



**Scoped Environmental Impact Study
4933 Victoria Ave**

4933 Victoria Avenue North, Lincoln,
Ontario

Submitted to:

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1. Introduction

1.1 Project Overview

GEI Consultants (GEI) was contracted by 4933 Vic Court Globizen LP to complete a Scoped Environmental Impact Study (EIS) for the property located at 4933 Victoria Avenue North in the Town of Lincoln, Ontario (herein referred to as the Subject Lands; **Figure 1, Appendix A**). The Subject Lands are generally located east of Victoria Avenue and the Millennium Forest Park, north of Laurie Avenue and south of Lake Ontario.

The Subject Lands previously hosted two industrial buildings; however, those buildings have since been removed from the landscape. Currently there is a wooded community located along the eastern limits of the Subject Lands, which hosts a watercourse (Prudhomme Creek) that outlets into Lake Ontario. The proposed redevelopment concept of this property includes a mixed-use commercial, hotel and residential condominium development.

1.2 Purpose of the Report

A Scoped EIS is required to assess the potential impacts of the proposed development on the Subject Lands on natural heritage features and their associated functions. This Scoped EIS considers applicable policies of the Province of Ontario's Provincial Policy Statement (PPS; Ministry of Municipal Affairs and Housing; MMAH 2020) and associated provincial implementation guidance contained in the Natural Heritage Reference Manual (NHRM; MNR 2010) as well as the Town of Lincoln's Official Plan (TLOP, 2018 Consolidation), the Niagara Region's Official Plan (NROP, 2022 Consolidation) and the Niagara Peninsula Conservation Authority's (NPCA) regulation and policies. This EIS has been prepared to support an Official Plan Amendment (OPA) and Zoning By-Law Amendment (ZBA) for the property.

The Scoped EIS Terms of Reference (TOR) was prepared and circulated to the Town of Lincoln and the NPCA. The Scoped EIS TOR was approved by the Town of Lincoln and the NPCA on August 24, 2023. A copy of the TOR is included within **Appendix B** for reference.

Based on the approved TOR, this Scoped EIS considers and includes the following information:

- Description of the proposal and purpose;
- Description of the surrounding environment;
- Review of relevant legislation, regulations and policies;
- Description of background review;
- Description of field investigations;
- Analysis of natural heritage features;
- Identification and assessment of the potential impacts of the proposal on the environment and the significant features and functions;
- Identification of positive effects of the proposal such as opportunities for enhancement and/or restoration of significant features, as appropriate;
- Evaluation of the feasibility of alternative mitigation measures or techniques and the ability of such measures to prevent or minimize impacts;



- Recommendation on the suitability of proceeding with the proposal, appropriate mitigation measures, whether changes to the proposal are advised; and
- Recommendation for a monitoring plan and contingency plans and funds should the proposal result in any unexpected impacts to natural features, as appropriate.

1.3 Natural Heritage Legislation and Policy Context

An assessment of the quality and extent of natural heritage features found on, and adjacent to, the Subject Lands and the potential impacts to these features from the proposed development was undertaken to comply with requirements of the following regulatory agencies, local municipality, and/or legislation:

- Town of Lincoln Official Plan (2018 Consolidation);
- Niagara Region's Official Plan (2022 Consolidation);
- NPCA - Ontario Regulation 41/24: Prohibited Activities, Exemptions, and Permits, under the Conservation Authorities Act, R.S.O. 1990, c. C.27. (2024);
- Greenbelt Plan (2017);
- Provincial Policy Statement (MMAH 2020);
- *Endangered Species Act* (2021 Consolidation of S.O. 2007, c. 6);
- *Fish and Wildlife Conservation Act* (2021 Consolidation of S.O. 1997, c. 41);
- *Migratory Birds Convention Act* (1994); and
- *Fisheries Act* (R.S.C., 1985, c. F-14).

A review of each document is provided below. The Subject Lands are located outside of the Niagara Escarpment Plan.

