



FINAL

Terrestrial Ecology Report

Vacant Lot West of Highway 10, Markdale, Ontario

Prepared for:

**J.L. Richards & Associates
Limited**

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Attn: Jane Wilson

January 13, 2025

Pinchin File: 339761



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1.0 INTRODUCTION

Pinchin Ltd. (Pinchin) was retained by the Consultant (Client) to conduct studies and prepare a Terrestrial Ecology Report (TER) for the subject property located at Vacant Lot West of Highway 10, Markdale, Ontario (Site) as part of an application for a proposed wastewater treatment infrastructure expansion. The location of the Site with general surrounding area is shown on Figure 1 in **Appendix A**. According to the Client's agency consultation, a TER is required by the Municipality of Grey Highlands for the Schedule C Class EA.

The Site, approximately 31-hectares in area, is currently occupied by the Markdale Wastewater Treatment Plant. Pinchin has identified the Site and its immediately surrounding area extending 120 m farther as the Study Area, as depicted on Figure 2 in **Appendix A**. Potential natural heritage features within the Site boundaries include woodlands, unevaluated wetlands, waterbodies, and watercourses, regulated by Saugeen Valley Conservation Authority (SVCA). The Client intends to conduct a Schedule C Municipal Class Environmental Assessment (EA) to evaluate the capacity of the Markdale Wastewater Treatment Plant to accommodate increased demands from future development.

This TER was prepared to: identify natural heritage features present on, or immediately adjacent to, the Site and characterize their ecological functions; evaluate aspect of the development proposal that might reasonably be expected adversely affect the natural features; and provide recommendations of measures to avoid or otherwise mitigate potential impacts. This TER report will be prepared in general accordance with relevant guidelines from the Municipality of Grey Highlands Official Plan (2017), County of Grey Official Plan (2023), and Saugeen Valley Conservation Authority Environmental Planning and Regulation Policies Manual (SVCA, 2018).

2.0 POLICY CONTEXT

Pinchin reviewed the following provincial, regional, and municipal legislation and policies prior to undertaking our evaluation of the natural heritage features and functions of the Site and adjacent areas:

- Provincial Policy Statement (2024);
- Municipality of Grey Highlands Official Plan (2017)
- Grey County Official Plan (2023); and
- Ontario Regulation 41/24.

The sections below provide a summary of the above legislation and policies applicable to the development planning of the Site.

2.1 Provincial Policy Statement

The Provincial Policy Statement 2024 (PPS) sets a policy foundation for regulating development and land use in the Province of Ontario. It sets out guidelines for development while protecting resources of interest to the province, public health and safety and the quality of the natural environment (Ministry of Municipal Affairs and Housing, 2020). The PPS does support development and improved land use for planning, management, and growth, but it does so in ways to enhance communities through efficient land use and environmental management and protection.

Section 4 of the PPS provides direction for wise use and management of resources by conserving and protecting natural areas and their features to their benefit. Section 4.1 stipulates that the natural features and areas are to be protected for the long term. Section 4.2 also states that the diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, are to be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features, and ground water features. Section 4.3 stipulates that the natural heritage systems shall be identified in Ecoregions 6E & 6E1, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas.

As the Study Area falls within Ecoregion 6E (Lake Erie – Lake Ontario Ecoregion), development and site alteration shall not be permitted that affect significant wetlands and significant coastal wetlands, as noted in section 4.5. Development and site alteration shall not be permitted, unless it has been demonstrated that there will be no negative impacts on these natural features or their ecological functions:

- a) significant woodlands in Ecoregions 6E (excluding islands in Lake Huron and the St. Mary's River);
- b) significant valleylands in Ecoregions 6E (excluding islands in Lake Huron and the St. Mary's River);
- c) significant wildlife habitat;
- d) significant areas of natural and scientific interest; and
- e) Coastal Wetlands in Ecoregion 6E that are not subject to policy 4.1.4 (b)

Development and Site alteration shall not be permitted in the habitat of endangered species and threatened species, except in accordance with provincial and federal requirements. Section 4.8 notes that development and site alteration shall not be permitted on land adjacent to the natural heritage features and areas unless the ecological function of the adjacent lands has been demonstrated and that there will be no negative impacts on their features or functions.

The PPS provides overall policy direction and should be read in conjunction with other provincial and municipal plans. Where the policies from various plans overlap, the more stringent policy applies unless otherwise stated.

2.2 Grey County Official Plan

The Study Area is subject to the policies and designations in the County of Grey (2023). Currently, the City designates the Study Area as “Hazard Lands” and “Rural Lands” as shown in Schedule A Map 3 of **Appendix B**. The predominant land uses within the Rural land use type will be agriculture, aggregate extraction, recreation, and forestry. Permitted uses in the Rural land use type include:

- a) All types, sizes and intensities of agricultural uses, and normal farm practices, including accessory uses (see Table 7);
- b) Agricultural-related uses;
- c) On-farm diversified uses;
- d) Marihuana/Cannabis production in accordance with any Federal laws and subsection
- e) Forestry;
- f) Conservation uses;
- g) Institutional uses on existing lots, serving those segments of the population whose primary means of transportation is via horse and buggy and active transportation, subject to policy 5.2.2(4)(b);
- h) Sand and gravel operations proposed within Aggregate Resource Areas on Schedule B to this Plan;
- i) Licensed aggregate operations identified as Mineral Resource Extraction on Schedule B;
- j) Wayside pits and quarries; and
- k) Portable asphalt or concrete plants used for a specific public use contract.

Hazards Lands include floodplains, steep or erosion prone slopes, organic or unstable soils, poorly drained areas, and lands along the Georgian Bay shoreline. These lands can be adversely affected by flooding, erosion, and dynamic beach hazards or have poor drainage, or any other physical condition that is severe enough to pose a risk for the occupant, property damage, or social disruption if developed. New development shall generally be directed away from Hazard lands. The policies of this section of the Plan work together with MNRF Natural Hazards Technical Guidelines, as well as conservation authority regulations, and policies. Permitted uses in the Hazard Lands land use type are forestry and uses connected with the conservation of water, soil, wildlife, and other natural resources. Other uses also permitted are agriculture, passive public parks, public utilities, and resource based recreational uses.



The above uses will be permitted only where site conditions are suitable and where the relevant hazard impacts have been reviewed.

2.3 Municipality of Grey Highlands Official Plan

The Study Area is subject to the policies and designations in the Municipality of Grey Highlands Official Plan Study Area (2022). However, it should be noted that the Site is not located within any of the Schedules within the Official Plan. Currently, the Municipality designates the Study Area as “Significant Woodlands” “Other identified Wetlands”, and “Stream/River” as shown in schedule C of **Appendix B**. No development and site alteration is permitted within the significant woodlands and the associated adjacent lands (120 metres) unless it has been demonstrated through an Environmental Impact Study that there will be no negative impacts on the natural features or on their ecological functions. Fragmentation of the woodlands is generally discouraged. New development or Site Alteration within or adjacent (120 metres) shall not be permitted, except for the restoration or minor expansion of buildings or structures legally existing at the date of approval of this Plan, or site alteration in association with a legally established use unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. Development and Site Alteration within or adjacent (30 metres) shall not be permitted on lands identified as “Other Identified Wetlands” unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

2.4 Ontario Regulation 41/24

Pursuant to the Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, any development in or on areas defined in the regulation area (e.g., river or stream valleys, hazardous land, wetlands) requires permission from SVCA under Ontario Regulation 169/06 (Government of Ontario, 2024). This regulation states that development in or on areas defined in the regulation area (e.g., river or stream valleys, hazardous land, wetlands) requires permission from SVCA. The SVCA may grant permission for development in or on these areas if the control of flooding, erosion, dynamic beaches, pollution, or the conservation of land will not be affected by the development. The Regulation also states that it is prohibited to straighten, change, divert or interfere in any way the existing channel of a river, creek, stream, or watercourse or change or interfere in any way with the wetland without the permission from the SVCA. Due to the presence of a watercourse and unevaluated wetlands on the Site, SVCA approval may be required for the proposed development and site alteration.

It is noteworthy that, since April 1, 2024, Ontario Regulation 41/24 was in effect that would have revoked previous regulations for Conservation Authorities, including the Ontario Regulation 161/06 for the SVCA. Ontario Regulation 41/24 applies to this Site, as it contains a wetland.

3.0 STUDY METHODOLOGY

3.1 Background Review and Agency Consultation

Pinchin conducted a desktop background review of available information sources relating to the Study Area prior to our site assessment. Included in our review were natural heritage features present on the Site and in the surrounding area, historical species occurrences available from the Natural Heritage Information Centre (NHIC), existing wildlife data records, Species of Conservation Concern lists and other relevant information. We also reviewed information and documents available from the Client, including site history and the Site plan. We prepared this TER in accordance with applicable policies and guidelines including the Municipality of Grey Highlands Official Plan (2017), and Saugeen Valley Conservation Authority Environmental Planning and Regulation Policies Manual (2018). This TER is also consistent with applicable provincial and regional policies, including the Provincial Policy Statement (2020), County of Grey Official Plan (2023), Ontario Regulation 169/06 under the *Conservation Authorities Act* (1990), and the *Endangered Species Act* (2007).

Additionally, as mentioned above and according to the Client's agency consultation, a TER is required by the Municipality of Grey Highlands for the Schedule C Class EA. The Client intends to conduct a Schedule C Municipal Class Environmental Assessment (EA) to assess the capacity of the Markdale Wastewater Treatment Plant to accommodate increased demands from future development.

Pinchin identified natural heritage resources with the potential to be present on the Study Area through the following information sources:

- An assessment of habitat through aerial photographs and online mapping:
 - Land Information Ontario (MNRF, 2020a); and
 - Google Earth.
- A review of historical occurrence records for Species of Conservation Concern within or adjacent to the Study Area:
 - Natural Heritage Information Centre (MNRF, 2024b);
 - Atlas of the Breeding Birds of Ontario (BSC, 2024);
 - Atlas of the Mammals of Ontario (Dobbyn, 1994);
 - Department of Fisheries and Oceans Canada Aquatic Species at Risk Map tool (DFO, 2024);
 - Ontario Reptile and Amphibian Atlas (ON, 2024);
 - Ontario Butterfly Atlas (TEA, 2024);
 - Ontario Regulation 230/08 Species at Risk in Ontario List (COSSARO, 2020); and
 - Provincial and federal assessments, recovery strategies, and management plans.

3.2 Field Assessment

Pinchin conducted field studies to characterize the natural heritage features present on the Site and in the surrounding landscape. Methodologies for the fieldwork completed by Pinchin are provided below.

3.2.1 Vegetation Surveys

Vegetation communities within the Study Area were assessed and described using the provincial Ecological Land Classification system. *The Ecological Land Classification for Southern Ontario: First Approximation and its Application* (Lee et al., 1998) and the *Ecological Land Classification for Southern Ontario: Second Approximation and its Application* (Lee et al., 2008) was referenced to classify the habitats to ecosite. Ecosites classified within the Study Area were then applied to Ecological Land Classification (ELC) polygons mapped using aerial imagery.

The vegetation communities for the summer season were sampled for their structure, species composition and habitat characteristics. This information was supplemented by floristic surveys at the time of each visit. Species names generally follow the nomenclature of Flora Ontario (Newmaster and Ragupathy, 2012) and the NHIC.

3.2.2 Woodland Assessment

The County of Grey Highlands has its own evaluation criteria for significant woodlands. The following woodland assessment criteria are from the Grey County Official Plan and meeting one of more criterion should be considered as candidate significant woodlands. A woodland shall be either greater than or equal to forty hectares in size outside of settlement areas, or greater than or equal to four hectares in size within settlement area boundaries. If a failing to meet the size criteria outside a settlement area, a woodland can also be significant if it meets any two of the following three criteria:

- a) Proximity to other woodlands, i.e., if a woodland was within 30 metres of another significant woodland, or
- b) Overlap with the boundaries of a Provincially Significant Wetland and Significant Coastal Wetlands, Core Area, Significant Valleylands, or a Significant Areas of Natural and Scientific Interest, or
- c) Interior habitat of greater than or equal to eight hectares, with a 100 metre interior buffer on all sides.

Each woodland evaluation criterion is discussed in Section 4.3 below.

3.2.3 Wetland Assessment

Wetland assessment in the Study Area followed the criteria outlined in the *Ontario Wetland Evaluation System* (OWES) 3rd Edition (MNR, 2013). The OWES framework evaluation criteria therein provide an appropriate benchmark to work from.

Soil classification, the “50% rule”, and the presence of wetland species and wetland indicator species form a useful basis for evaluation of the upland-wetland transition on the Site. According to the OWES, the “50% rule” is defined as that, if 50% or more of the relative vegetation cover in a given area consists of wetland plants (including wetland tolerant species and wetland indicator species), then the area should be considered a “wetland”.

Wetland indicator species are plants that cannot live in upland areas, as compared with wetland species that include wetland indicator plants and plants that can tolerate both wetland and upland habitats. We also used the Coefficient of Wetness (CW) in our assessment. The CW is an indicator that varies from minus 5 (obligate wetland) to 5 (obligate upland) and describes tolerances to wetness of an individual plant species. The OWES also has guidelines on feature size and complexing criteria. Though the OWES defines a wetland as being larger than 2 ha, features as small as 0.5 ha can be included with justifications. Although OWES further allows features smaller than 0.5 ha to be evaluated, that allowance is for only features having specialized habitat. For wetland complexing, biological and hydrological features, functions, and values are considered in evaluation, both on and off the feature or site.

3.2.4 *Species at Risk*

The *Endangered Species Act* (ESA) of 2007 provides protection from harm, harassment, or captures, to species listed as extirpated, endangered, or threatened on the Species at Risk Ontario List. Additional protection is provided to the habitat of endangered or threatened species on the Species at Risk Ontario List. Species habitat includes anywhere the species depends on for reproduction, rearing, hibernation, migration, or feeding; or prescribed habitat as defined in Ontario Regulation 242/08 of the General Regulation.

Pinchin assessed the likelihood of occurrence for Species at Risk, based qualitatively on the ability of the habitat to meet one or more life requisite for each, identified during the desktop assessment. If habitat suitable for Species at Risk was identified, we applied additional survey effort in that area. If incidental Species at Risk were observed, they were recorded throughout the field assessment within and adjacent to the Site.

3.2.5 *Breeding Bird Surveys*

Pinchin conducted breeding-bird surveys during the breeding bird season, in accordance with the Ontario Breeding Bird Atlas (OBBA; Cadman and Kopysh, 2001) protocol. Surveys were conducted between dawn and five hours after dawn during appropriate weather, and consisted of both standardized five-minute point counts at six pre-determined sites within the property, and active searching for evidence of breeding birds.

Point count sites were selected to minimize overlap and to incorporate a variety of habitat types. During the five-minute period, the surveyor recorded all birds seen or heard from the stationary position and indicated whether individuals were within a 100 m radius.

In addition, the surveyor recorded any breeding behaviours (i.e., nest building, courtship displays, etc.) that were observed on Site. Two breeding bird surveys, one week apart, were conducted on the Site as part of the field assessment program.

