists for the general area. This species was not detected during field surveys.
Butternut (<i>Juglans cinerea</i>)	Endangered	Found throughout the southwest, north to the Bruce Peninsula, and south of the Canadian Shield	Generally grows in rich, moist, and well-drained soils often found along streams. It may also be found on well-drained gravel sites, especially those made up of limestone. It is also found, though seldomly, on dry, rocky and sterile soils. In Ontario, the Butternut generally grows alone or in small groups in deciduous forests as well as in hedgerows.	Potential Butternut were identified in Polygon 2. Genetic analysis revealed that identified individuals are hybrid Butternut x Japanese Walnut (<i>J. cinerea</i> x <i>J. ailantifolia</i>) and therefore are not pure Butternut. See report (Appendix H) for details.

APPENDIX G - Terms of Reference (TOR)



April 30, 2024

Mike Puopolo
Chief Operating Officer, Polocorp Inc.
379 Queen Street South, Kitchener, Ontario N2G 1W6
(519)-745-3249, ext. 201

RE: 51 HAWKESVILLE RD. (ST. JACOBS) – TERMS OF REFERENCE (TOR) FOR SCOPED
ENVIRONMENTAL IMPACT STUDY (EIS)

Dear Mike,

Dougan & Associates (D&A) was retained by Polocorp Inc. to prepare a Terms of Reference (TOR) and scoped EIS in support of a proposed development. The property, located in the village of St. Jacobs in the Township of Woolwich, Region of Waterloo is subject to the Regional Official Plan (OP).

The enclosed TOR outlines D&A's proposed approach for the EIS, following a desktop review of the proposal in the context of existing natural heritage background data, policy mapping, known survey protocols, and professional experience in the locality.

We trust this information is sufficient for your review and we look forward to a response at your earliest convenience to finalize the scope of the EIS and schedule a site visit with GRCA and Region staff. Please do not hesitate to contact the undersigned with any questions or concerns.

Respectfully submitted,



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Terms of Reference

Scoped Environmental Impact Statement

HAWKESVILLE RD, ST. JACOBS, ONTARIO

Dougan & Associates (D&A) was retained by Polocorp to prepare a Terms of Reference (ToR) for an Environmental Impact Statement (EIS) for a 7.22 ha property located at 51 Hawkesville Road in St. Jacobs. (see Figure 1). The proposed development will consist of 25 single detached dwellings, 31 townhouse units, an 2 medium-density building blocks with 28-40 units in each building, as well as associated parking, streets, and servicing. The development is proposed on existing trucking company lands zoned agricultural (see Concept Plan provided in **Appendix A**).

It is located within the jurisdiction area of the Grand River Conservation Authority (GRCA) and contains GRCA regulated features. The Conestogo River corridor extends through the south end of the property and contains the main concentration of natural features of concern including the river, floodplain, wetland, and treed valley slope. There is also a corridor of more disturbed natural features along the western edge of the property adjacent to the railway line. The west corridor includes a watercourse, online pond, and potentially wetland. The GRCA Regulation Limit encompasses both corridors but does not include the northeast portion of the property.

PURPOSE AND SCOPE

The Region of Waterloo requires an EIS for any proposed development within Environmental Constraint Areas to demonstrate that the proposal will not adversely affect these areas. Generally, development is discouraged within Environmental Constraint Areas that as it would detract from the functions performed by the natural environment such as groundwater recharge, erosion control, wildlife habitat, or where environmental constraints exist. However, such development may be permitted where it can be demonstrated that the proposal will not adversely affect the Environmental Constraint Areas (Region of Waterloo, 2015).

This EIS serves as a due diligence exercise to screen for ancillary impacts of the proposed development on the adjacent Core Area and any additional natural heritage constraints within the study area. The EIS will meet the criteria outlined in the GRCA EIS guidelines document including the following components:

- description of the proposed development;
- description of the surrounding environment;
- identification and assessment of the potential impacts of the proposal on the environment and the significant features and functions of the natural features;
- assessment of the potential effects of the proposal such as enhancement and/or restoration of significant features;
- assessment of the feasibility of alternative mitigation measures or techniques and the ability of such measures to prevent or minimize impacts;
- recommendations for wetland protection and/or enhancement;
- recommendations on the advisability of proceeding with the proposal, appropriate mitigation measures, changes to the proposal; and,
- if necessary, recommendations relating to a monitoring plan and contingency plans and funds should the proposal result in any unexpected impacts to the natural heritage features.

Recommendations will be made for avoiding or mitigating impacts to natural heritage features. Opportunities for restoring and enhancing natural heritage features will also be identified.

The proposed study area for the EIS is shown on Figure 1. This will include the subject property, the adjacent 120m lands and any natural heritage features that overlap the 120m adjacent lands. Areas outside the subject property may be surveyed indirectly (e.g., aerial/satellite interpretation, roadside survey) if property access is not available.

BACKGROUND REVIEW

The EIS will include review of background data, documents, plans and legislation relevant to the subject property. Key background sources will include:

- Natural Heritage Information Centre (NHIC) Biodiversity Atlas;
- Grand River Conservation Authority mapping and data request;
- Region of Waterloo Official Plan and Schedules and relevant zoning by-laws;
- Global Biodiversity Information Facility;
- Review of online citizen science databases (i.e., iNaturalist and Nature Counts);
 - Ontario Breeding Bird Atlas;
 - Ontario Reptile & Amphibian Atlas;
 - Ontario Butterfly Atlas;
- Constraints Summary Letter (Dogan & Associates, May 2023) for 51 Hawkesville Road; and,
- Any other relevant background documents.