1.3.1 Town of Lincoln Official Plan

The Town of Lincoln Official Plan (TLOP, 2018 Consolidation) outlines goals, objectives and policies to guide future land use, physical development, growth and change within the Town. The Subject Lands are located within the Prudhommes Area within the Town of Lincoln.

The TLOP is currently undergoing an Official Plan Review; a draft plan has been shared for public input (TLOP Review Draft, 2023).

According to the TLOP (2018) Schedule B1 (Prudhommes Area Secondary Plan) indicates that the Subject Lands are located within a medium density residential area with overlapping Natural Environment areas on the eastern and northern sides, as well as a Regulated Shoreline Area at its northern end. In the TLOP Review Draft (2023), Schedule B1 indicates that the Natural Environment also extends along the southern edge of the Subject Lands.

Section 2.4 (Natural Environment Area) of Part 2 of the TLOP (2018) states that the Natural Environment is comprised of the following designations:

- Environmental Protection Areas;
- Environmental Conservation Areas;
- Greenbelt Protected Areas; and
- Potential Natural Heritage Corridors.



Environmental Protection Areas include:

- Provincially Significant Wetlands (PSW), outside of the Greenbelt Plan area;
- Provincially significant Areas of Natural and Scientific Interest (ANSI) and habitat for endangered and threatened species outside of the Greenbelt Natural Heritage System; and
- Provincially Significant Earth Science ANSIs.

Components that comprise the Environmental Conservation Area designation include:

- Locally significant wetlands outside of the Greenbelt Plan area;
- Significant habitat of species of concern;
- Significant woodlands;
- Significant valley lands;
- Regionally significant Life Science ANSI;
- Savannahs and tall grass prairies;
- Alvars;
- Significant wildlife habitat (SWH);
- Publicly owned conservation lands; and
- Fish habitat.

As shown on Schedule E1 (Environmental Protection Area), no Environmental Protection Areas are identified on or adjacent to the Subject Lands.

As identified in Schedule E2 (Environmental Conservation Area), significant woodlands occupy the eastern portion of the Subject Lands and significant valleylands occupy the northern portion at Lake Ontario (**Figure 2, Appendix A**).

The policies above related to the Natural Environment Area and Schedules E1 and E2 remain the same in the TLOP Review Draft (2023).

Please refer to **Section 1.3.4** for Greenbelt Protected Areas. No potential natural heritage corridors were identified within the TLOP Schedules.

1.3.2 Niagara Region's Official Plan

The Niagara Region's Official Plan (NROP, 2022 Consolidation) designates the Subject Lands as Urban Area under Schedule C1 (Natural Environment System: Individual Components and Features). While difficult to see on the overlay, the Subject Lands may contain a portion of the Natural Environment System (**Figure 2, Appendix A**).

The key individual components and features of the Natural Environment System include:

- Significant woodlands;
- Other woodlands;
- Provincially significant wetlands;
- Other wetlands and non-provincially significant wetlands;
- Life science ANSIs;
- Earth science ANSIs;
- Permanent and intermittent streams;



- Inlands lakes; and
- Linkages.

Other key hydrological features and areas that are components of the natural environment system include:

- Groundwater features
 - o recharge/discharge areas;
 - o water tables; and
 - o aquifers and unsaturated zones;
- Surface water features
 - o headwater drainage features;
 - o recharge/discharge areas;
 - o associated riparian lands that can be defined by their soil moisture, soil type, vegetation or topographic characteristics; and
- other hydrologic functions.

New development or site alteration within a Provincial natural heritage system shall demonstrate that “there are no negative impacts on key natural heritage features or key hydrologic features or their functions”, that connectivity between key natural heritage features and key hydrological feature will be maintained, and removal of these key features will be avoided (NROP, 2022). Any proposal for new development and site alteration within 120 meters of key natural heritage features within a Provincial natural heritage system or key hydrological feature will require an environmental impact study and/or hydrological evaluation, provided the area is outside of designated settlement areas.