3.2.6 *Incidental Wildlife Observations*

Pinchin surveyed wildlife and their habitat during the Site visits to survey vegetation communities and vascular plants. These surveys involved general coverage recording all species observations and signs, including tracks or trails, scat, burrows, dens, browse, and vocalizations. We assessed significant wildlife habitat according to the MNRF Natural Heritage Reference Manual (MNRF 2010) and the MNRF Significant Wildlife Habitat Technical Guide (MNRF 2000).

4.0 EXISTING CONDITIONS

4.1 Landform, Physiography, and Geology

The Site is bounded by agricultural land to the northeast, and woodlands on the southeast, southwest, and northwest. The Ontario Geological Survey (1991) classifies the bedrock of the Site as being of Middle and Lower Silurian (sandstone, shale, dolostone, siltstone) from the Guelph Formation. The Site is within Ecodistrict 6E-5 (Mount Forest Ecodistrict), which extends from the community of Clavering in the north, south to Monkton, and from Bervie in the west and east to Shelburne. The ecodistrict is dominated by 72% pasture/cropland, 20% deciduous forest, 7% other natural, and 1% other land cover. The substrates within the ecodistrict are 70% Gray Brown Luvisol, 21% Melanic Brunisol, 6% Gleysol, and 3% other soil types. The Study Area gradually decreases in elevation toward the watercourse, with the lowest elevation of 400 metres above sea level (masl). A detailed review and analysis of the vegetation communities and potential natural heritage features on and surrounding the Site are provided in Section 4.2 below.

4.2 Vegetation Surveys

4.2.1 *Vascular Plants*

A three-season vegetation survey was conducted on the Site.

Season	Date	Temperature
Spring	31-May-24	Sunny with a high of 5° C
Summer	21-Jun-24	Sunny with a high of 26° C
Fall	30-Sep-24	Sunny with a high of 16° C

A total of 70 plant species were identified on the Site from the three-season vegetation surveys. A full inventory of vascular plant species observed on the Site is catalogued in Table 1 in **Appendix C**.

4.2.2 Vegetation Communities

Seven vegetation communities were identified on the Site during surveys: White Cedar Mineral Coniferous Swamp, Dry – Fresh White Cedar Coniferous Forest, Willow Mineral Deciduous Swamp, Balsam Poplar Mineral Deciduous Swamp, Grey County CP Rail Trail, Dry – Fresh Mixed Meadow, and Sewage and Water Treatment. These vegetation communities with their ELC polygons surveyed on the Site and the surrounding area are mapped on Figure 3 in **Appendix A**. Selected site photographs of the vegetation communities are included in **Appendix D** for reference.

White Cedar Mineral coniferous Swamp (SWCM1): This large community is found in two patches on the Site, one located along the western boundary and the other along the northern boundary. The community contains significant amounts of standing water throughout and is composed of a variety of wetland species. The canopy is dominated by Eastern White Cedar (*Thuja occidentalis*), with some Tamarack (*Larix laricina*). The ground layer is relatively sparse, consisting of fallen plant material, with Colt's Foot (*Tussilago farfara*) and Marsh Marigold (*Caltha palustris*).

There are two small patches of marsh communities dispersed within open canopy areas of the Eastern White Cedar. Within these patches, the vegetation is dominated by Narrow-leaved Cattail (*Typha angustifolia*), Bittersweet Nightshade (*Solanum dulcamara*), May Lily (*Maianthemum canadense*), and Broad-leaved Dock (*Rumex obtusifolius*).

Dry – Fresh White Cedar Coniferous Forest (FOCM2-2): This community is found in three patches on the Site and is on an elevation, acting as a transition zone to the wetland communities, and is entirely dominated by Eastern White Cedar, with the ground cover consisting of fallen tree leaves.

Willow Mineral Deciduous Swamp (SWDM4-1): This community is found within the central portion of the Site and is bounded to the west by the Grey County CP Rail Trail and to the east by the Sewage and Water Treatment community. The canopy was relatively sparse, with Silver Maple (*Acer saccharinum*). The shrub layer is dominated by Bebb's Willow (*Salix bebbiana*), with some Red-osier Dogwood (*Cornus sericea*). The ground layer vegetation consisted of Narrow-leaved Cattail (*Typha angustifolia*), Reed Canary Grass (*Phalaris arundinacea*), and Colt's Foot (*Tussilago farfara*), with lesser amounts of Panicked Aster (*Symphyotrichum lanceolatum*).

Balsam Poplar Mineral Deciduous Swamp (SWDM4); This community is found within the central portion of the Site and is bounded to the east by the Grey County CP Rail Trail and to the west by White Cedar Mineral Coniferous Swamp. The canopy within this community is dominated by Balsam Poplar (*Populus balsamifera*), with lesser amounts of American Elm (*Ulmus americana*). The shrub layer consisted of Maple Leaf Viburnum (*Viburnum acerifolium*), Red-osier Dogwood (*Cornus sericea*), Guelder Rose (*Viburnum opulus*), and Heart-leaved Willow (*Salix eriocephala*). The ground cover was dominated by Panicked Aster (*Symphyotrichum lanceolatum*), Marsh Fern (*Thelypteris palustris*), and Reed Canary Grass (*Phalaris arundinacea*). This community was flooded during the field assessments.

Grey County CP Rail Trail (CVI_1): This community runs through the center of the Site and consists of a gravel trail used for hiking and biking. The ground cover along the sides of the trail includes Giant Hogweed (*Heracleum mantegazzianum*), Wild Carrot (*Daucus carota*), Chicory (*Cichorium intybus*), Common Vetch (*Vicia sativa*), Orchard Grass (*Dactylis glomerata*), Wild Strawberry (*Fragaria virginiana*), and Large-leaf Aster (*Eurybia macrophylla*).

Dry – Fresh Mixed Meadow (MEMM3): This community is located in the northeastern portion of the Site and is composed of a mix of graminoid and forb species, including Viper's Bugloss (*Echium vulgare*), Common Dandelion (*Taraxacum officinale*), Tall Buttercup (*Ranunculus acris*), Smooth Brome (*Bromus inermis*), Oxeye Daisy (*Leucanthemum vulgare*), and Orchard Grass (*Dactylis glomerata*). This area appears to be regularly mown and is used by cattle for grazing and pasture during the fall.

Sewage and Water Treatment (CVI_3): This is the second-largest community on the Site and consists of the Markdale sewage and water treatment plant. Within this community, there are two ponds with rapid infiltration basins and associated access routes. The vegetation is primarily composed of mown grass, dominated by Kentucky Bluegrass (*Poa pratensis*).

4.3 Woodland Assessment

As described in Section 3.2.2, the Municipality of Grey Highlands has its own evaluation criteria for the assessment of woodland significance.

The Study Area contains three woodland communities, which are a White Cedar Mineral Coniferous Swamp, Dry – Fresh White Cedar Coniferous Forest, and Balsam Poplar Mineral Deciduous Swamp. The Site contains two patches of White Cedar Mineral Coniferous Swamp and Dry – Fresh White Cedar Coniferous Forest that are separated by a narrow trail. As the trail does not act as a significant barrier to wildlife movement, the two patches should be considered a single, continuous forested area.

Based on the evaluation criteria listed in section 3.2.2, the White Cedar Mineral Coniferous Swamp and the Dry – Fresh White Cedar Coniferous Forest, together meet the criteria for a significant woodland, as it is contiguous with a woodland beyond the Site that greater than 40 hectares in size. The Balsam Poplar Mineral Deciduous Swamp does not, however, meet the size criteria for a significant woodland, and does not overlap any significant features.

Potential adverse impacts, mitigation, and restoration of the significant woodlands are discussed in Section 7.0.

4.4 Wetland Assessment

The wetland communities on the Site include White Cedar Mineral Coniferous Swamp, Willow Mineral Deciduous Thicket Swamp, and Balsam Poplar Mineral Deciduous Swamp. These communities are dominated by over 50% wetland indicator plant species.

There are no identified Provincially Significant Wetlands within the vicinity of the Site. Furthermore, soil core samples under ELC methodology were taken from the wetland communities following OWES protocol, with the results matching the vegetation survey. Soil core samples were conducted throughout the Site, with sampling locations being picked at random for representative results. Within the White Cedar Mineral Coniferous Swamp communities, a layer of dark organic material was observed to a depth of 30 cm and the water table was observed at approximately 10 cm. The organic layer transitioned to a clay beyond 30 m. Soil cores within the Balsam Poplar Mineral Deciduous Swamp and Willow Mineral Deciduous Thicket Swamp had mottles and gley were observed within the top 27 cm of the soil samples, a finding that supports the analysis of wetland presence. Gley occurs when the oxygen in the soil becomes depleted (due to water saturation) resulting in the iron being completely reduced taking on a blue-grey colouration. This reduced iron is also mobile and can re-oxidize, producing reddish, yellow, or orange spotting, which is known as mottling. Mottles and gleys are indicators of wetland presence due to the water table being close to the surface.

The White Cedar Mineral Coniferous Swamp on the Site is dominated by over 50% wetland indicator species including Eastern White Cedar, and Tamarack, with some Yellow Marsh Marigold, and Sensitive Fern. The Willow Mineral Deciduous Swamp on the Site is dominated by over 50% wetland indicator species including Heart-leaved Willow, and lesser amounts of Red-osier Dogwood and Narrow-leaved Cattail. The Balsam Poplar Mineral Deciduous Swamp on the Site is dominated by over 50% wetland indicator species including Balsam Poplar with some Narrow-leaved Cattail and Reed Canary Grass.

Potential adverse impacts, mitigation, and restoration of the wetlands are discussed in Section 7.0.

4.5 Incidental Wildlife Observations

The following incidental wildlife were observed based on their sound, sight, and scat during the surveys for vegetation on the Site within the Study Area: Killdeer (*Charadrius vociferus*), Cedar Waxwing (*Bombycilla cedrorum*), American Woodcock (*Scolopax minor*), Brown Thrasher (*Toxostoma rufum*), Baltimore Oriole (*Icterus galbula*), White-tailed Deer (*Odocoileus virginianus*), and Raccoon (*Procyon lotor*). All these species are common in this suburban area of Markdale.

4.6 Species at Risk Screening

Upon a comprehensive Species at Risk (SAR) screening, 30 SAR were identified as having potential occurrence on the Site, resulting from the background review of the NHIC records and other available data sources for the Study Area surrounding the Site. The details on these 30 species screened for this Site, including the listing status, last observed date and sources used to identify their presence in the Study Area, and their habitat requirements are all summarized in the Species at Risk Screening Table in **Appendix E**. Based on the background review and field assessment, 11 of the 30 SAR were determined to have suitable habitat within the Study Area.

The woodlands and swamps throughout the Study Area may offer suitable habitat to nine avian SAR, including the Canada Warbler (*Cardellina canadensis*), Chimney Swift (*Chaetura pelagica*), Eastern Wood-pewee (*Contopus virens*), Evening Grosbeak (*Coccothraustes vespertinus*), Least Bittern (*Ixobrychus exilis*), Louisiana Waterthrush (*Seiurus motacilla*), and Red Shouldered Hawk (*Buteo lineatus*). These birds utilize different layers in the canopy or ground cover throughout the woodland and wetlands for nesting habitat. Of these avian SAR listed, only Chimney Swift was heard and observed. No evidence of any other avian SAR species was observed on the Site. Breeding bird surveys are discussed in section 4.8.

Three bat species were considered to have suitable habitat on the Site. These species are the Little Brown Bat (*Myotis lucifuga*), Northern Myotis (*Myotis septentrionalis*), Tri-coloured Bat (*Pipistrellus subflavus*). All three species can form summer colonies within attics, abandoned building and barns, as well as within established deciduous forests with loose bark and tree cavities. Based on the results of the completed fieldwork, the Site and surrounding area has the potential to provide habitat for these bat species. The classification of three other bats, the Eastern Red Bat (*Lasiurus borealis*), Hoary Bat (*Lasiurus cinereus*), and Silver-haired Bat (*Lasioncyteris noctivagans*) assessed by COSSARO, will be downlisted to Endangered in January 2025 on the *ESA 2007*. During our fieldwork, majority of the trees present were Eastern White Cedars. Given the small diameter of Eastern White Cedars, and the absence of cavities or loose bark, it is unlikely to provide suitable roosting habitat. However, several snags were observed within the vicinity of the watercourse. Targeted surveys were not completed as part of this assessment, and none of the species above were incidentally observed during field surveys.

It should be noted that during breeding bird surveys, a pair of Eastern Meadowlark and Bobolink were observed in the Dry – Fresh Mixed Meadow on the Site, as well as within the Area. These species typically prefer large, open grasslands for nesting and foraging and tend to avoid areas with significant hedgerow or tree cover. The meadow on the Site contains a patch of woodland that acts as a barrier of movement for the species and does not likely act as suitable habitat for the species. The Eastern Meadowlark and Bobolink are likely utilizing the meadow in the Study Area for foraging and nesting.

Mitigation measures to protect potential SAR on and around the Site are discussed in section 7.0 below.

4.7 Significant Wildlife Habitat Screening

The Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF, 2015) was consulted to screen the wildlife habitat for significance in the Study Area. Field assessments were also undertaken to assess the quality of the habitat in relation to Significant Wildlife Habitat. Based on observations during the vegetation surveys, candidate Significant Wildlife Habitat is present within the Study Area. Significant Wildlife Habitats we found within the Study Area are described in **Table 2 in Appendix E**.

According to the Significant Wildlife Habitat Criteria reviewed for this TER, candidate SWH was identified on the Site for Raptor Wintering Areas, Colonially-Nesting Bird Breeding Habitat (Tree/Shrub), Waterfowl Nesting Area, Bald Eagle and Osprey Nesting, Foraging and Perching Habitat, Woodland Raptor Nesting Habitat, and Special Concern Wildlife Habitat. Therefore, Pinchin conducted breeding bird surveys of the Site in summer 2024 (Section 4.8). None of the species listed for six out of seven of these SWH were observed on the Site and therefore SWH is not confirmed as present, with the exception being SWH for Special Concern and Rare Wildlife Species. Chimney Swift, Bobolinks, and Eastern Meadowlarks were heard calling and observed foraging on the Site, and therefore confirmed SWH is present for those species.

Candidate SWH was also identified on the Site for Bat Maternity Colonies and Amphibian Breeding Habitat (Wetlands), and Turtle Nesting Areas. Therefore, breeding amphibian surveys, snag surveys, and turtle basking surveys are recommended conducted on the Site prior to any future development. Should the Site be developed in the future, these wildlife surveys may be required to confirm if significant wildlife habitat is present within the Site and Study Area.

One Snapping Turtle hatchling was observed making its way to the wastewater ponds on the Site. There are gravelled roadways surrounding the ponds on the Site, and along the trail that could provide suitable nesting habitat. Snapping turtles can travel far distances from where they were nesting, and Turtle Nesting Surveys should be conducted prior to development.

Though an aquatic component was not scoped for this Terrestrial Ecology Report, we note that candidate turtle wintering areas would also be present on the Site within the stormwater ponds.

Measures to mitigate potential effects on SWH within and around the Site are discussed in section 7.0 below.