The information gathered in this phase will provide a preliminary understanding of the natural heritage features and functions present on the subject lands, facilitate decision-making during the study, and will be incorporated into subsequent reporting.

POLICY CONTEXT

The policy context will be reviewed, and relevant natural heritage designations and regulations will be discussed in the EIS where applicable, including:

- Species at Risk Act (2002);
- Migratory Birds Convention Act (1994);
- Endangered Species Act (2007);
- Provincial Policy Statement (2020);
- Conservation Authorities Act/O.Reg. 150/06 and GRCA Policies;
- Region of Waterloo Official Plan (2015);
- Township of Woolwich Official Plan;
- Region of Waterloo Woodland Conservation Bylaw;
- Township of Woolwich Site Alteration Bylaw;
- Township of Woolwich Zoning Bylaw.

DESKTOP AND FIELD STUDIES

The scope of desktop and field studies for this EIS is proposed based on the presence of documented constraint features or anticipated constraints. The proposed study area boundary is shown on Figure 1. Table 1 summarizes the proposed desktop and field studies for this study:

Table 1. Proposed desktop and field studies for Hawkesville Road EIS

Activity	Details	Timing
Desktop Studies		
Background and Policy Review	The background and policy documents listed above will be reviewed for natural heritage information to form a preliminary understanding of natural heritage features and functions on the study site. The EIS will clearly demonstrate how the proposal is consistent with the Natural Heritage Policies contained within the Regions Official Plan.	Fall 2023
Significant Wildlife Habitat Screening	A desktop screening will be completed for Significant wildlife habitat (SWH) criteria for Ecoregion 7E (per MNRF 2015) prior to fieldwork. Field results will inform and/or confirm SWH presence/status.	Following 2023/2024 vegetation and wildlife field surveys
Species at Risk Screening	A desktop screening of the Global Biodiversity Information Facility (GBIF) and Natural Heritage Information Centre (NHIC) will be completed prior to fieldwork which will inform and/or confirm SAR presence/status.	Following 2023/2024 vegetation and wildlife field surveys
Vegetation Surveys		
Ecological Land Classification	Three (3) season vegetation surveys (spring, summer, and fall) will be used to delineate communities to vegetation type based on the ELC system for Southern Ontario, 1st approximation (Lee et al, 1998).	May 2023 July/August 2023 September 2023 (concurrent with Botanical Inventory and Tree Inventory visits)
Botanical Inventory	Three (3) season botanical inventories will be conducted in spring, summer, and fall 2023 to capture all vascular plants observable in the study area. This inventory will also determine if locally, provincially, or federally significant species are present. Local status will be based on the information provided within the Regional Municipality of Waterloo (RMW) Significant species List (1999).	May 2023 July/August 2023 September 2023

Activity	Details	Timing
		(concurrent with ELC and Tree Inventory visits)
Tree Inventory and Arborist Assessment	An ISA certified arborist will conduct a tree inventory and arborist assessment within the study area (Figure 1) to collect data for all trees that are ≥10cm DBH (diameter-at-breast height) that have driplines extending within the proposed limit of disturbance. Trees will be tagged with a uniquely numbered metal forestry tag that will correspond with mapping and reporting.	September 2023 (concurrent with ELC and Botanical Inventory)
Wildlife Surveys		
Breeding Bird Survey	Breeding bird surveys will take place following protocols outlined in the Ontario Breeding Bird Atlas (OBBA 2001), i.e. two surveys taking place at least seven days apart between May 24 and July 10. Surveys will occur between sunrise and approximately 10:00 a.m. under suitable weather conditions (i.e. light winds, good visibility, and no heavy rain).	Survey 1: May 24 – June 15 Survey 2: June 15 – July 10
Nocturnal Amphibian Call Survey	Nocturnal amphibian call surveys will be conducted in accordance with the Marsh Monitoring Program (BSC, 2009). Three (3) visits are required, in April, May and June to ensure that all frog species' calling windows are covered during surveys. Surveys will commence 30 minutes after sunset and will conclude at midnight.	Survey 1: April 15 – April 30 Survey 2: May 15 – May 30 Survey 3: June 15 – June 30
Bat Visual Exit Surveys*	Visual exit surveys (VES) for Species at Risk (SAR) bats will be undertaken in accordance with MECP's (2021) "Bats & Buildings – Exit & Roost Surveys" protocol which stipulates two (2) visits be undertaken in June under suitable weather conditions, with observers positioned from sunset to one (1) hour after the first emergence of bats (or longer if bats continue to emerge), or 1.5 hours after sunset, if no bats are observed emerging. Information that will be collected includes: • Date • Start and end time of survey • Temperature • Wind and sky condition • Species present • # of exit points monitored • Numbers counted • Names of surveyors	Survey 1: June 1 – 15 Survey 2: June 15 – 30
Incidental Wildlife Observations	Wildlife will be noted on an incidental basis during all field investigations.	Concurrent with all field investigations

Activity	Details	Timing
	Any incidental observations of Species at Risk (SAR) will be used in addition to desktop queries of the Global Biodiversity Facility (GBFI) and Natural Heritage Information Centre (NHIC).	

* VES for SAR bats will be undertaken at the buildings proposed for demolition. Based on on-site knowledge, these buildings present potentially suitable habitat for SAR bats and MECP requires visual exit surveys be conducted prior to demolition:

"If a proposed activity or project will remove or alter an anthropogenic structure in a way that would negatively affect use of the structure by SAR bats then bat surveys are warranted. This applies whether the structure provides potential SAR bat habitat or was known to provide bat habitat historically." (MECP, 2022).