As illustrated on Schedule C2 of the Niagara Region OP, the Subject Lands contain no linkages nor inland lakes. There is a permanent or intermittent stream on the eastern boundary of the Subject Lands. Schedule C3 (Key Hydrological Areas Overlay) designates the Subject Lands as being located within a highly vulnerable aquifers area with a permanent and intermittent stream cutting through the eastern side of the property.

1.3.3 Ontario Regulation 41/24: Prohibited Activities, Exemptions, and Permits

The NPCA is responsible for regulating development activities within areas described in Section 28 of the Conservation Authorities Act and Ontario Regulation 41/24, commonly referred to as Regulated Areas. These include:

- watercourses (including flood plains and meander belt)
- hazardous lands
- wetlands (and adjacent lands up to 30 metres)
- river or stream valleys
- areas that are adjacent or close to the shoreline of the Great Lakes-St. Lawrence River System or to an inland lake and that may be affected by flooding, erosion or dynamic beach hazards



Permission is required from NPCA for any work development within their regulated areas which include watercourses, flooding and erosion hazards and wetlands as well as regulated allowances adjacent to these features.

The NPCA Watershed Explorer interface and the NPCA Approximate Regulation Lands interface show that the Subject Lands contains a regulated watercourse on the eastern side on the property, as well as regulated shoreline at Lake Ontario on the northern end of the property (**Figure 2, Appendix A**).

1.3.4 Greenbelt Plan

The Greenbelt Plan (2017) works to permanently protect environmentally sensitive areas, due to their ecological value, within the Golden Horseshoe. It is intended to enhance the natural landscapes by working to facilitate the connection of environmentally significant areas and reducing fragmentation of the landscape. Protection is offered also to permanent agricultural areas ensuring the permanency and sustainability of natural resources.

As illustrated on Map 99, the Subject Lands are designated as Towns and Villages within Protected Countryside (**Figure 2, Appendix A**). As discussed within Section 3.4.3 of the Greenbelt Plan, Towns and Villages are subject to policies of the Growth Plan and are governed by the Official Plans, except for policies identified under Sections 3.1.5, 3.2.3, 3.2.6 and 3.4.2. Key Natural Heritage Features and Key Hydrologic Feature/Areas policies under the Greenbelt Plan do not apply within Towns and Villages areas.

1.3.5 Provincial Policy Statement

The PPS (MMAH 2020) provides guidance on matters of provincial interest surrounding land-use planning and development. It “supports improved land use planning and management, which contributes to a more effective and efficient land use planning system” (p. 1). The PPS is to be read in its entirety and land-use planners and decision-makers need to consider all relevant policies and how they work together.

Eight types of significant natural heritage features are defined in the PPS, as follows:

- Significant wetlands;
- Significant coastal wetlands;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Fish habitat;
- Habitat of endangered and threatened species; and
- ANSIs.

The PPS indicates the following:

- Natural features and areas shall be protected for the long term;
- The diversity and connectivity of natural features, as well their associated functions and biodiversity of natural heritage systems should be maintained, restored and, where possible, improved;



- Natural heritage systems should be identified within EcoRegions 6E and 7E. These features and systems should be resilient to climate change; and
- Water resources should be sustainably used.

Development and site alteration shall not be permitted in significant wetlands within EcoRegions 5E, 6E and 7E, or in significant coastal wetlands. Development and site alteration shall not be permitted in significant woodlands, significant valleylands, SWH or significant ANSIs, unless it is demonstrated that there will be no negative impacts on the natural features or their ecological functions.

Development and site alteration shall not be permitted in the habitat of endangered and threatened species or in fish habitat, except in accordance with provincial and federal requirements.

Development and site alteration may be permitted on lands adjacent to the above features provided it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

The Province released a draft Provincial Planning Statement (draft PPS) on April 10, 2024; while this has not been adopted to-date, it will come into effect as of October 20th, 2024. The intention for this document is to replace both the current PPS (2020) and *A Place to Grow: Growth Plan for the Greater Golden Horseshoe* (2020). The April 10th 2024 draft does not propose any changes to natural heritage policies in the PPS (2020) identified above and there are relatively minor changes to some of the existing definitions.