4.8 Breeding Bird Surveys

A total of 31 avian species were seen or heard at or in the vicinity of the Site during the breeding bird season on May 31, 2024, and June 21, 2024. The survey route and point count locations are shown on Figure 4 in **Appendix A**. Of the 31 species surveyed, 9 species were probable breeders, and 22 species were possible breeders. None of the avian species surveyed are protected as Threatened or Endangered under the Species at Risk Act 2002 (SARA) with the exception of the Bobolink (*Dolichonyx oryzivorus*), Eastern Meadowlark (*Sturnella magna*), and Chimney Swift (*Chaetura pelagica*).

A pair of Bobolink were observed foraging on the Site and Study Area. The Bobolink are listed as Threatened in the *Ontario Endangered Species Act 2007* (ESA). A pair of Eastern Meadowlark were observed foraging on the Site and Study Area. The Eastern Meadowlark are listed as Threatened in the *Ontario Endangered Species Act 2007* (ESA). Multiple Chimney Swifts were observed foraging on the Site and Study Area.

The Chimney Swift are listed as Threatened in the *Ontario Endangered Species Act* 2007 (ESA). All the other species observed are ranked as S5 (secure), S4 (apparently secure) or SNA (non-native). The statuses of observed species, their provincial NHIC rank (SRank), and the likelihood of their breeding at the Site are summarized in the Table in **Appendix F**.

Mitigations to protect breeding birds are discussed in section 7.0.

4.9 Natural Heritage System and Ecological Connectivity

The Site within the Study Area is surrounded by agricultural, forested, and residential areas. The Site is bounded by forests to the north, west, and south, and agricultural land with residential buildings to the east.

The Site consists of White Cedar Mineral Coniferous Swamp, Dry – Fresh White Cedar Coniferous Forest, Willow Mineral Deciduous Swamp, Balsam Poplar Mineral Deciduous Swamp, Grey County CP Rail Trail, Dry – Fresh Mixed Meadow, and Sewage and Water Treatment.

The Site is connected to neighbouring woodland and swamp communities, forming part of a broader landscape of woodlands and wetlands that serve as essential habitat for various species in the area. These habitats provide foraging opportunities and facilitate the dispersal of plants and wildlife, contributing to ecological connectivity within a predominantly developed landscape. While the wetlands and woodlands on the Site demonstrate good ecological value, evidence of disturbance, such as the presence of building materials within the wetland, reduces their overall ecological integrity. The roadway that intersects the middle of the Site, separating the White Cedar Mineral Coniferous Swamp and the Dry–Fresh White Cedar Coniferous Swamp, may act as a minor barrier to ecological connectivity. However, due to the trail's narrow width and its accessibility to wildlife, ecological connectivity is largely preserved. The meadow on the Site offers moderate ecological value, as it is regularly mowed and subsequently grazed by cattle, limiting its potential for diverse species development.

While the proposed development would disturb portions of the woodland and wetland on the Site, the planned restoration efforts would be strategically focussed within the same watershed, adjacent to nearby natural features. This approach aims to enhance ecological connectivity on an off-site property, contributing to the broader ecological network.

Mitigation measures to protect the wetlands and woodland on the Site are found in section 7.0 below.

5.0 PROPOSED DEVELOPMENT

The approximately 31-hectare Site is currently occupied by the Markdale Wastewater Treatment Plant. The Site and its immediate surrounding area as the identified Study Area for this TER can be seen on Figure 2 in **Appendix A**. Potential terrestrial natural heritage features on the Site include woodlands and unevaluated wetlands.

The orange areas will be developed into rapid infiltration basins (RIBs), similar to the eight existing ones on the Site. The number, size, and specific locations of these basins will be determined during the hydrogeological assessment. Additionally, the green area on the plan will house a septage recycling building, with vehicle access provided within the yellow-marked zones. The proposed Site Plan can be found in **Appendix G** for reference.

The purpose of this TER is to understand the current constraints by assessing ecological characteristics and conditions of a land-based environment on the Site and within the Study Area for the proposed Schedule C Municipal Class Environmental Assessment (EA) to assess the capacity of the Markdale Wastewater Treatment Plant to accommodate increased demands from future development, as well as the potential impacts from development in those areas. The impact assessment in Section 6.0 is based on the proposed Site Plan.

5.1 Developmental Constraints

It is noteworthy that the Site and Study Area contains wetland and significant woodland, based on assessment criteria set by the County of Grey Highlands. As such, the Site is subject to submittal of a TER based on the development plans and that assesses the natural features and potential adverse impacts of development on the Site and the surrounding Study Area. Pinchin anticipates that the natural communities throughout the Site will be affected in ways mainly to accommodate the proposed development. Below we identify a number of potentially adverse direct and indirect impacts of the proposed development.

6.0 IMPACT ASSESSEMENT

There are potential direct and indirect impacts of the proposed development on natural heritage features within and adjacent to the Site.

6.1 Direct Impacts

Direct impacts of the proposed development on natural heritage features (i.e., woodlands, wetlands, meadow) would include those from the following construction aspects:

- Stripping of vegetation and topsoil on the Site;
- Selective removal of trees and shrubs on the Site; and
- Displacement of wildlife on the Site

To accommodate the proposed development, stripping of vegetation and topsoil will be restricted to the wetland, woodland, and meadow on the Site. The Site may provide seasonal habitat to birds and other wildlife using the woodland for foraging and feeding. Potential effects on wildlife can be avoided by prudent timing of vegetation and topsoil removal.

The proposed development will be entirely contained within the development envelope of the Site. Potential direct impacts on the Site from the proposed development are mainly from selective removal of trees and shrubs on the Site. The wildlife utilizing the Site will be displaced permanently post-construction.

All trees removed within the White Cedar Mineral Coniferous Swamp and Dry – Fresh White Cedar Coniferous Swamp to allow for any proposed development, should be accommodated through a restoration planting program. The total encroachment into the wetland and woodland areas is 2.11 ha, with 0.28 ha of buffer encroachment and 1.83 of feature encroachment, as shown in Figure 6 of **Appendix A**. Given the limited potential for restoration within the Site, it is recommended to carry out restoration efforts within the same watershed, adjacent to existing natural heritage features off-site. Off-site wetland creation should be carried out by a qualified professional and compensated at a 1:1.5 ratio. The created wetland should include a 15-meter buffer from the outermost extent of the feature, and mature trees should be planted to address potential lag times in ecological function. The woodland should be compensated at a 1:1 ratio, adjacent to other forested areas, to enhance the connectivity and integrity of the natural heritage system. Restoration Planting should be done in accordance with a Landscape Plan developed in the detailed design phase with an emphasis on native species of vegetation. Given the presence of Eastern Meadowlark and Bobolink in the meadow on the Site, it is suggested that restoration activities occur outside of the community.

6.2 Indirect Impacts

The potential indirect impacts on the natural heritage features (i.e., woodland and wetland), based on the severance and development proposals, may include:

- Effects on plants and wildlife adjacent to the Site by construction noise, dust and vibration;
- Sedimentation of the natural heritage features by construction activities; and
- Alteration of water quality and flow regime in the adjacent natural heritage features.

Indirect impacts on the woodland, wetlands, and adjacent woodland communities will likely be limited to associated plants and wildlife inhabiting areas close to the Site. It is likely that, during the construction periods, birds, mammals, reptiles, and other wildlife that seasonally use these natural heritage features for foraging and breeding may be disturbed temporarily, while over time the wildlife will likely return to the wetland, and wooded areas on the Site.

Stormwater runoff from construction has potential to affect nearby natural heritage features. Development of a Stormwater Management Report with an Erosion and Sediment Control Plan for the Site is recommended prior to construction to identify ways to mitigate impacts on natural heritage features. Recommendations and measures to mitigate potential impacts of development on the Site are described in Section 7.0 below.

6.3 Residual and Cumulative Effects Assessment

Residual environmental effects are any permanent, immitigable changes in an identified valued ecosystem component. As residual environmental effects on the natural environment cannot, by definition, be addressed through mitigation, they are likely to persist following project completion.

Residual effects may result in cumulative effects through the interaction among residual effects of the project and those associated with other identified past, present, and reasonably anticipated projects and activities. Due to the short-term, local construction of the proposed development within the Site surrounded by roadways, wooded areas, and agricultural areas, residual effects from the Site development are projected to be low significance in magnitude, geographic extent, duration, and frequency. Residual adverse effects are not expected from the future residential development on the Site as all of the direct and indirect impacts identified above can be addressed through appropriate mitigation.

With sufficient and effective mitigation measures implemented prior to and during construction activities, no cumulative impacts are anticipated as a result of the proposed development. This conclusion supports the Provincial Policy Statement rule regarding no negative impacts on natural heritage features present on the Site. Recommendations and mitigation measures to address the potential impacts are detailed in Section 7.0 below.

7.0 RECOMMENDED AVOIDANCE AND MITIGATION MEASURES

Based upon the above impact assessment, according to the County of Grey Highlands OP, Pinchin has identified direct and indirect impacts on the natural environment present on the Site and within the Study Area, including the woodlands, meadow, and wetlands. Proposed mitigation measures to address all potential, identified negative impacts, including recommended timing windows and other specifications for implementation, are included in this TER. Furthermore, mitigation measures relating to protection of setbacks and buffers during onsite works (such as exclusion fencing) must be implemented prior to commencement of construction work to protect sensitive natural features.

As avoidance is the most effective approach to mitigating potential environmental impacts, the majority of the development will not affect the wetland and woodland on the Site. A minimum 15 m setback with exclusion fencing installed is recommended to protect the wetlands prior to tree removal and other construction activities. Pinchin anticipates encroachment into the wetland of the Balsam Poplar Mineral Deciduous Swamp, and White Cedar Mineral Coniferous Swamp. Given the current extent of development, a minimum 5 m setback with exclusion fencing installed is recommended to protect the woodlands prior to tree removal and other construction activities. Pinchin anticipates encroachment into the Dry – Fresh White Cedar Coniferous Forest. We note that the vegetation on the parcels is to remain in a natural state as possible, with the exception of the clearing within the development areas.

Restoration planting within appropriate areas at an off-Site location is recommended to compensate for the encroachment. Protective fencing and tree barriers are to be established so that no development activities including Site grading and construction will take place within protected areas.

The wetland and woodlands provides significant ecological value for plant and wildlife and protecting those features during development will help to preserve these natural heritage features. Protection of those features is also warranted to prevent soil erosion and sediment-laden water from entering these valuable natural heritage features during site construction.

Additionally, restoration and enhancement plan for the Site must be effectively implemented in a timely way to prevent potential negative impacts on the woodland post-construction. The following recommendations are provided for the protection of the natural heritage features prior to construction or site alteration.

Tree and vegetation removal:

- Restrict the extent of potential tree and vegetation removal within the Site to the construction footprint as far as practicable.
- To minimize or avoid impacts on breeding birds and roosting bats, remove vegetation within the Site outside of the associated breeding periods for bird and bat species, between April 1 and September 30.
- If trees need to be removed within this timing constraint window, deploy a qualified Biologist to conduct bird nest and bat roost surveys prior to any tree removal and to conduct ongoing monitoring.

Erosion and sediment control:

- Develop an Erosion and Sediment Control Plan as part of the Stormwater Management Report for the construction on the Site, and include protection measures applicable to the surrounding natural features.
- Prior to construction and site alteration, establish adequate erosion, and sediment control (ESC) measures, including sediment fencing, around the Site upgradient from the natural heritage features until the disturbed area is restored upon construction completion.
- Establish sufficient buffers to the adjacent natural features through protection zones.
- Conduct repairs and maintenance of the installed ESC measures regularly and as required until construction completion.
- Immediately stabilize disturbed areas post construction to prevent site erosion and sedimentation.

Significant Wildlife Habitat:

- Candidate SWH was identified on the Site for Bat Maternity Colonies and Amphibian Breeding Habitat (Wetlands), and Turtle Nesting Areas. Therefore, breeding amphibian surveys, snag surveys, and turtle basking surveys are recommended conducted on the Site prior to any future development.
- Significant wildlife habitat has been confirmed for Species of Special Concern. As noted in the SWH Mitigation Support Tool (2014), if disturbance can't be avoided, the retained habitat should be capable of maintaining a viable population. The woodland and agricultural land in the surrounding area provides suitable habitat to the SAR species observed and will not be adversely affected by development.

Species at Risk:

- Chimney Swifts were observed on the Site during breeding bird surveys. Although there are no chimneys present, snags are found within the wetland community. A leaf-off/on survey should be conducted in areas where tree removal is proposed. If snag trees are to be removed, a follow-up Chimney Swift survey may be required to assess whether they are nesting on the Site.
- Eastern Meadowlarks and Bobolinks were observed in pairs within the meadow on the Site. Should development occur within the meadow, consultation with the MECP will be required to assess potential impacts on these species.

Wildlife and Species at Risk encounter protocols:

- If wildlife is encountered during construction, cease work immediately and allow the animal to naturally move out of the construction zone.
- If the animal does not leave the area for a prolonged period, please consult with a qualified Biologist for possible response or mitigation measures.
- If an animal is injured or deceased, or if a Species at Risk is found on the Site, contact the Ministry of Environment, Conservation and Parks for guidance and handling.

Restoration and enhancement:

- Restore areas of encroachment into the candidate significant woodland at a 1:1 ratio by planting native deciduous tree and shrub species in an appropriate area off the Site as detailed in a Landscape Plan, to provide for enhanced natural habitats and vegetative buffer to the adjacent natural heritage feature.

- Restore areas of encroachment into the wetland at a 1:1.5 ratio by planting native deciduous tree and shrub species in an appropriate area off the Site within the same watershed as detailed in a Landscape Plan, to provide for enhanced natural habitats and vegetative buffer to the adjacent natural heritage feature. Consult with the CA prior to development to discuss restoration criteria.
- Develop a monitoring plan and implement it post-restoration to evaluate the effectiveness of established mitigation measures, and enable adaptive responses.
- Recognize that appropriate restoration of the replaced or removed trees through a landscape planting plan is of utmost importance to prevent adverse impacts of construction on the wetland and woodland.

8.0 CONCLUSION

There are environmental opportunities and constraints identified on the Site as outlined in this TER. The assessed impacts, including direct and indirect impacts, can be avoided or otherwise mitigated through effective stormwater and environmental management measures. With the implementation of the environmental plans sought out in this TER and recommended Stormwater Management Plan, and Landscape Plan, the future development would preserve the ecological functions of the adjacent natural features and enhance natural landscape on the Site through the installation of restoration and enhancement measures on the Site post construction.

With the above recommendations taken into account and diligently implemented on the Site, no adverse negative impacts on the ecological integrity of the Site will result from the proposed severance and future residential development.

9.0 CLOSURE

The enclosed Terrestrial Ecology Report has been prepared to assess the natural heritage features including the terrestrial conditions on the Site within the Study Area. The information contained herein as a result of the TER regarding the proposed severance is solely provided to the Client and approval agencies as a reference only.

In the event that clarifications or further information is required by the Client and approval agencies, please do not hesitate to contact the primary Pinchin contact indicated in the contact page of this document.