REPORTING AND MAPPING

The findings of the background review and field studies will be integrated into a scoped EIS report that will characterize natural heritage features, summarize identified constraints and opportunities, assess potential impacts and mitigation measures (including vegetative protection zone requirements) consistent with the GRCA's Environmental Impact Study Guidelines and Submission Standards for Wetlands (2005). The impact assessment will examine the proposed development and address the direct, indirect and cumulative impacts to the natural heritage features and landscape functions. As required by GRCA guidelines, an assessment of potential impacts that the proposal may have on the natural heritage features will include:

- A description of the negative or positive impacts associated with the development proposal
- The potential for impacts on specific wetland features and/or functions
- The spatial extent, magnitude, frequency, and duration of wetland impacts (direct and indirect)
- The extent and degree to which lands adjacent to wetlands will be affected
- The possibility of cumulative impacts

Avoiding negative impacts is preferred over mitigation; as such, avoidance strategies undertaken will be listed and evaluated, including any modifications considered to the proposal. Where negative impacts are unavoidable, mitigation strategies to reduce or minimize significant impacts to features will be evaluated for relative effectiveness, and the extent of any residual impacts will be discussed. This section should include the following:

- an analysis of buffers and setbacks that are relevant to the potential impacts of the proposal and the natural heritage features to be protected.
- how the proposal was designed to avoid and/or minimize impacts;
- a description of any proposed compensation for impacts that cannot be mitigated (e.g. fragmented habitat), or restoration plans for disturbed areas; and,
- mitigation measures (e.g. lighting, fencing, erosion control, landowner stewardship brochures) proposed to eliminate or reduce impacts.

GIS tools will produce mapping products that support a scoped report. A summary of the proposed Table of Contents for the scoped EIS can be found in Appendix B.

A Landscape Plan will be completed by an OALA in good standing and will be completed after the EIS, which will document 1:1 compensation for all private tree removals.

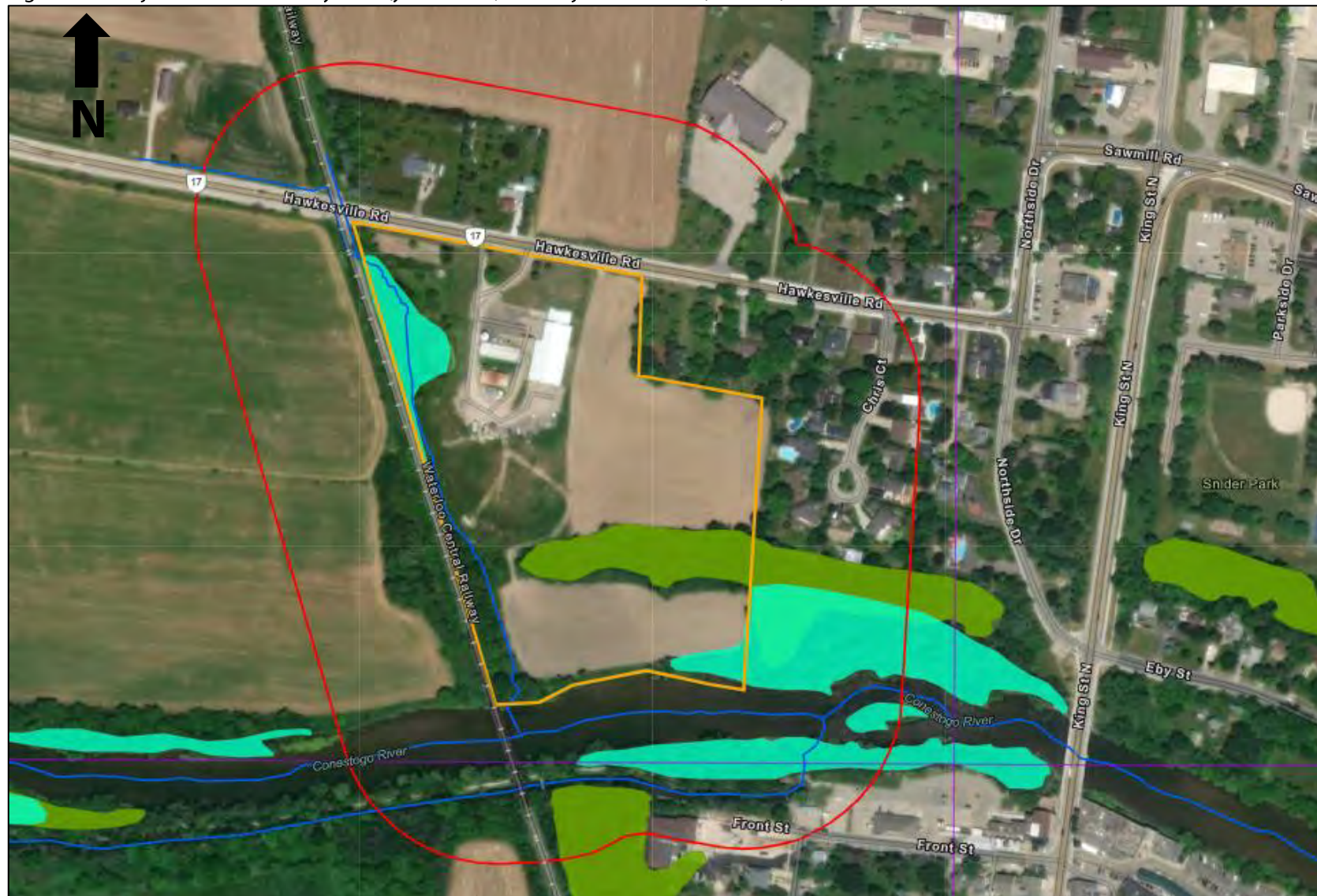
CONCLUSION

A summary of the findings, potential impacts on natural features and functions, recommended mitigation, monitoring and residual impacts will be provided within the EIS. The EIS will provide the foundation for future requirements for development approval as it relates to the natural heritage system. As the EIS progresses, consultation with the Region of Waterloo and GRCA will be maintained throughout to disclose observations and identify concerns and constraints. The EIS will also provide the foundation for impacts (if any) to SAR and/or their habitat and denote recommendations for next steps should SAR be identified.