The changes mentioned above are not yet in effect as of the submission date of this EIS report. However, we will take these changes into account throughout the EIS process to ensure it aligns with all relevant PPS provisions, which will be in effect starting October 20, 2024.

1.3.6 Endangered Species Act

The provincial Endangered Species Act (ESA), 2007 (Consolidation 2021) was developed to:

- Identify species at risk (SAR), based upon best available science;
- Protect SAR and their habitats and to promote the recovery of the SAR; and
- Promote stewardship activities that would support those protection and recovery efforts.

The ESA protects all threatened, endangered and extirpated species listed on the Species at Risk in Ontario (SARO) list (Government of Ontario 2007b). These species are legally protected from harm or harassment, and their associated habitats are legally protected from damage or destruction, as defined under the ESA.



1.3.7 Fish and Wildlife Conservation Act

The Fish and Wildlife Conservation Act outlines management of fishing, hunting, and trapping activities to protect and manage fish and wildlife populations. It also dictates the circumstances where wildlife may be kept in captivity, which is not applicable to this development application. Should any trapping or fishing in support of baseline, construction or post-construction activities be required, a permit will be needed from the Ministry Natural Resources and Forestry (MNR). In addition, nests of non-migratory bird species are protected under the Fish and Wildlife Conservation Act, and best management practices would be required to be implemented during development activities to detect and avoid these nests.

1.3.8 Migratory Birds Convention Act

This federal legislation protects the nests and offspring of listed migratory bird species from destruction or disturbance. In its application, it requires that best management practices be implemented to detect and avoid disturbance to active nests during development activities.

1.3.9 Fisheries Act

Fisheries and Oceans Canada (DFO) administers the federal *Fisheries Act*, 1985, which defines fish habitat as “water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas” (s. 2(1)). The *Fisheries Act* prohibits the death of fish by means other than fishing (s. 34.4(1)), and the harmful alteration, disruption or destruction of habitat (HADD; s. 35(1)). A HADD is defined as “any temporary or permanent change to fish habitat that directly or indirectly impairs the habitat’s capacity to support one or more life processes” (DFO 2019).



2. Summary of Data Collection Approaches and Methods

2.1 Background Review

GEI reviewed the following background material to determine existing natural heritage information for the site the proposed scope of work:

- MNRF's Natural Heritage Information Centre (NHIC) database (2024);
- MNRF's Land Information Ontario (LIO) database (2023);
- Bird Studies Canada's Atlas of the Breeding Birds of Ontario (Cadman et al. 2007);
- Ontario Nature's Reptile and Amphibian Atlas (2019);
- Toronto Entomologists' Association's (TEA) Ontario Butterfly and Moth Atlases (2020, 2023);
- DFO's Aquatic SAR Map (2023); and
- Online citizen science databases (e.g., eBird and iNaturalist).

2.1.1 Natural Heritage Information Centre

The NHIC (MNRF 2024) was searched for records of provincially significant plants, vegetation communities and wildlife on and in the vicinity of the Subject Lands. The database provides occurrence data by 1 km² area squares, with one square overlapping the Subject Lands (17PH3083). Four species of interest were noted:

- Eastern Meadowlark (*Sturnella magna*) – Threatened in Ontario;
- Least Bittern (*Ixobrychus exilis*) – Threatened in Ontario;
- Pumpkin Ash (*Fraxinus profunda*) – S1 (Extremely Rare in Ontario); and
- Tufted Titmouse (*Baeolophus bicolor*) – S3 (Rare to Uncommon in Ontario).

Detailed investigations will confirm whether suitable habitat is present and/or if these species are present within the Subject Lands.

While not immediately located near the Subject Lands, records of American Eel (*Anguilla rostrata*) was recorded approximately 1.5 km away within Jordan Harbour. This species is listed as Endangered in Ontario.