10.0 REFERENCES

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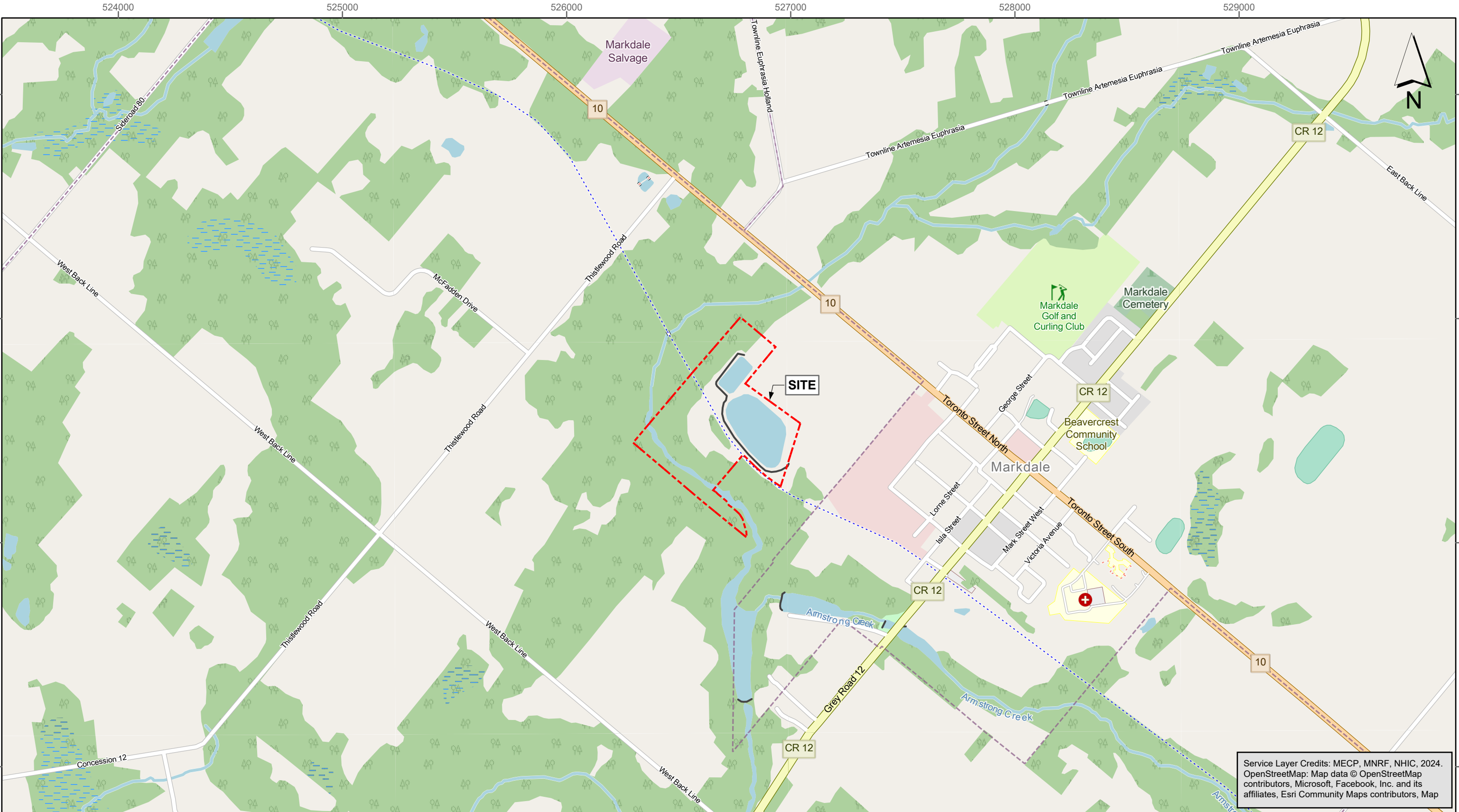
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11.0 LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project. Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

339761 FINAL Terrestrial Ecology Vacant Lot West of Highway 10 Markdale ON January 2025

APPENDIX A FIGURES



PROJECT NAME: Terrestrial Ecology Report

CLIENT NAME: J.L. Richards & Associated Limited

PROJECT LOCATION: Vacant Lot West of Highway 10, Markdale, Ontario

FIGURE NAME: Site Location

PROJECT NO. 339761.000

DATE: April 2024

SCALE: 1:16,000

FIGURE NO. 1

LEGEND

Site Boundary

NOTES

1. All features and measurements are approximate and subject to field verification. This map is for planning purposes only.

2. Use dimensions as shown, do not scale drawing.

3. This map is not to be used for legal purposes.

Service Layer Credits: MECP, MNRF, NHIC, 2024.
OpenStreetMap: Map data © OpenStreetMap contributors, Microsoft, Facebook, Inc. and its affiliates, Esri Community Maps contributors, Map

0 150 300 600 Metres

Coordinate System: NAD 1983 CSRS UTM Zone 17N
Projection: Transverse Mercator
Datum: North American 1983 CSRS

DRAWN BY: MH REVIEWED BY: EO REVISION: 0



Service Layer Credits: MECP, MNRF, NHIC, 2024.
World Imagery: Maxar



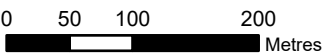
PROJECT NAME: Terrestrial Ecology Report
CLIENT NAME: J.L. Richards & Associated Limited
PROJECT LOCATION: Vacant Lot West of Highway 10, Markdale, Ontario
FIGURE NAME: Study Area

PROJECT NO. 339761.000
DATE: April 2024
SCALE: 1:6,000
FIGURE NO. 2

- LEGEND**
- Site Boundary
 - Study Area (120 m)
 - Wetland (Unevaluated)
 - Waterbody
 - Roadway
 - Topography Contours (5 m)
 - Watercourse

NOTE: Imagery was taken in 2014 and may not reflect current conditions.

- NOTES**
- All features and measurements are approximate and subject to field verification. This map is for planning purposes only.
 - Use dimensions as shown, do not scale drawing.
 - This map is not to be used for legal purposes.



Coordinate System: NAD 1983 CSRS UTM Zone 17N
Projection: Transverse Mercator
Datum: North American 1983 CSRS

DRAWN BY: MH REVIEWED BY: EO REVISION: 0



Ecological Land Classification

- 1. White Cedar Mineral Coniferous Swamp (SWCM1)
- 2. Dry – Fresh White Cedar Coniferous Forest (FOCM2-2)
- 3. Willow Mineral Deciduous Swamp (SWDM4-1)
- 4. Balsam Poplar Mineral Deciduous Swamp (SWDM4)
- 5. Grey County CP Rail Trail (CVI_1)
- 6. Dry - Fresh Mixed Meadow (MEMM3)
- 7. Sewage and Water Treatment (CVI_3)

Service Layer Credits: MECP, MNRF, NHIC, 2024.
World Imagery: Maxar



PROJECT NAME: Terrestrial Ecology Report

CLIENT NAME: J.L. Richards & Associated Limited

PROJECT LOCATION: Vacant Lot West of Highway 10, Markdale, Ontario

FIGURE NAME: Terrestrial Ecological Land Classification

PROJECT NO. 339761.000

DATE: Nov. 2024

SCALE: 1:4,800

FIGURE NO. 3

LEGEND

- Site Boundary
- Roadway
- Watercourse

NOTE: Imagery was taken in 2014 and may not reflect current conditions.

NOTES

1. All features and measurements are approximate and subject to field verification. This map is for planning purposes only.

2. Use dimensions as shown, do not scale drawing.

3. This map is not to be used for legal purposes.

0 30 60 120 Metres

Coordinate System: NAD 1983 CSRS UTM Zone 17N
Projection: Transverse Mercator
Datum: North American 1983 CSRS

DRAWN BY: MH REVIEWED BY: KH REVISION: 1



Ecological Land Classification	
1. White Cedar Mineral Coniferous Swamp (SWCM1)	
2. Dry – Fresh White Cedar Coniferous Forest (FOCM2-2)	
3. Willow Mineral Deciduous Swamp (SWDM4-1)	
4. Balsam Poplar Mineral Deciduous Swamp (SWDM4)	
5. Grey County CP Rail Trail (CVI_1)	
6. Dry - Fresh Mixed Meadow (MEMM3)	
7. Sewage and Water Treatment (CVI_3)	

Service Layer Credits: MECP, MNRF, NHIC, 2024.
World Imagery: Maxar



PROJECT NAME:	Terrestrial Ecology Report	PROJECT NO. 339761.000	LEGEND <div><div><div></div></div> Site Boundary</div> <div><div></div></div> Recommended Setback Area <div><div></div></div> Roadway <div><div></div></div> Watercourse <div><div>- Woodland #2 (5 m)</div><div>- Wetlands #1, 3, 4 (15 m)</div></div>	NOTES <div>1. All features and measurements are approximate and subject to field verification. This map is for planning purposes only.</div> <div>2. Use dimensions as shown, do not scale drawing.</div> <div>3. This map is not to be used for legal purposes.</div>	<div><div>03060120</div><div></div><div>Metres</div></div> <div>Coordinate System: NAD 1983 CSRS UTM Zone 17N Projection: Transverse Mercator Datum: North American 1983 CSRS</div>
CLIENT NAME:	J.L. Richards & Associated Limited	DATE:			
PROJECT LOCATION:	Vacant Lot West of Highway 10, Markdale, Ontario	SCALE:			1:4,800
FIGURE NAME:	Environmental Constraints	FIGURE NO.			4
			NOTE: Imagery was taken in 2014 and may not reflect current conditions.		
			<div><div>DRAWN BY: MH</div><div>REVIEWED BY: KH</div><div>REVISION: 1</div></div>		



Ecological Land Classification	
1. White Cedar Mineral Coniferous Swamp (SWCM1)	
2. Dry – Fresh White Cedar Coniferous Forest (FOCM2-2)	
3. Willow Mineral Deciduous Swamp (SWDM4-1)	
4. Balsam Poplar Mineral Deciduous Swamp (SWDM4)	
5. Grey County CP Rail Trail (CVI_1)	
6. Dry - Fresh Mixed Meadow (MEMM3)	
7. Sewage and Water Treatment (CVI_3)	

Service Layer Credits: MECP, MNRF, NHIC, 2024.
World Imagery: Maxar



PROJECT NAME:	Terrestrial Ecology Report
CLIENT NAME:	J.L. Richards & Associated Limited
PROJECT LOCATION:	Vacant Lot West of Highway 10, Markdale, Ontario
FIGURE NAME:	Breeding Bird Survey Station Locations

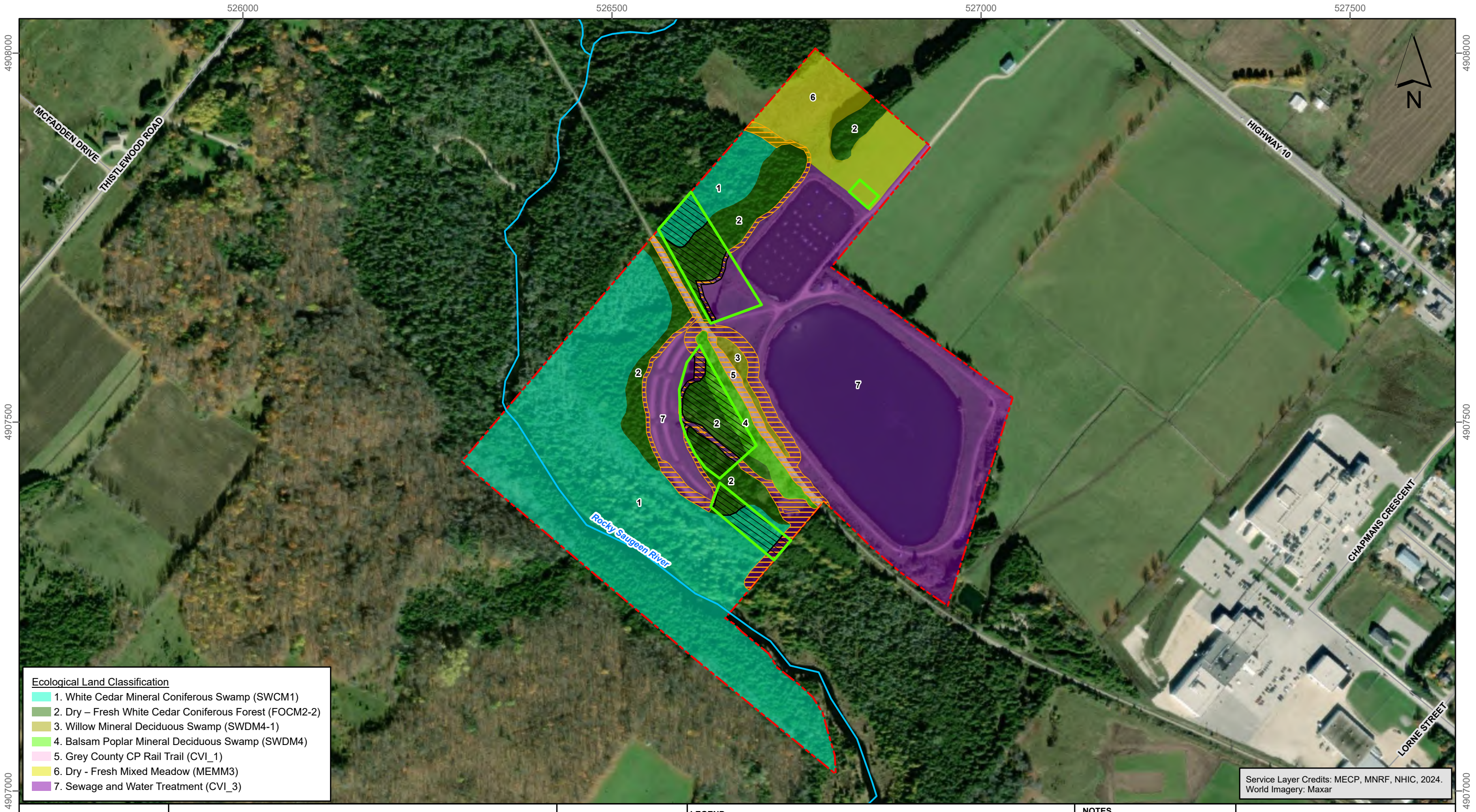
PROJECT NO.	339761.000
DATE:	June 2024
SCALE:	1:4,800
FIGURE NO.	5

LEGEND	
Site Boundary	Breeding Bird Survey Station
Roadway	Survey Route
Watercourse	

NOTE: Imagery was taken in 2014 and may not reflect current conditions.

NOTES
1. All features and measurements are approximate and subject to field verification. This map is for planning purposes only.
2. Use dimensions as shown, do not scale drawing.
3. This map is not to be used for legal purposes.