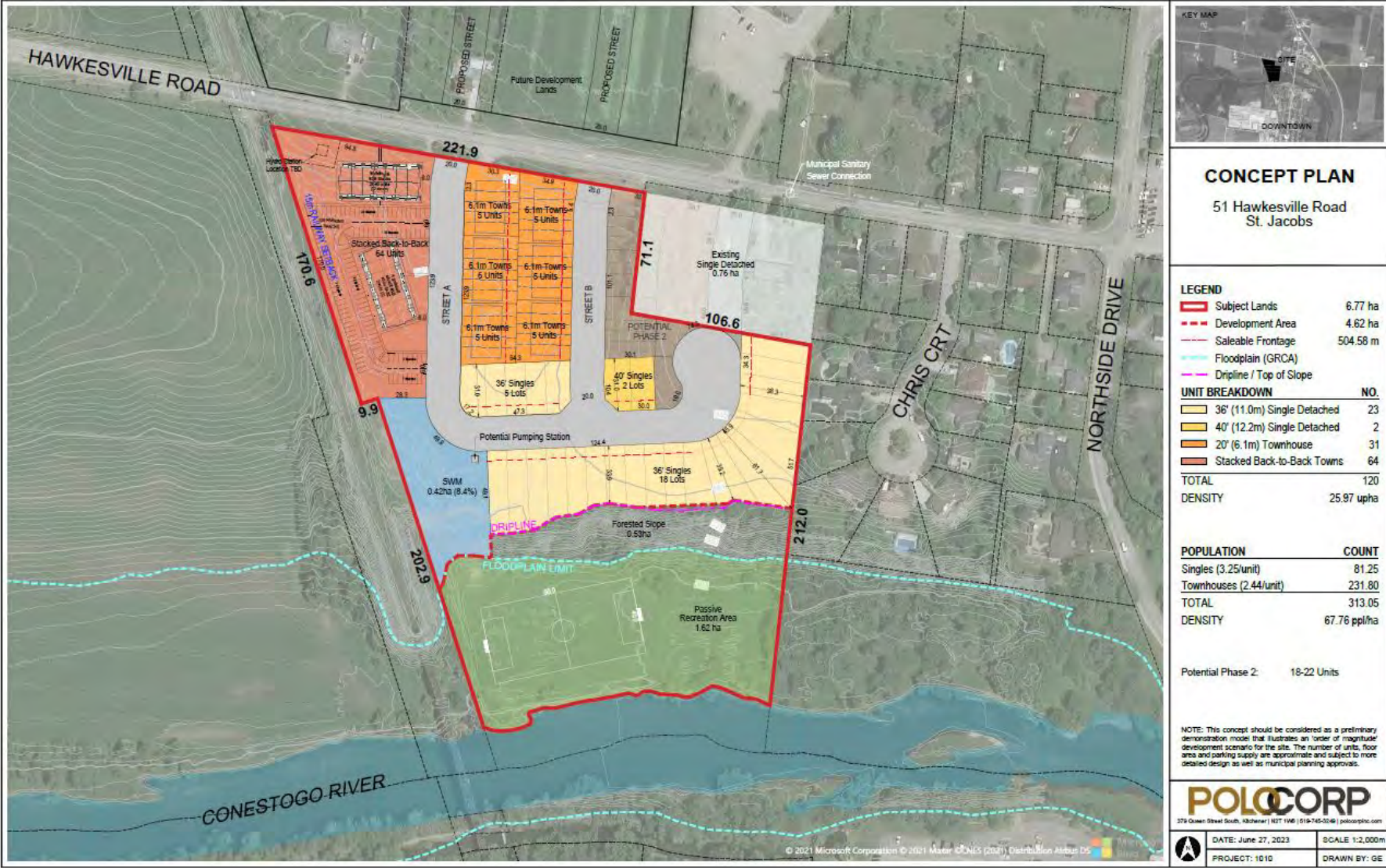
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- Lee, H., W. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig, and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, Southcentral Sciences Section, Science Development and Transfer Branch, SCSS Field Guide FG-02.
- MECP (Ministry of the Environment, Conservation and Parks). 2022. Species at Risk Bats Survey Note – 2022.
- OBBA (Ontario Breeding Bird Atlas). 2001. Guide for Participants. Atlas Management Board, Federation of Ontario Naturalists, Don Mills. 34pp.
- Regional Municipality of Waterloo. 2015. Official Plan.
- Regional Municipality of Waterloo (RMW). 1999. Significant species List. Native vascular plants component. PC-99-028.1 Appendix A.