2.1.2 Land Information Ontario

Based on the MNRF LIO geographic database, two natural features were found along the eastern boundary of the Subject Lands: woodlands and the watercourse. These features correspond with the Prudhomme Creek corridor. Lake Ontario is identified immediately along the northern boundary of the Subject Lands. All features are identified on **Figure 2 (Appendix A)**.

No other known natural heritage features were identified within or adjacent to the Subject Lands.



2.1.3 Ontario Breeding Bird Atlas Results

The Ontario Breeding Bird Atlas (OBBA) contains detailed information on the population and distribution status of Ontario birds (Cadman et al. 2007). The data is presented on 100 km² area squares with one square overlapping the Subject Lands (17PH38). It should be noted that the Subject Lands are a small component of the overall bird atlas square, and therefore it is unlikely that all bird species are found within the Subject Lands. Habitat type, availability and size are all contributing factors in bird species presence and use.

A total of 86 bird species were recorded in atlas square, with the following species of interest noted:

- Species listed as Threatened or Endangered on the SARO List:
 - o Bank Swallow (*Riparia riparia*) – Threatened;
 - o Bobolink (*Dolichonyx oryzivorus*) – Threatened;
 - o Chimney Swift (*Chaetura pelagica*) – Threatened;
 - o Eastern Meadowlark – Threatened; and
 - o Yellow-breasted Chat (*Icteria virens*) - Endangered.
- Species of Conservation Concern (i.e., listed as Special Concern on the SARO List or identified as an S1–S3 species):
 - o Common Moorhen (*Gallinula chloropus*) – S3B;
 - o Eastern Wood-Pewee (*Contopus virens*) – Special Concern;
 - o Purple Martin (*Progne subis*) – S3B;
 - o Tufted Titmouse – S3; and
 - o Wood Thrush (*Hylocichla mustelina*) – Special Concern.

Detailed investigations will confirm whether suitable habitat is present and/or if these species are present within the Subject Lands.

2.1.4 Ontario Reptile and Amphibian Atlas Results

The Ontario Reptile and Amphibian Atlas contains detailed information on the population and distribution status of Ontario herpetofauna (Ontario Nature 2019). The data is presented on 100 km² area squares with one square overlapping the Subject Lands (17PH38). It should be noted that the Subject Lands are a small component of the overall atlas square, and therefore it is unlikely that all herpetofauna species are found within the Subject Lands. Habitat type, availability and size are all contributing factors in herpetofauna species presence and use.

A total of 15 species were recorded in the atlas square that overlaps with the Subject Lands, of which one is a salamander species, eight are frog and toad species, three are turtle species and three are snake species. Of these species, the following species is of interest were noted:

- Species listed as Threatened or Endangered on the SARO List:
 - o Gray Ratsnake (*Pantherophis spiloides*) – Endangered.
- Species of Conservation Concern (i.e., listed as Special Concern on the SARO List or identified as an S1–S3 species):
 - o Snapping Turtle (*Chelydra serpentina*) – Special Concern; and
 - o Northern Watersnake (*Nerodia sipedon*) – Special Concern.



The last observations of the Gray Ratsnake occurred in 1985. Detailed investigations will confirm whether suitable habitat is present and/or if these species are present within the Subject Lands.

2.1.5 Ontario Butterfly and Moth Atlases Results

The Ontario Butterfly and Moth Atlases (Toronto Entomologists' Association 2020, 2023) contain detailed information on the population and distribution status of butterflies and moths in Ontario. The database provides occurrence data by 10 km x 10 km squares. The Study Area is located within the atlas square (17PH38), which was used to determine a potential butterfly and moth species list for the area. The Study Area is a small component of the overall atlas square, and therefore all the butterfly and moth species listed for this atlas square may not be found within the Study Area. Habitat type, availability and size are all contributing factors in butterfly and moth species presence and use.