0 30 60 120 Metres
Coordinate System: NAD 1983 CSRS UTM Zone 17N Projection: Transverse Mercator Datum: North American 1983 CSRS
DRAWN BY: MH REVIEWED BY: KH REVISION: 0



Ecological Land Classification	
1.	White Cedar Mineral Coniferous Swamp (SWCM1)
2.	Dry – Fresh White Cedar Coniferous Forest (FOCM2-2)
3.	Willow Mineral Deciduous Swamp (SWDM4-1)
4.	Balsam Poplar Mineral Deciduous Swamp (SWDM4)
5.	Grey County CP Rail Trail (CVI_1)
6.	Dry - Fresh Mixed Meadow (MEMM3)
7.	Sewage and Water Treatment (CVI_3)

Service Layer Credits: MECP, MNRF, NHIC, 2024.
World Imagery: Maxar



PROJECT NAME:	Terrestrial Ecology Report
CLIENT NAME:	J.L. Richards & Associated Limited
PROJECT LOCATION:	Vacant Lot West of Highway 10, Markdale, Ontario
FIGURE NAME:	Development Constraints

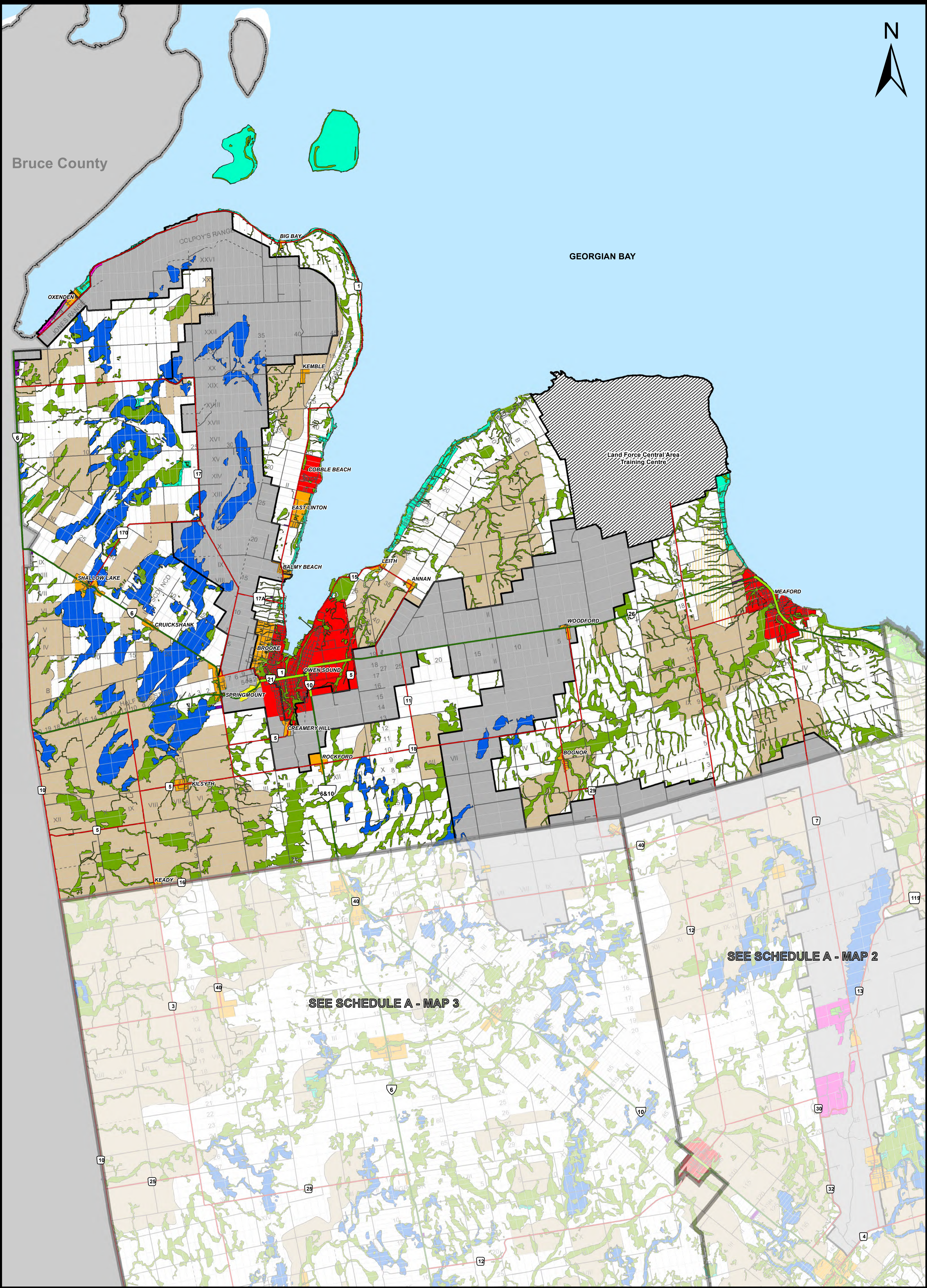
PROJECT NO.	339761.000
DATE:	Dec. 2024
SCALE:	1:4,800
FIGURE NO.	6

LEGEND	
	Site Boundary
	Roadway
	Watercourse
	Recommended Setback Area
	Encroachment Areas
	Woodland and Wetlands = 1.83 ha
	Buffer Areas = 0.28 ha
	Total Encroachment = 2.11 ha
	- Wetlands #1, 3, 4 (15 m)
NOTE: Imagery was taken in 2014 and may not reflect current conditions.	

NOTES
1. All features and measurements are approximate and subject to field verification. This map is for planning purposes only.
2. Use dimensions as shown, do not scale drawing.
3. This map is not to be used for legal purposes.

0 30 60 120 Metres
Coordinate System: NAD 1983 CSRS UTM Zone 17N Projection: Transverse Mercator Datum: North American 1983 CSRS
DRAWN BY: MH REVIEWED BY: KH REVISION: 0

APPENDIX B
SUPPLEMENTARY INFORMATION



THE COUNTY OF GREY
OFFICIAL PLAN

**SCHEDULE A
Land Use Types**

MAP 1

LEGEND

- Provincial Highway Connecting Link
- Provincial Highway
- County Road
- Local Road
- Seasonal Road
- Agricultural



Special Agricultural



Rural



Primary Settlement Area *



Secondary Settlement Area *



Inland Lakes & Shoreline Settlement Area



Recreational Resort Settlement Area



Sunset Strip Settlement Area



Industrial Business Park Settlement Area

Space Extensive Industrial and Commercial

Niagara Escarpment Plan Boundary **

Niagara Escarpment Development Control Area

Escarpment Natural Area

Escarpment Recreation Area

Hazard Lands

Provincially Significant Wetlands and Significant Coastal Lands

* refer to Secondary Schedules for further detail.

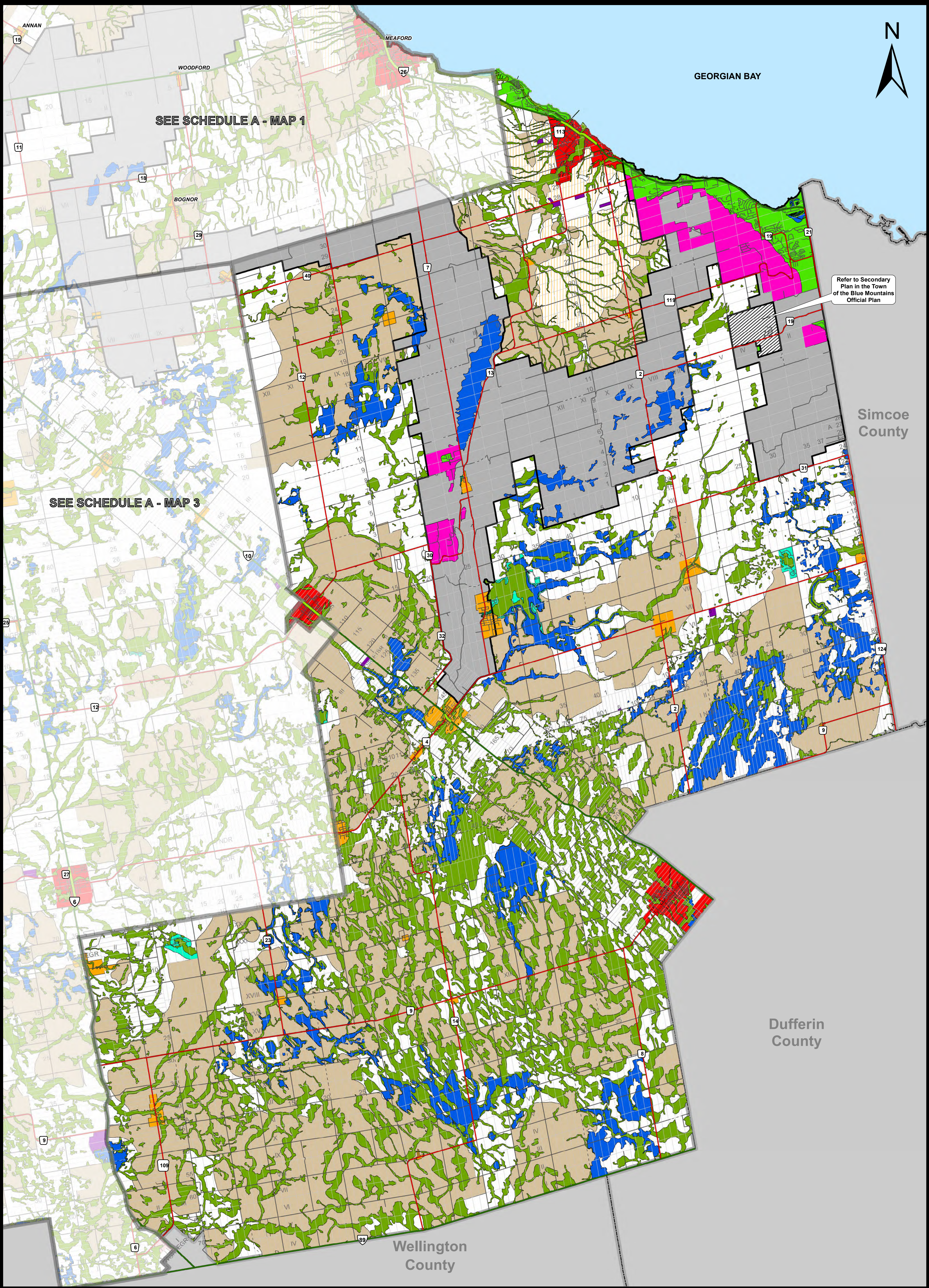
** certain settlement areas within the Niagara Escarpment Plan Boundary may be subject to Development Control.

SCALE 1:95,000

0 1,125 2,250 4,500 6,750 9,000 Meters

AUTHOR: Grey County Planning
FILE NAME: GR_OP_SchedA_Map1northX36.mxd
CONSOLIDATION: May 1, 2023
INTERACTIVE MAP: geo.grey.ca
DOWNLOAD PDF: grey.ca/planning-development

This map is for illustrative purposes only. Do not rely on this map as being a precise indicator of routes, location of features or surveying purposes. This map may contain cartographical errors or omissions.



THE COUNTY OF GREY
OFFICIAL PLAN

**SCHEDULE A
Land Use Types**

MAP 2

LEGEND

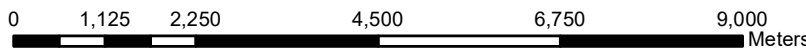
- Provincial Highway Connecting Link
- Provincial Highway
- County Road
- Local Road
- Seasonal Road
- Agricultural

- Special Agricultural
- Rural
- Primary Settlement Area *
- Secondary Settlement Area *
- Inland Lakes & Shoreline Settlement Area
- Recreational Resort Settlement Area
- Sunset Strip Settlement Area
- Industrial Business Park Settlement Area

- Space Extensive Industrial and Commercial
- Niagara Escarpment Plan Boundary **
- Niagara Escarpment Development Control Area
- Escarpment Natural Area
- Escarpment Recreation Area
- Hazard Lands
- Provincially Significant Wetlands and Significant Costal Lands

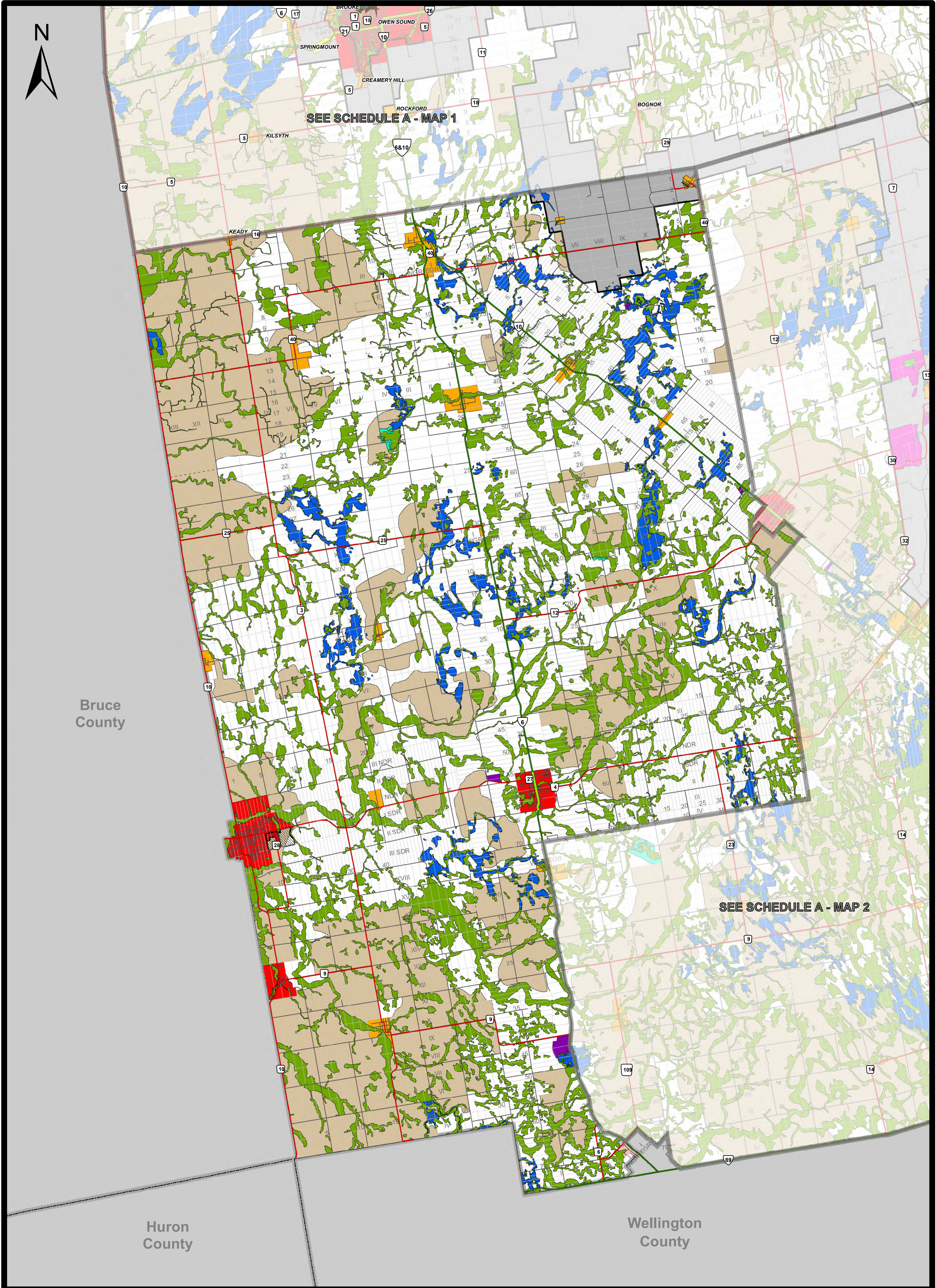
* refer to Secondary Schedules for further detail.
** certain settlement areas within the Niagara Escarpment Plan Boundary may be subject to Development Control.