Figure 1. Subject lands and study area (yellow line) and adjacent 120 m (red line) – Hawkesville Road EIS



Appendix A – Concept Plan



Appendix B

Proposed EIS Table of Contents

1. **INTRODUCTION**
 - 1.1. STUDY PURPOSE & OBJECTIVES
 - 1.2. BACKGROUND INFORMATION REVIEW
2. **POLICY REVIEW**
 - 2.1. FEDERAL
 - 2.1.1. SPECIES AT RISK ACT (GOVERNMENT OF CANADA, 2002)
 - 2.1.2. MIGRATORY BIRDS CONVENTION ACT (GOVERNMENT OF CANADA, 1994)
 - 2.2. PROVINCIAL
 - 2.2.1. PROVINCIAL POLICY STATEMENT
 - 2.2.2. ENDANGERED SPECIES ACT
 - 2.2.3. CONSERVATION AUTHORITIES AND GRCA POLICIES
 - 2.3. LOCAL
 - 2.3.1. REGION OF WATERLOO OFFICIAL PLAN (2012)
 - 2.3.2. TOWNSHIP OF WOOLWICH OFFICIAL PLAN
 - 2.3.3. TOWNSHIP OF WOOLWICH ZONING BY-LAWS
 - 2.3.4. TOWNSHIP OF WOOLWICH SITE ALTERATION BY-LAW
 - 2.3.5. REGION OF WATERLOO WOODLAND CONSERVATION BY-LAW
3. **STUDY APPROACH**
 - 3.1. PHYSIOGRAPHY AND TOPOGRAPHY
 - 3.2. VEGETATION
 - 3.2.1. ECOLOGICAL LAND CLASSIFICATION (ELC)
 - 3.2.2. BOTANICAL INVENTORY
 - 3.3. WILDLIFE
 - 3.3.1. BREEDING BIRD SURVEYS
 - 3.3.2. NOCTURNAL AMPHIBIAN CALL SURVEYS
 - 3.3.3. BAT VISUAL EXIT SURVEYS
 - 3.3.4. INCIDENTAL WILDLIFE
4. **EXISTING CONDITIONS**
 - 4.1. PHYSIOGRAPHY

- 4.1.1. PHYSICAL SETTING
- 4.2. VEGETATION
 - 4.2.1. ECOLOGICAL LAND CLASSIFICATION
 - 4.2.2. BOTANICAL INVENTORY
- 4.4. WILDLIFE
 - 4.4.1. BREEDING BIRD SURVEYS
 - 4.4.2. NOCTURNAL AMPHIBIAN CALL SURVEYS
 - 4.4.3. BAT VISUAL EXIT SURVEYS
 - 4.4.4. INCIDENTAL WILDLIFE
- 4.5. SIGNIFICANT WILDLIFE HABITAT (SWH) ASSESSMENT
- 4.6. SPECIES AT RISK (SAR) ASSESSMENT
- 4.7. SIGNIFICANT VALLEYLANDS
- 4.8. SUMMARY OF ECOLOGICAL FUNCTIONS AND ATTRIBUTES
- 5. **DESCRIPTION OF PROPOSED DEVELOPMENT**
 - 5.1. STORMWATER MANAGEMENT
 - 5.2. GRADING
 - 5.3. SERVICING
 - 5.4. CONSTRUCTION
- 6. **IMPACT ASSESSMENT**
 - 6.1. DIRECT IMPACTS
 - 6.2. INDIRECT IMPACTS
 - 6.3. CUMULATIVE IMPACTS
- 7. **MITIGATION AND ENHANCEMENT MEASURES**
- 8. **CONCLUSIONS AND RECOMMENDATIONS**
- 9. **REFERENCES**

ANTICIPATED MAPS

Map 1: Study Area Landscape Context

Map 2: ELC Vegetation Communities and Survey Locations

Map 3: Tree Inventory and Arborist Assessment

Map 4: Impact Assessment

Map 5: Constraints and Opportunities

Map 6: Tree Protection Plan

ANTICIPATED APPENDICES



- Flora and Fauna Species Lists (including Federal, Provincial, and Local Rankings Species Checklist (According to the Regional Municipality of Waterloo (RMW) Significant species List (1999)).
- ELC Data;
- Background Review Species List;
- SAR Screening List;
- SWH Screening List;
- Relevant Policy Summaries.

A large, stylized graphic of a plant with five leaves. The leaves are arranged in a fan-like pattern, with one leaf at the top and four others branching out below it. The leaves are a light gray color and have a smooth, curved shape.

APPENDIX H - Butternut Hybridity Report



BUTTERNUT HYBRIDITY TESTING RESULTS

Order number:	NA-SO00324
Report number:	NM-VSE608
Company:	Dougan & Associates
Contact:	Bianca Marcellino
Project:	51 Hawkesville Rd. St. Jacobs
Sample type:	Plant tissue
Date of report:	27 Oct 2023
Number of samples:	1

Thank you for sending your samples for analysis by NatureMetrics. Your samples have been **analysed** following our **Butternut RFLP (Restriction Fragment Length Polymorphism)** pipeline supplemented by **Sequence Characterized Amplified Region (SCAR)** codominant marker.

Butternut (*Juglans cinerea* L.) is considered an **endangered (EN)** tree species in Ontario. This report contains biodiversity information that may be sensitive, particularly with respect to endangered or protected species. It is the responsibility of the client to ensure that due consideration is given to the data and that the information is shared in a responsible way.

Disclaimer: Provided test only detects the occurrence of a hybridization event between butternut (*J. cinerea* L.) and Japanese Walnut (*J. ailantifolia* Carr.) similar to the previous OFRI test derived from the publication by Zhao and Woeste (2011).

Here we present an overview of the key results, followed by a more detailed report that starts with the taxonomic composition of the samples followed by a more detailed look at the steps taken to extract, amplify, sequence, and analyse your DNA. A glossary for terms in **bold** is provided at the end of the report to define key terms used within the report.

OVERVIEW OF YOUR RESULTS

- A total of 0 **butternut** sample(s) and 1 **hybrid** sample(s) (see **Disclaimer**) were identified.
- All laboratory **controls** performed as expected.



FULL REPORT

Sample composition

A total of 0 butternut sample(s) and 1 hybrid sample(s) were identified (**Table 1**).

High-quality PCR products were obtained from all four tested markers with corresponding restriction enzyme profiles, where applicable.

All laboratory controls performed as expected.

Table 1. The summary of RFLP and SCAR results of the sample(s) submitted.

Customer ID	Barcode	Date arrived	trnT-R RFLP	ITS RFLP	15R-8 RFLP	22-5 SCAR	Identification
DA21-059-02	NAS-01-H0472	06-Oct-23	<i>J. aillantifolia</i>	Hybrid	<i>J. cinerea</i>	<i>J. cinerea</i>	Hybrid



METHODS

DNA from plant sample(s) was extracted using a commercial plant DNA extraction kit with a protocol modified to produce standard DNA yields suitable for PCR and restriction analysis. An extraction blank was also processed for the extraction batch.

Extracted DNAs for sample(s) and negative extraction control were amplified with **PCR** for four regions: trnT-F, ITS, 15R-8 and 22-5.

All PCRs were performed using pre-validated PCR mixes in the presence of both a **negative DNA extraction control** and a **negative PCR control**. Amplification and restriction enzyme digestion products were analyzed by **gel electrophoresis**.

Markers and corresponding restriction digests:

Assay #1) PCR amplification of chloroplast gene trnT-F, followed by restriction digest with enzyme MbolI.

Assay #2) PCR amplification of ITS region of ribosomal nuclear DNA, followed by restriction digest with enzyme BsiEI.

Assay #3) PCR amplification of random nuclear fragment called “15R-8”, followed by restriction digest with enzyme AclI.

Assay #4) PCR amplification of SCAR marker 22-5 without restriction digest.

Comment: PCR reactions were consistently successful for all four markers for 1 sample(s). Electrophoresis bands were strong and of the expected size and no PCRs required repeating. No bands were observed on electrophoresis gels for the extraction blank or negative controls.

END OF REPORT

Report issued by: **May Mei**

Report reviewed by: **Natalia Ivanova**

Contact: team@naturemetrics.co.uk

REFERENCES

Zhao, P. & Woeste, K. E. (2011). DNA markers identify hybrids between butternut (*Juglans cinerea* L.) and Japanese walnut (*Juglans ailantifolia* Carr.). *Tree Genetics & Genomes*, 7, 511-533.



GLOSSARY

Butternut

Extraction Blank

Gel Electrophoresis

Inhibitors/inhibition

Hybrid

IUCN Red List

Juglans cinerea L.

A DNA extraction with no sample added to assess potential contamination during the DNA extraction process.

The process in which DNA is separated according to size and electrical charge via an electric current, while in a gel. The process is used to confirm the successful amplification of a specific size fragment of DNA.

Naturally-occurring chemicals/compounds that cause DNA amplification to fail, potentially resulting in false negative results. Common inhibitors include tannins, humic acids and other organic compounds. Inhibitors can be overcome by either diluting the DNA (and the inhibitors) or by additional cleaning of the DNA, but dilution carries the risk of reducing the DNA concentration below the limits of detection. At NatureMetrics, inhibition is removed using a commercial extraction/purification kit.

In this report – hybrid between butternut (*J. cinerea* L.) and Japanese Walnut (*J. ailantifolia* Carr.).

The IUCN (International Union for the Conservation of Nature) is a global union of government and civil organisations that disseminates information to assist conservation. The IUCN Red List of Threatened Species is an inventory of the conservation status of over 100,000 species worldwide. The Red List evaluates data such as population trends, geographic range and the number of mature individuals in order to categorise species based on their extinction risk:

Extinct (EX) - No individual of this species remains alive.

Extinct in the Wild (EW) - Surviving individuals are only found in captivity.

Critically Endangered (CE) - species faces an extremely high risk of extinction in the wild. e.g. Population size estimated at fewer than 50 mature individuals.

Endangered (EN) - species faces a very high risk of extinction in the wild. e.g. Population size estimated at fewer than 250 mature individuals.

Vulnerable (VU) - species faces a high risk of extinction in the wild. e.g. Population size estimated at fewer than 10,000 mature individuals and declining.

Near Threatened (NT) - species is below the threshold for any of the threatened categories (CE, E, V) but is close to this threshold or is expected to pass it in the near future.

Least Concern (LC) - species is not currently close to qualifying for any of the other categories. This includes widespread and abundant species.

Data Deficient (DD) - There is currently insufficient data available to make an assessment of extinction risk. This is not a threat



Negative Control PCR

category - when more data becomes available the species may be recategorised as threatened.

Used to determine if PCR reactions are contaminated.

Short for Polymerase chain reaction. A process by which millions of copies of a particular DNA segment are produced through a series of heating and cooling steps. Known as an 'amplification' process. One of the most common processes in molecular biology and a precursor to most sequencing-based analyses.

RFLP

Short for Restriction Fragment Length Polymorphism which is a difference in homologous DNA sequences that can be detected by the presence of fragments of different lengths after digestion of the DNA samples in question with specific restriction endonucleases.

Positive Control Primers

Used to determine whether the assay is working correctly.