SCALE 1:95,000



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THE COUNTY OF GREY
OFFICIAL PLAN

**SCHEDULE A
Land Use Types**

MAP 3

LEGEND

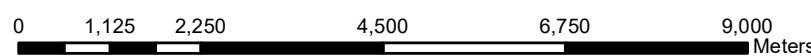
- Provincial Highway Connecting Link
- Provincial Highway
- County Road
- Local Road
- Seasonal Road
- Agricultural

- Special Agricultural
- Rural
- Primary Settlement Area *
- Secondary Settlement Area *
- Inland Lakes & Shoreline Settlement Area
- Recreational Resort Settlement Area
- Sunset Strip Settlement Area
- Industrial Business Park Settlement Area

- Space Extensive Industrial and Commercial
- Niagara Escarpment Plan Boundary **
- Niagara Escarpment Development Control Area
- Escarpment Natural Area
- Escarpment Recreation Area
- Hazard Lands
- Provincially Significant Wetlands and Significant Costal Lands

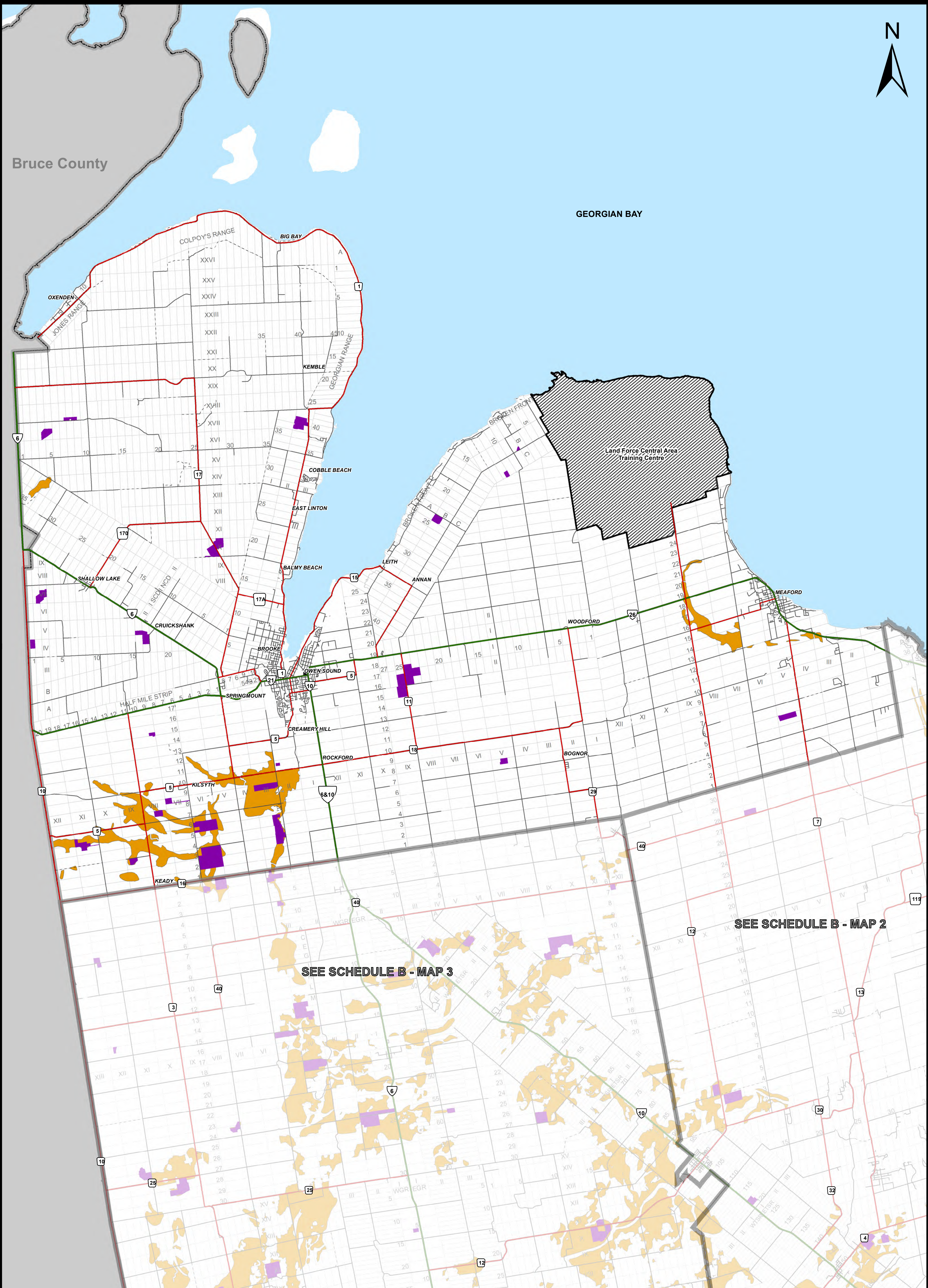
* refer to Secondary Schedules for further detail.
** certain settlement areas within the Niagara Escarpment Plan Boundary may be subject to Development Control.

SCALE 1:95,000



AUTHOR: Grey County Planning
FILE NAME: GR_OP_SchedA_Map3westX36.mxd
CONSOLIDATION: May 1, 2023
INTERACTIVE MAP: geo.grey.ca
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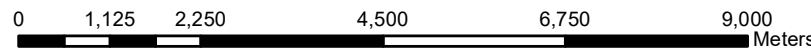
THE COUNTY OF GREY
OFFICIAL PLAN

SCHEDULE B
High Potential
Mineral Aggregate Resources
MAP 1

LEGEND

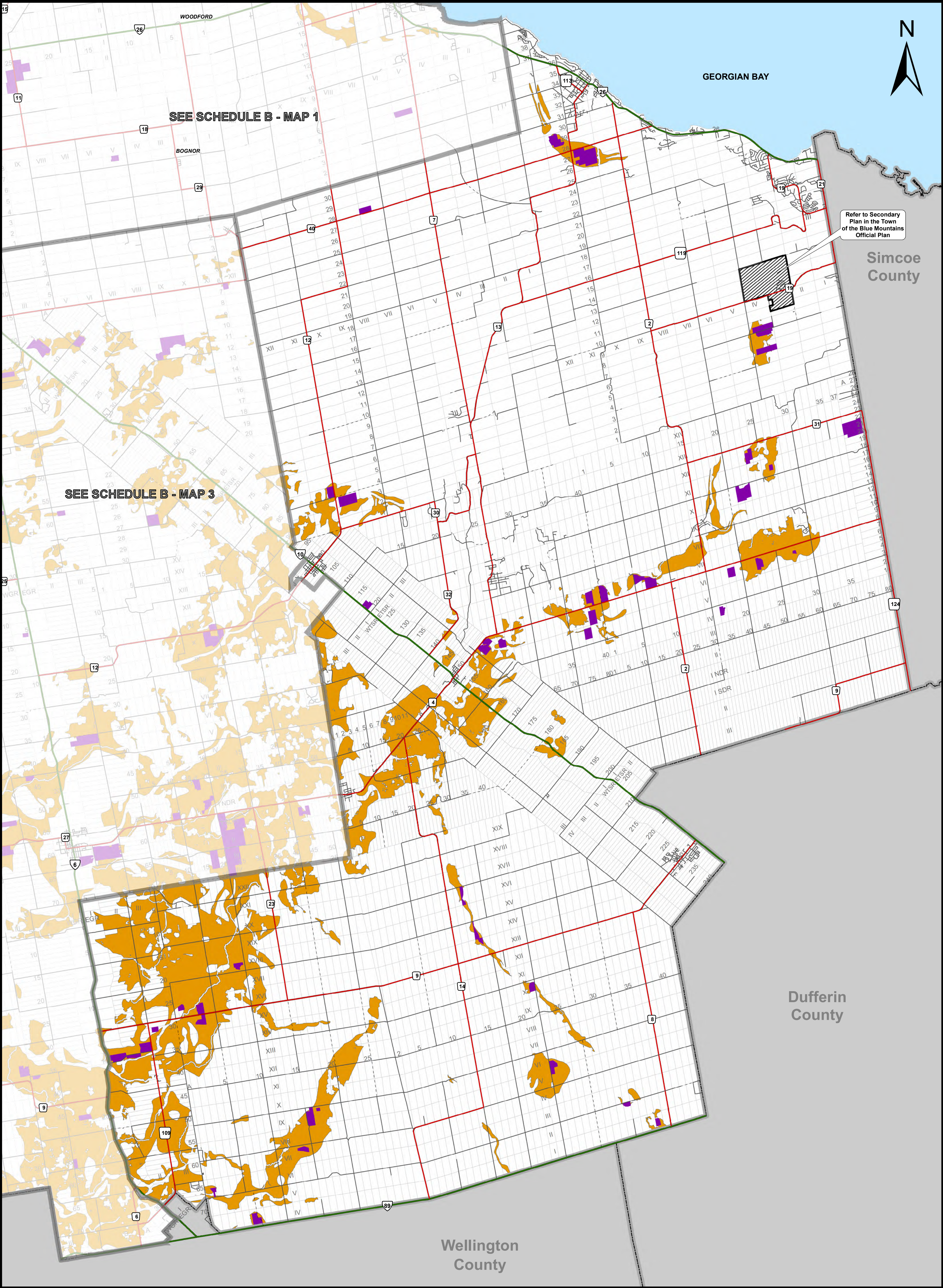
- Provincial Highway
- County Road
- Local Road
- Seasonal Road
- Aggregate Resource Area
- Mineral Resource Extraction;
Licensed Pits and Quarries

SCALE 1:95,000



AUTHOR: Grey County Planning
FILE NAME: GR_OP_SchedB_Map1northX36.mxd
CONSOLIDATION: May 1, 2023
INTERACTIVE MAP: geo.grey.ca
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THE COUNTY OF GREY
OFFICIAL PLAN

SCHEDULE B
High Potential
Mineral Aggregate Resources
MAP 2

LEGEND

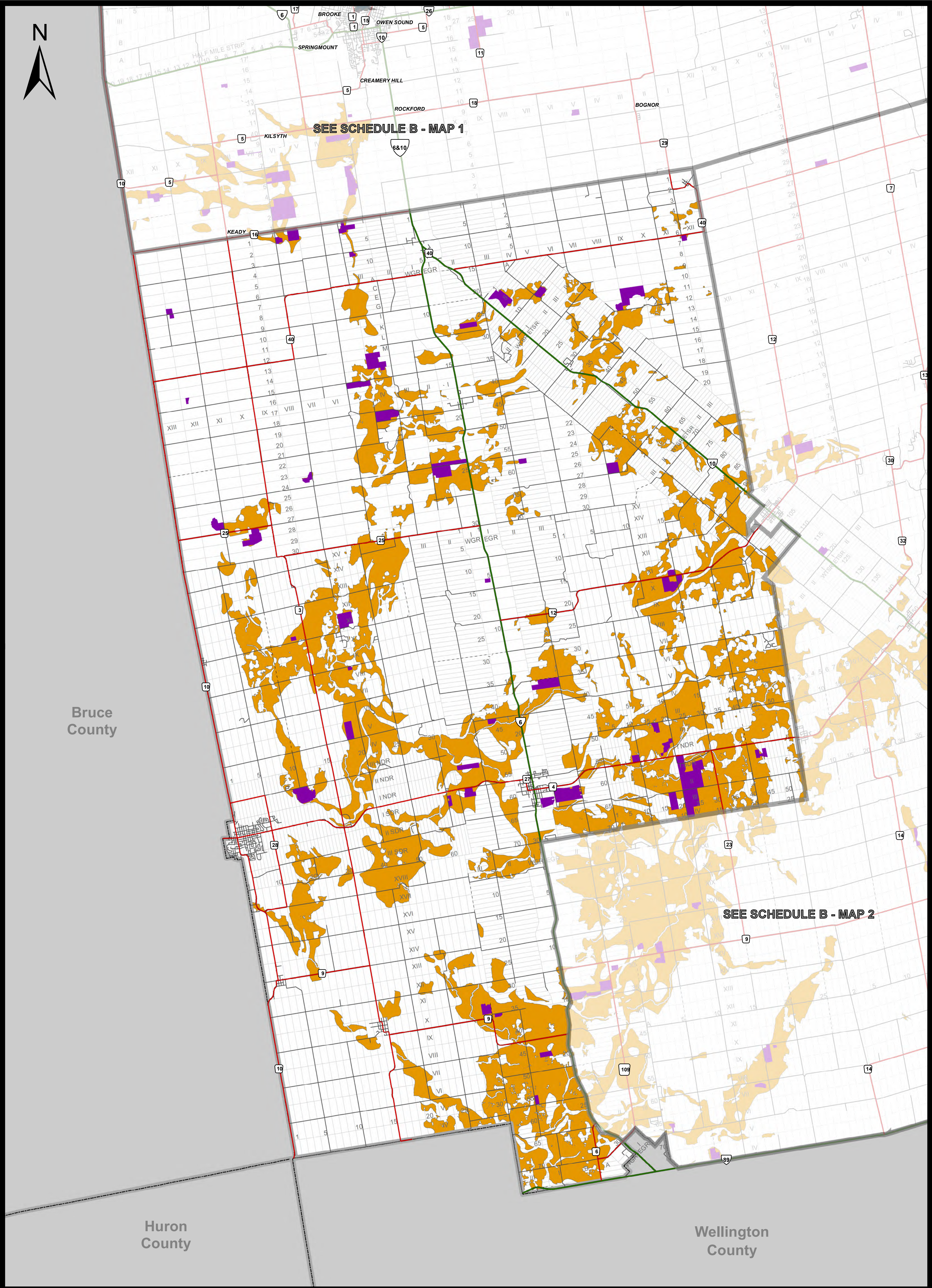
- Provincial Highway
- County Road
- Local Road
- Seasonal Road
- Aggregate Resource Area
- Mineral Resource Extraction;
Licensed Pits and Quarries

SCALE 1:95,000

0 1,125 2,250 4,500 6,750 9,000 Meters

AUTHOR: Grey County Planning
FILE NAME: GR_OP_SchedB_Map2eastX36.mxd
CONSOLIDATION: May 1, 2023
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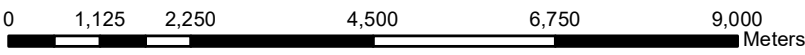
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SCHEDULE B
High Potential
Mineral Aggregate Resources
MAP 3