Short sections of synthesised DNA that bind to either end of the DNA segment to be amplified by PCR. Can be designed to be totally specific to a particular species (so that only that species' DNA will be amplified from a community DNA sample), or to be very general so that a wide range of species' DNA will be amplified. Good design of primers is one of the critical factors in DNA-based monitoring.

SCAR

Short for Sequence Characterized Amplified Region. SCARs are DNA fragments amplified by the PCR using specific 15-30 bp primers, designed from nucleotide sequences established from cloned RAPD fragments linked to a trait of interest. Obtaining a codominant marker may be an additional advantage of converting RAPDs into SCARs, although SCARs may exhibit dominance when one or both primers partially overlap the site of sequence variation. Length polymorphisms are detected by gel electrophoresis.

Taxon (s.) / **taxa** (pl.)

Strictly, a taxonomic group. Here we use the term to describe groups of DNA sequences that are equivalent to species. We do not use the term species because we are unable to assign complete identifications to all of the groups at this time due to gaps in the available reference databases.

Taxonomy

species (s./pl.) - A group of individuals capable of interbreeding.

This is the most important taxonomic unit defined by scientists and the population trends of individual species are a key indicator in judging the effect of conservation programs. Related species are grouped together into progressively larger taxonomic units, from genus to kingdom. *Homo sapiens* (human) is an example of a species.

genus (s.) / **genera** (pl.) - A group of closely related species. Each genus can include one or more species. *Homo* is an example of a genus.

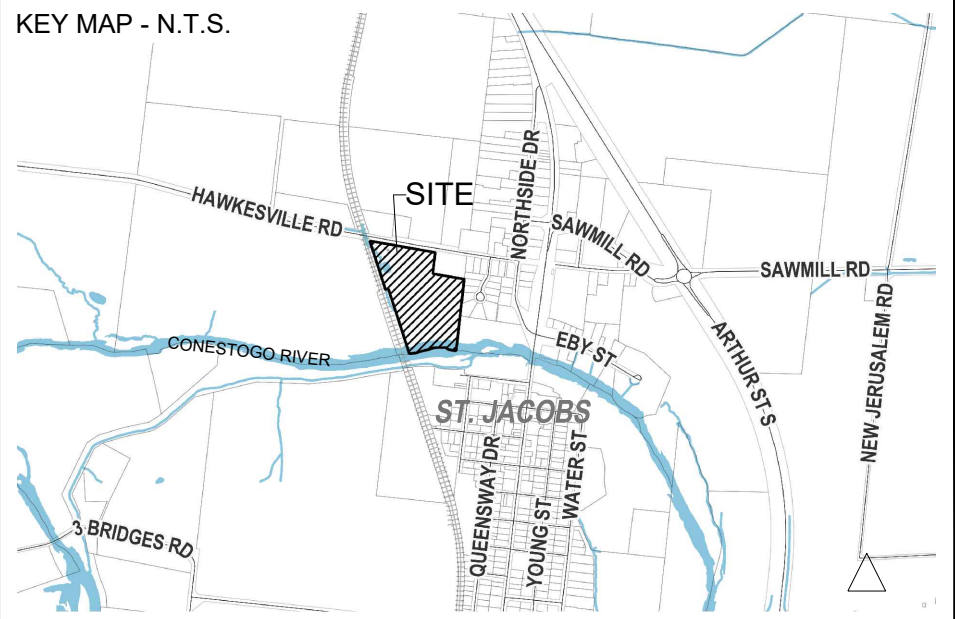
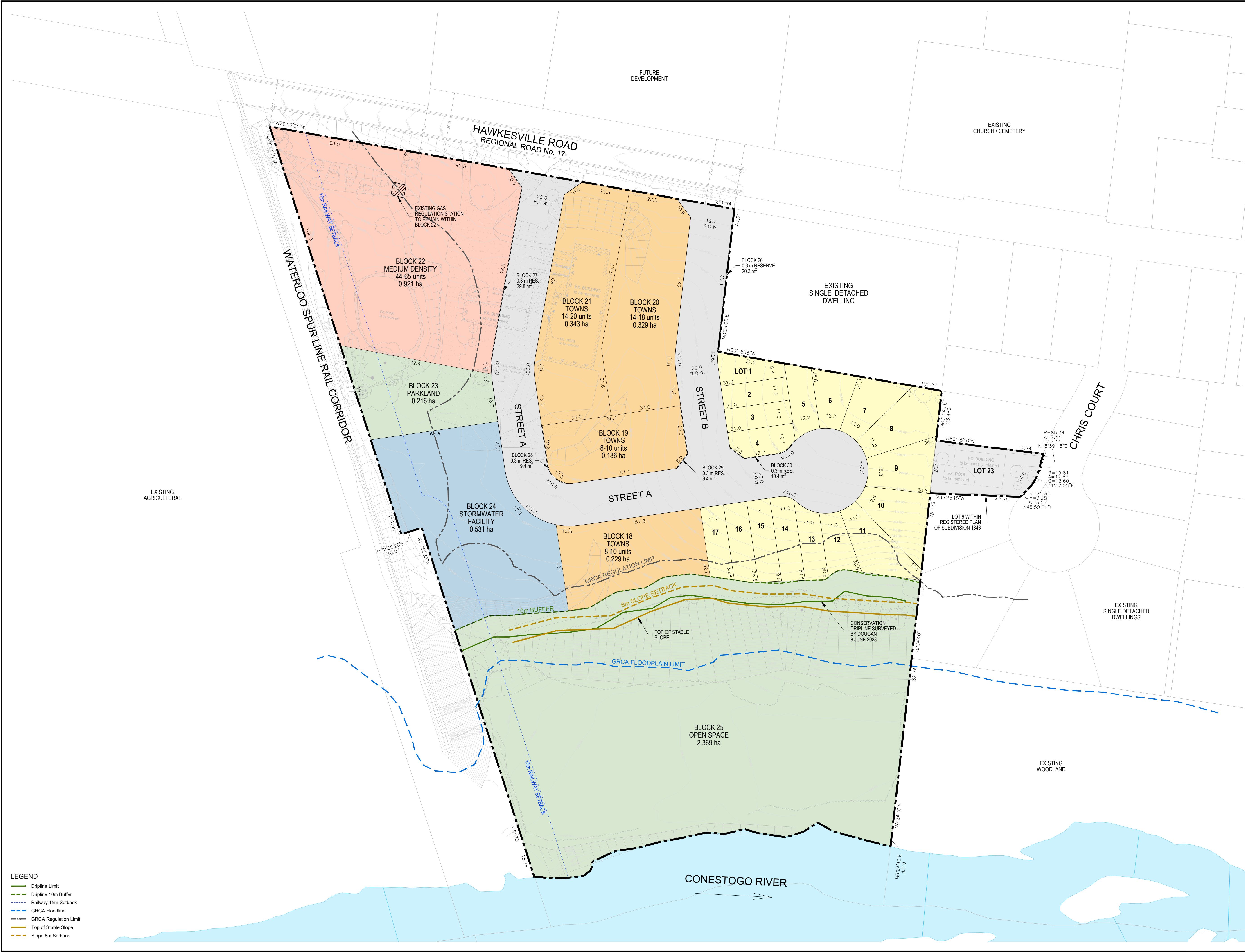
family (s.) / **families** (pl.) - A group of closely related genera. *Homo sapiens* is in the family Hominidae (great apes).