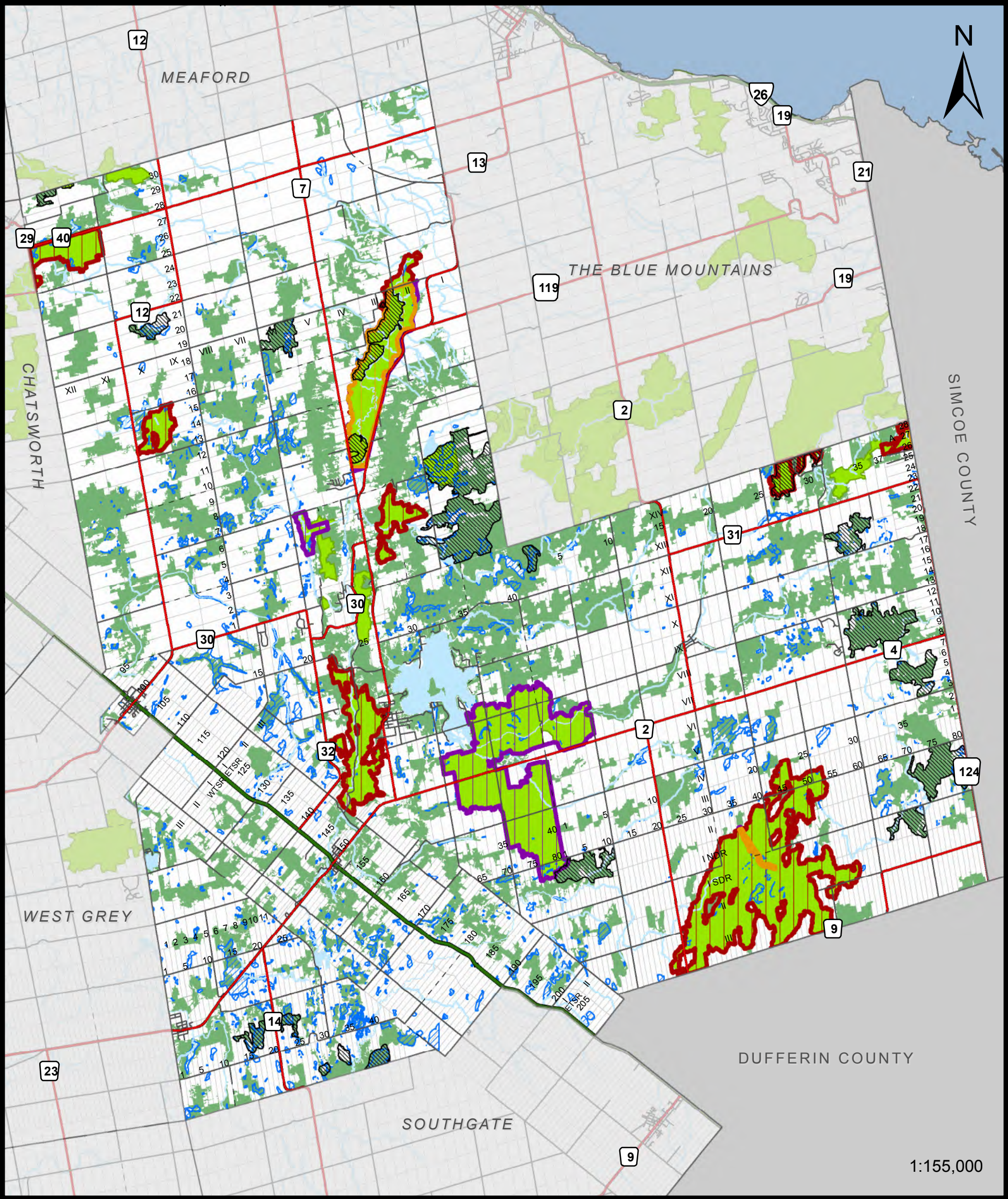
- LEGEND**
- Provincial Highway
 - County Road
 - Local Road
 - Seasonal Road
 - Aggregate Resource Area
 - Mineral Resource Extraction;
Licensed Pits and Quarries

SCALE 1:95,000



AUTHOR: Grey County Planning
FILE NAME: GR_OP_SchedB_Map3westX36.mxd
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THE MUNICIPALITY OF GREY HIGHLANDS
OFFICIAL PLAN

**SCHEDULE C
CONSTRAINT MAPPING**



AUGUST 2017 - GREY COUNTY PLANNING

LEGEND

- | | |
|---|--|
|  Stream / River |  Significant Woodlands |
|  Lakes |  Significant Wildlife Habitat
(Deer Wintering Areas) |
|  Other Identified Wetlands | |
|  Earth & Life ANSI | |
|  Earth ANSI | |
|  Life ANSI | |
|  Regional ANSI | |

APPENDIX C
VEGETATION INVENTORY

Table 1. Vegetation Inventory

Scientific Name	Common Name	S-Rank	Coefficient Conservatism	Coefficient Wetness
<i>Endotropis alnifolia</i>	Alder-leaved Buckthorn	S5	7	-5
<i>Ulmus americana</i>	American Elm	S5	3	-3
<i>Abies balsamea</i>	Balsam Fir	S5	5	-3
<i>Salix bebbiana</i>	Bebb's Willow	S5	4	-3
<i>Solanum dulcamara</i>	Bittersweet Nightshade	SNA		0
<i>Silene vulgaris</i>	Bladder Campion	SNA		5
<i>Crataegus douglasii</i>	Black Hawthorn	S4?	7	0
<i>Typha latifolia</i>	Broad-leaved Cattail	S5	1	-5
<i>Rumex obtusifolius</i>	Bitter Dock	SNA		-3
<i>Solidago canadensis</i>	Canada Goldenrod	S5	1	3
<i>Cichorium intybus</i>	Chicory	SNA		5
<i>Prunus virginiana</i>	Choke Cherry	S5	2	3
<i>Tussilago farfara</i>	Colt's-foot	SNA		3
<i>Vicia sativa</i>	Common Vetch	SNA		3
<i>Taraxacum officinale</i>	Common Dandelion	SNA		3
<i>Asclepias syriaca</i>	Common Milkweed	S5	0	5
<i>Verbascum thapsus</i>	Common Mullein	SNA		5
<i>Rubus idaeus</i>	Common Red Raspberry	S5	2	3
<i>Althaea officinalis</i>	Common Marsh-mallow	SNA		0
<i>Vicia sativa</i>	Common Vetch	SNA		3
<i>Echium vulgare</i>	Common Viper's Bugloss	SNA		5
<i>Prunella vulgaris ssp. vulgaris</i>	Common Self-heal	SNA		0
<i>Viburnum opulus</i>	Cranberry Viburnum	S5	5	-3
<i>Ranunculus repens</i>	Creeping Buttercup	SNA		0
<i>Erigeron hyssopifolius</i>	Daisy Fleabane	S5	10	-3
<i>Scirpus atrovirens</i>	Dark-green Bulrush	S5	3	-5
<i>Thuja occidentalis</i>	Eastern White Cedar	S5	4	-3
<i>Dryopteris intermedia</i>	Evergreen Wood Fern	S5	5	0
<i>Parnassia glauca</i>	Fen Grass-of-Parnassus	S5	8	-5
<i>Clinopodium vulgare</i>	Field Basil	S5	4	5
<i>Equisetum arvense</i>	Field Horsetail	S5	0	0
<i>Heracleum mantegazzianum</i>	Giant Hogweed	SNA		0
<i>Fraxinus pennsylvanica</i>	Green Ash	S4	3	-3
<i>Salix eriocephala</i>	Heart-leaved Willow	S5	4	-3
<i>Eurybia macrophylla</i>	Large-leaved Aster	S5	5	5
<i>Viburnum acerifolium</i>	Maple-leaved Viburnum	S5	6	5
<i>Thelypteris palustris</i>	Marsh Fern	S5	5	-3
<i>Lonicera morrowii</i>	Morrow's Honeysuckle	SNA		3
<i>Malva moschata</i>	Musk Cheeseweed	SNA		5
<i>Symphyotrichum novae-angliae</i>	New England Aster	S5	2	-3
<i>Dactylis glomerata</i>	Orchard Grass	SNA		3
<i>Leucanthemum vulgare</i>	Oxeye Daisy	SNA		5
<i>Symphyotrichum lanceolatum</i>	Panicked Aster	S5	3	-3

Table 1. Vegetation Inventory

Scientific Name	Common Name	S-Rank	Coefficient Conservatism	Coefficient Wetness
<i>Erigeron philadelphicus</i>	Philadelphia Fleabane	S5	1	-3
<i>Echium plantagineum</i>	Purple Viper's Bugloss	SNA		
<i>Trifolium pratense</i>	Red Clover	SNA		3
<i>Acer rubrum</i>	Red Maple	S5	4	0
<i>Cornus sericea</i>	Red-osier Dogwood	S5	2	-3
<i>Phalaris arundinacea</i>	Reed Canary Grass	S5	0	-3
<i>Onoclea sensibilis</i>	Sensitive Fern	S5	4	-3
<i>Acer saccharinum</i>	Silver Maple	S5	5	-3
<i>Bromus inermis</i>	Smooth Brome	SNA		5
<i>Eutrochium maculatum</i>	Spotted Joe Pye Weed	S5	3	-5
<i>Centaurea stoebe</i>	Spotted Knapweed	SNA		5
<i>Rhus typhina</i>	Staghorn Sumac	S5	1	3
<i>Asclepias incarnata</i>	Swamp Milkweed	S5	6	-5
<i>Anemone virginiana</i>	Tall Anemone	S5	4	3
<i>Ranunculus acris</i>	Tall Buttercup	SNA		0
<i>Thalictrum pubescens</i>	Tall Meadow-rue	S5	5	-3
<i>Larix laricina</i>	Tamarack	S5	7	-3
<i>Lonicera tatarica</i>	Tartarian Honeysuckle	SNA		3
<i>Carex aquatilis</i>	Water Sedge	S5	7	-5
<i>Nasturtium officinale</i>	Watercress	SNA		-5
<i>Trifolium repens</i>	White Clover	SNA		3
<i>Salix alba</i>	White Willow	SNA		-3
<i>Daucus carota</i>	Wild Carrot	SNA		5
<i>Maianthemum canadense</i>	Wild Lily-of-the-valley	S5	5	3
<i>Aralia nudicaulis</i>	Wild Sarsaparilla	S5	4	3
<i>Fragaria virginiana</i>	Wild Strawberry	S5	2	3
<i>Equisetum sylvaticum</i>	Woodland Horsetail	S5	7	-3
<i>Caltha palustris</i>	Yellow Marsh Marigold	S5	5	-5

NHIC Srank (Subnational) Legend

S1	Critically imperiled, at very high risk of extirpation.
S2	Imperiled, at high risk of extirpation.
S3	Vulnerable, at moderate risk of extirpation.
S4	Apparently secure, at fairly low risk of extirpation.
S5	Secure, at low or no risk of extirpation.
B	Conservation status refers to breeding population.
N	Conservation status refers to non-breeding population.

APPENDIX D
SELECTED SITE PHOTOGRAPH

Selected Site Photographs

(All photos were taken on June 21, 2024)



Photo 1 - View of the White Cedar Mineral Coniferous Swamp on the Site.



Photo 2- View of the Dry – Fresh White Cedar Coniferous Forest on the Site.



Photo 3 – View of the Sewage and Water Treatment on the Site.



Photo 4 – View of the Balsam Poplar Mineral Deciduous Swamp on the Site.



Photo 5 - View of the Grey County CP Rail Trail on the Site.



Photo 6 – View of the marsh patch within White Cedar Mineral Coniferous Swamp on the Site.

APPENDIX E
SPECIES AT RISK AND SIGNIFICANT WILDLIFE HABITAT SCREENING

Table 1. Species at Risk Screening for the Study Area

Type	Common Name	Scientific Name	Srank	SARO Status	COSEWIC Status	Last Obs Date	Background Information Source							Notes on Preferred Habitat ¹	Suitable Habitat on Site	Observed in the Field
							NHIC 17NK2607	Atlas of Ontario Mammals (Dobbyn 1994)	Atlas of the Breeding Bird of Ontario (Cadman 2024)	Ontario Reptile and Amphibian Atlas (ON 2024)	Rare Vascular Plants of Ontario (Oldham & Brinker 2009)	Aquatic Species at Risk Map (DFO, 2024)	Ontario Butterfly Atlas (Macnoughton 2024)			
BIRDS	Eastern Meadowlark	<i>Sturnella magna</i>	S4B	THR	THR	2001-2023	X		X					open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size	No, suitable habitat is not found on the Site. However, this species was observed on site during breeding bird surveys.	Yes
	Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	THR	THR	2001-2023	X		X					large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha	No, suitable habitat is not found on the Site. However, this species was observed on site during breeding bird surveys.	Yes
	Bank Swallow	<i>Riparia riparia</i>	S4B	THR	THR	2001-2023			X					sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water; nesting sites are limiting factor for species presence	No, suitable habitat is not found on the Site.	No
	Barn Swallow	<i>Hirundo rustica</i>	S4B	THR	THR	2001-2023			X					Nest along human-made structures such as open barns, under bridges and in culverts. Attracted to open structures to build their nests, including ledges. They prefer rough-cut wood structures as the mud nests adheres better.	No, suitable habitat is not found on the Site.	No
	Black Tern	<i>Chlidonias niger</i>	S3B	SC	SC	2001-2023			X					wetlands, coastal or inland marshes; large cattail marshes, marshy edges of rivers, lakes or ponds, wet open fens, wet meadows; must have shallow (0.5 to 1 m deep) water and areas of open water near nests; requires marshes >20 ha in size;	No, suitable habitat is not found on the Site.	No
	Canada Warbler	<i>Wilsonia canadensis</i>	S4B	SC	THR	2001-2023			X					an interior forest species; dense, mixed coniferous, deciduous forests with closed canopy, wet bottomlands of cedar or alder; shrubby undergrowth in cool moist mature woodlands; usually requires at least 30 ha	Yes, suitable habitat may be present in the swamp within the Site. However, no evidence of this species was observed on site during breeding bird surveys.	No
	Cerulean Warbler	<i>Dendroica cerulea</i>	S3B	THR	END	2001-2023			X					mature deciduous woodland of Great Lakes- St. Lawrence and Carolinian forests, sometimes coniferous; swamps or bottomlands with large trees; area sensitive species needing extensive areas of forest (>100 ha)	No, suitable habitat is not found on the Site.	No
	Chimney Swift	<i>Chaetura pelagica</i>	S4B, S4N	THR	THR	2001-2023			X					commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water	Yes, suitable habitat may be present in the forest within the Site. However, no evidence of this species was observed on site during breeding bird surveys.	Yes
	Common Nighthawk	<i>Chordeiles minor</i>	S4B	THR	SC	2001-2023			X					open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs	No, suitable habitat is not found on the Site.	No
	Eastern Wood-pewee	<i>Contopus virens</i>	S4B	SC	SC	2001-2023			X					open, deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearings, edges; farm woodlots, parks	Yes, suitable habitat may be present in the forest within the Site. However, no evidence of this species was observed on site during breeding bird surveys.	No
	Evening Grosbeak	<i>Coccothraustes vespertinus</i>	S4B	SC	SC	2001-2023			X					coniferous or mixed forests; deciduous tree stands; parks, orchards	Yes, suitable habitat may be present in the forest within the Site. However, no evidence of this species was observed on site during breeding bird surveys.	No
	Golden-winged Warbler*	<i>Vermivora chrysoptera</i>	S4B	SC	THR	2001-2023			X					early successional habitat; shrubby, grassy abandoned fields with small deciduous trees bordered by low woodland and wooded swamps; alder bogs; deciduous, damp woods; shrubby clearings in deciduous woods with saplings and grasses; brier-woodland edges; requires >10 ha of habitat	No, suitable habitat is not found on the Site.	No
	Grasshopper Sparrow	<i>Ammodramus savannarum</i>	S4B, SZN	SC	SC	2001-2023			X					well-drained grassland or prairie with low cover of grasses, taller weeds on sandy soil; hayfields or weedy fallow fields; requires tracts of grassland > 10 ha	No, suitable habitat is not found on the Site.	No
	Hooded Warbler	<i>Wilsonia citrina</i>	S3B	SC	THR	2001-2023			X					favours mature, deciduous forest (Carolinian), particularly along stream bottoms, ravine edges and where saplings and shrubbery grow; nests above ground in small shrubs; feeds on or near ground	No, suitable habitat is not found on the Site.	No
	Least Bittern	<i>Ixobrychus exilis</i>	S4B	THR	THR	2001-2023			X					deep marshes, swamps, bogs; marshy borders of lakes, ponds, streams, ditches; dense emergent vegetation of cattail, bulrush, sedge; nests in cattails	Yes, suitable habitat may be present in the swamp within the Site. However, no evidence of this species was observed on site during breeding bird surveys.	No
	Louisiana Waterthrush	<i>Seiurus motacilla</i>	S3B	THR	THR	2001-2023			X					prefers wooded ravines with running streams; also woodlands swamps; large tracts of mature deciduous or mixed forests; canopy cover is essential; has strong affinity to nest sites; nests on ground	Yes, suitable habitat may be present in the swamp within the Site. However, no evidence of this species was observed on site during breeding bird surveys.	No
Olive-sided Flycatcher	<i>Contopus cooperi</i>	S4B	SC	SC	2001-2023			X					semi-open, conifer forest, prefers spruce; near pond, lake or river; treed wetlands for nesting; burns with dead trees for perching	No, suitable habitat is not found on the Site.	No	
Peregrine Falcon*	<i>Falco peregrinus</i>	S2S3B, ZN	THR	--	2001-2023			X					rock cliffs, crags, especially situated near water; tall buildings in urban centres.	No, suitable habitat is not found on the Site.	No	

BIRDS	Piping Plover	<i>Charadrius melodus</i>	S1B, S2N	END	END	2001-2023			X					dry, sandy outer beaches; upper stretches near dunes, usually large open, grassless areas, but sometimes with sparse scattering of beach grass;	No, suitable habitat is not found on the Site.	No
	Red-headed Woodpecker*	<i>Melanerpes erythrocephalus</i>	S4B	THR	SC	2001-2023			X					open, deciduous forest with little understory; fields or pasture lands with scattered large trees; wooded swamps; orchards, small woodlots or forest edges; groves of dead or dying trees; requires cavity trees with at least 40 cm dbh; require about 4 ha for a territory	No, suitable habitat is not found on the Site.	No
	Red-shouldered Hawk	<i>Buteo lineatus</i>	S4B		SC	2001-2023			X					moist, mature hardwood forests ; woody swamps or wooded margins of marshes; wet bottomlands; restricted to mature, closed (>80%) closed forests; nests reused; requires a minimum of 10 ha of continuous forest to meet territorial requirements	Yes, suitable habitat may be present in the swamp within the Site. However, no evidence of this species was observed on site during breeding bird surveys.	No
	Short-eared Owl	<i>Asio flammeus</i>	S2N, S4B	THR	SC	2001-2023			X					grasslands, open areas or meadows that are grassy or bushy; marshes, bogs or tundra; requires 75-100 ha of contiguous open habitat	No, suitable habitat is not found on the Site.	No
	Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	S4B	THR	THR	2001-2023			X					dry, open, deciduous woodlands of small to medium trees; oak or beech with lots of clearings and shaded leaf litter; wooded edges, forest clearings with little herbaceous growth; pine plantations; associated with >100 ha forests	No, suitable habitat is not found on the Site.	No
	Wood Thrush	<i>Hylocichla mustelina</i>	S4B	SC	THR	2001-2023			X					Carolinian and Great Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12 m	No, suitable habitat is not found on the Site.	No
	Yellow Rail	<i>Coturnicops noveboracensis</i>	S4B	SC	SC	2001-2023			X					Large, freshwater or brackish grass and sedge marshes with dense vegetation including bulrushes, horsetails, grasses;	No, suitable habitat is not found on the Site.	No
INSECTS	Monarch	<i>Danaus plexippus</i>	S2N,S4B	SC	END	2022							X	Caterpillars feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adults forage on a variety of wildflowers and milkweed.	No, suitable habitat is not found on the Site.	No
REPTILES	Snapping Turtle	<i>Chelydra serpentina</i>	S4	SC	SC	2019				X				permanent, semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms; often uses soft soil or clean dry sand on south-facing slopes for nest sites;	Yes, suitable habitat may be present in the ponds on the Site.	Yes
MAMMALS	Little Brown Bat	<i>Myotis lucifuga</i>	S4	END	END	1970-1993		X						uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges	Yes, suitable habitat may be present in the swamp within the Site. However, no evidence of this species was observed on site during breeding bird surveys.	No
	Northern Long-eared Myotis	<i>Myotis septentrionalis</i>	S3	END	END	1970-1993		X						hibernates during winter in mines or caves; roosts in houses, manmade structures but prefers hollow trees or under loose bark;	Yes, suitable habitat may be present in the swamp within the Site. However, no evidence of this species was observed on site during breeding bird surveys.	No
	Tri-colored Bat	<i>Pipistrellus subflavus</i>	S3	END	END	1999-2019		X						open woods near water; roosts in trees, cliff crevices, buildings or caves; hibernates in damp, draft-free, warm caves, mines or rock crevices	Yes, suitable habitat may be present in the swamp within the Site. However, no evidence of this species was observed on site during breeding bird surveys.	No

SARO Species at Risk Ontario (O. Reg. 230/08)
COSEWIC Committee on the Status of Endangered Wildlife in Canada

COSEWIC Definitions
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Endangered (END) Species facing imminent extirpation or extinction
Threatened (THR) Species likely to become endangered if nothing is done to reverse the factors leading to their extirpation or extinction
Special Concern (SC) Species that may become threatened or endangered because of a combination of biological characteristics and identified threats
Extirpated (EXR) Species which no longer exist in the wild in Ontario, but exist elsewhere in the world
DD Data deficient
Not at Risk (NAR) Not at risk

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NHIC Rank (Subnational) Legend	
S1	Critically imperiled, at very high risk of extirpation.
S2	Imperiled, at high risk of extirpation.
S3	Vulnerable, at moderate risk of extirpation.
S4	Apparently secure, at fairly low risk of extirpation.
S5	Secure, at low or no risk of extirpation.
B	Conservation status refers to breeding population.
N	Conservation status refers to non-breeding population.
SH	Possibly Extirpated
Subnational ranks are used by the NHIC to set protection priorities for rare and natural communities. Those ranks are not legal designations and are only within the political boundaries of Ontario.	

Table 2. Significant Wildlife Habitat Assessment	
Significant Habitat Type	Site Assessment
Seasonal Wildlife Concentration Areas	
Waterfowl Stopover and Staging Areas (Terrestrial)	No meadows with evidence of spring flooding found on the Site. Unlikley SWH
Waterfowl Stopover and Staging Areas (Aquatic)	No aquatic features were assessed as part of this EIS. Not SWH
Shorebird Migratory Stopover Area	No shorelines present on the Site. Not SWH
Raptor Wintering Area	Forest communities greater than 20 ha are found within the Site. Candidate SWH
Bat Hibernacula	No caves or crevices are found within the Site. Not SWH
Bat Maternity Colonies	Forested areas with snags were present on the Site. Candidate SWH
Turtle Wintering Areas	No aquatic features were assessed as part of this EIS. Not SWH
Reptile Hibernaculum	No rock piles or similar features observed on the Site. Not SWH
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)	No large banks or cliffs observed on Site. Not SWH
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)	Wetlands with snags were observed within the Site. Candidate SWH
Colonially - Nesting Bird Breeding Habitat (Ground)	No rocky islands or peninsulas within lakes or large rivers found within the Site. Not SWH
Migratory Butterfly Stopover Area	No meadow communities over 10 ha in size within 5 km of the Great Lakes are found on the Site. Not
Landbird Migratory Stopover Area	No woodlots greater than 10 ha and within 5 km of Lake Erie or Lake Ontario found on the Site. Not SWH
Deer Yarding Areas	No stratum I or II habitats were identified on the Site. Not SWH
Deer Winter Congregation Area	Forested areas greater than 50 ha found on the Site. However, the Site was not identified by the MNRF. Unlikley SWH
Rare Vegetation Communities or Specialized Habitat for Wildlife	
Cliffs and Talus Slopes	No cliffs or talus slopes found within the Site. Not SWH
Sand Barren	No sand barrens found within the Site. Not SWH
Alvar	No alvars found within the Site. Not SWH
Old Growth Forest	No old growth forest present on the Site. Not SWH
Savannah	No savannahs found within the Site. Not SWH
Tallgrass Prairie	No tallgrass prairies found within the Site. Not SWH
Other Rare Vegetation Communities	No other provincially rare plant communities are found within the Site. Not SWH
Specialized Habitat for Wildlife	
Waterfowl Nesting Area	Wetlands are found on the Site. Candidate SWH
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Forests directly adjacent to a river is found on the Site. Candidate SWH
Woodland Raptor Nesting Habitat	Forested ecosites greater than 30 ha are found within the Site. Candidate SWH
Turtle Nesting Areas	Ponds with mineral soils are found on the Site. Candidate SWH
Seeps and Springs	No seeps or springs observed within the Site. Not SWH
Amphibian Breeding Habitat (Woodland)	No wetlands, ponds, or woodlands with vernal pools within woodlands on the Site. Not SWH
Amphibian Breeding Habitat (Wetlands)	Wetlands are found on the Site. Candidate SWH
Woodland Area - Sensitive Bird Breeding Habitat	No forest over 60 years old and larger than 30 ha found within the Site. Not SWH
Habitat for Species of Conservation Concern (Not Including Endangered or Threatened Species)	
Marsh Bird Breeding Habitat	No marshes with swallow water observed on the the Site. Not SWH
Open Country Bird Breeding Habitat	No large grassland areas bigger than 30 ha found within the Site. Not SWH
Shrub/Early Successional Bird Breeding Habitat	No shrub thickets greater than 10 ha found within the Site. Not SWH
Terrestrial Crayfish	No wet meadows or marshed on the Site and not terrestrial crayfish observed on the Site. Not SWH
Special Concern and Rare Wildlife Species	Chimney Swifts, Eastern Meadowlarks, and Bobolinks were obbserved on the Site. Confirmed SWH
Animal Movement Corridors	
Amphibian Movement Corridors	No confirmed amphibian breeding habitat on the Site. Not SWH
Deer Movemnet Corridors	No deer movement corridors were identified on the Site. Not SWH

SWH Assessment Criteria

Unlikley: Refers to areas where it is generally considered that significant wildlife habitat is not present based on assessments or known criteria

Confirmed: Identified as significant wildlife habitat based on thorough assessments and evidence that demonstrate the presence of important species or habitat features

Not significant: refers to areas that have been assessed and found not to meet the criteria for significant wildlife habitat

References

Ministry of Natural Resources and Forestry. 2015. Significant Wildlife Habitat Crieteria Schedules for Ecoregion 6E. Queen's Printer for Ontario

Ministry of Natural Resources and Forestry. 2000. Significant Wildlife Habitat Technical Guide. Peterborough, ON.

APPENDIX F
BREEDING BIRD SURVEY

Table 1. Breeding Bird Survey

SCIENTIFIC NAME	COMMON NAME	S RANK	SARO STATUS	COSEWIC STATUS	Breeding Likelihood and Observed Activities
<i>Carduelis tristis</i>	American Goldfinch	S5B			P-Probable
<i>Setophaga ruticilla</i>	American Redstart	S5B			H-Possible
<i>Turdus migratorius</i>	American Robin	S5B			P-Probable
<i>Hirundo rustica</i>	Barn Swallow	S4B	SC	SC	H-Possible
<i>Mniotilta varia</i>	Black-and-white Warbler	S5B			H-Possible
<i>Poecile atricapillus</i>	Black-capped Chickadee	S5			H-Possible
<i>Dolichonyx oryzivorus</i>	Bobolink	S4B	THR	THR	P-Probable
<i>Branta canadensis</i>	Canada Goose	S5			P-Probable
<i>Thryothorus ludovicianus</i>	Carolina Wren	S4			H-Possible
<i>Bombycilla cedrorum</i>	Cedar Waxwing	S5B			H-Possible
<i>Chaetura pelagica</i>	Chimney Swift	S4B, S4N	THR	THR	P-Probable
<i>Quiscalus quiscula</i>	Common Grackle	S5B			S-Possible
<i>Geothlypis trichas</i>	Common Yellowthroat	S5B			H-Possible
<i>Tyrannus tyrannus</i>	Eastern Kingbird	S4B			S-Possible
<i>Sturnella magna</i>	Eastern Meadowlark	S4B	THR	THR	P-Probable
<i>Sturnus vulgaris</i>	European Starling	SNA			H-Possible
<i>Dumetella carolinensis</i>	Gray Catbird	S4B			H-Possible
<i>Catharus guttatus</i>	Hermit Thrush	S5B			H-Possible
<i>Carpodacus mexicanus</i>	House Finch	SNA			H-Possible
<i>Troglodytes aedon</i>	House Wren	S5B			H-Possible
<i>Charadrius vociferus</i>	Killdeer	S5B, S5N			H-Possible
<i>Anas platyrhynchos</i>	Mallard	S5			P-Probable
<i>Oporornis philadelphia</i>	Mourning Warbler	S4B			H-Possible
<i>Colaptes auratus</i>	Northern Flicker	S4B			S-Possible
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	S4			P-Probable
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak	S4B			H-Possible
<i>Passerculus sandwichensis</i>	Savannah Sparrow	S4B			H-Possible
<i>Melospiza melodia</i>	Song Sparrow	S5B			S-Possible
<i>Tachycineta bicolor</i>	Tree Swallow	S4B			S-Possible
<i>Zonotrichia albicollis</i>	White-throated Sparrow	S5B			H-Possible
<i>Aix sponsa</i>	Wood Duck	S5			H-Possible
<i>Dendroica petechia</i>	Yellow Warbler	S5B			P-Probable

NHIC Srank (Subnational) Legend

S3	Vulnerable, at moderate risk of extirpation
S4	Apparently secure, at fairly low risk of extirpation.
S5	Secure, at low or no risk of extirpation.
S#N and S#B	Conservation status refers to non-breeding population.

OBBA Breeding Codes

<i>Observed</i>	
X	Species observed in its breeding season (no breeding evidence)
<i>Possible</i>	
H	Species observed in suitable nesting habitat during the breeding season
S	Singing male present or breeding calls heard in suitable nesting habitat
<i>Probable</i>	
p	Pair observed in their breeding season in suitable nesting habitat
CF	Adult carrying food for young
A	Agitated behaviour or anxiety calls of adult
N	Nest building or excavation of nest hole
<i>Confirmed</i>	
DD	Distraction display or injury feigning

Definitions

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APPENDIX G
PROPOSED SITE PLAN