order (s.) / **orders** (pl.) - A group of closely related families. *Homo sapiens* is in the order Primates.

class (s.) / **classes** (pl.) - A group of closely related orders. *Homo sapiens* is in the class Mammalia.

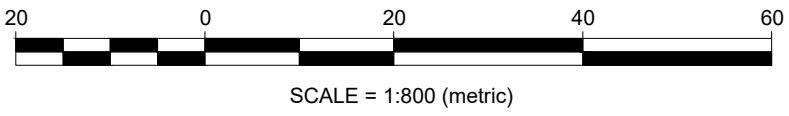
APPENDIX I - Polocorp Development Concept





DRAFT PLAN OF SUBDIVISION

PART OF LOT 37, GERMAN COMPANT TRACT,
TOWNSHIP OF WOOLWICH
REGIONAL MUNICIPALITY OF WATERLOO
51-55 HAWKESVILLE ROAD, ST. JACOBS



LAND USE SCHEDULE			
DESCRIPTION	LOTS/BLKS.	UNITS	AREA (ha.)
Single Detached	1-17	17	0.791
Street Townhouses	18-21	44-58	1.089
Medium Density	22	44-65	0.921
Existing Residential	23	1	0.110
Parkland	23	-	0.216
Stormwater Facility	24	-	0.531
Open Space	25	-	2.369
Reserve	26-30	-	0.008
Public Roads	-	-	0.923
TOTAL		106-141	6.958
DENSITY		GROSS	NET
Area (ha)		6.958	4.589
Density (upha)		15.2 - 20.3	23.1 - 30.7
People & Jobs per ha. (P&J/ha)		39.3 - 51.5	59.5 - 78.1

NOTES:
1. Lot 9 within Registered Plan of Subdivision 1346 (municipally known as 9 Christ Court) forms part of the subject lands solely for the purpose of securing consent for the proposed easement through the current subdivision application. No changes are proposed to Lot 9, which is identified as proposed Lot 23, and so it will not form part of the Registered Plan of Subdivision following draft approval.
2. The limit of development is defined by a 10.0 metre conservation buffer measured from the surveyed dripline.

INFORMATION REQUIRED
UNDER SECTION 51 (17) OF THE PLANNING ACT, R.S.O. 1990, c.P.13 AS AMENDED
INFORMATION REQUIRED BY CLAUSES a,b,c,d,e,f,i,j,g.) AND I ARE AS SHOWN ON THE DRAFT PLAN.
(h) Municipal Water Supply
(i) Silty Sands
(k) Municipal Sanitary and Storm Sewers

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

Jason Elliott
JASON ELLIOTT, O.L.S.
J.D. Barnes Limited
March 12, 2026
DATE

OWNER'S CERTIFICATE
I HEREBY CONSENT TO THE FILING OF THIS PLAN BY POLOCORP INC., IN DRAFT FORM
Mike Puopolo
MIKE PUOPOLO
Polocorp Inc.
March 12, 2026
DATE

APPROVALS

REVISIONS		
DATE	BY	DESCRIPTION
2026.03.20	GFE	ISSUED FOR DPS (SUB. 1) & OPA / ZBA (SUB. 3)
2026.06.09	ND	ISSUED FOR DPS (SUB. 2) & OPA / ZBA (SUB. 4)

POLOCORP
379 Queen Street South
Kitchener, ON N2T 1W6
polocorpinc.com
519-745-3249

DATE: 2026.06.09
PROJECT: 1010 (Hawkesville)
FILE: dps1010-2026.06.09.dwg
SCALE 1:800 (metric)
DRAWN BY: GFE/ND



REALIZING THE ECOLOGICAL POTENTIAL OF EVERY PLACE