A total of 17 species including 10 butterfly species and 7 moth species were recorded in atlas square. Of these reported species, one species of interest is noted: Monarch (*Danaus plexippus*), which is listed as Special Concern in Ontario.

Detailed investigations will confirm whether suitable habitat is present and/or if these species are present within the Subject Lands.

2.1.6 Aquatic SAR Distribution Mapping Results

The DFO Aquatic SAR Map (2023) was reviewed to identify any known occurrences of aquatic SAR, including fish and mussels, in nearby Lake Ontario and the regulated watercourse located within the Subject Lands. One species of note was identified: Shortnose Cisco (*Coregonus reighardi*). This species is listed as Endangered in Ontario and would be located within Lake Ontario.

Detailed investigations will confirm whether suitable habitat is present and/or if these species are present within the Subject Lands.

2.1.7 NPCA Fisheries Data Request

A request was made to the NPCA to obtain fisheries data for Prudhomme Creek. The NPCA indicated that their species records were collected using both seine net and backpack electrofishing techniques. The species list (provided below) was recorded during the 2004-2005 field seasons for the area between Laurie Avenue and the mouth of Prudhomme Creek:

- Creek Chub (*Semotilus atromaculatus*)
- Fathead Minnow (*Pimephales promelas*)
- Golden Shiner (*Notemigonus crysoleucas*)
- Green Sunfish (*Lepomis cyanellus*)
- Largemouth Bass (*Micropterus salmoides*)
- Round Goby (*Neogobius melanostomus*)
- White Sucker (*Catostomus commersonii*)
- Brown Trout, Creek (*Salmo trutta*)
- Emerald Shiner (*Notropis atherinoides*)



- Lake Chub (*Couesius plumbeus*)
- Rainbow Trout (*Oncorhynchus mykiss*)
- Threespine Stickleback (*Gasterosteus aculeatus*)

2.1.8 Online citizen science databases

2.1.8.1 eBird

The eBird (2023) database is a large citizen science-based project with a goal to gather bird diversity information in the form of checklists of birds, archive it, and share it to power new data-driven approaches to science, conservation and education. As the observations can be submitted by anyone, and the records are not officially vetted, the data obtained from this tool should not be used as a clear indicator of species presence, and species may be filtered out based on habitat and target survey efforts.

This online database was examined to identify observations made within the Subject Lands. However, no significant bird species were found on the Subject Lands or within 120 meters of its boundaries.

2.1.8.2 iNaturalist

The iNaturalist (2023) database is a large citizen science-based identification and data collection app. It allows any citizen to submit observations to be reviewed and identified by other naturalists and scientists to help provide accurate species observations. As the observations can be submitted by anyone, and the records are not officially vetted, the data obtained from this tool should not be used as a clear indicator of species presence, and species may be filtered out based on habitat and target survey efforts.

No significant observations were recorded.

2.2 Ecological Field Investigations

In accordance with the approved TOR (**Appendix B**), the following ecological field investigations have been completed to inform this EIS:

- Botanical Inventory and Ecological Land Classification Survey (Summer);
- Terrestrial Habitat Review; and,
- Aquatic Assessment.

In addition, a tree inventory was completed and is summarized within the Arborist Report (GEI 2024).

Finally, one bat acoustic survey was added based on the upcoming listing of several SAR bats. This survey was not previously requested as part of the TOR; rather, was added to address potential permitting requirements with the Ministry of the Environment, Conservation and Park's (MECP) as part of the SPA/detailed design stage. No bat habitat assessments were completed at this stage as the disturbance footprints associated with the adjacent NHS (e.g., woodlands) are unknown. Snag surveys may be required during detailed design depending on the extent of the disturbance footprint within the woodland and the results of the acoustic monitoring.



2.2.1 Botanical Field Investigation

One botanical inventory and ELC survey was completed during the summer within the Subject Lands. Vegetation communities within the Subject Lands were delineated through the review of aerial imagery and ground truthed in the field. A botanical inventory list was compiled to understand the flora present within the Subject Lands. Flora nomenclature was based on the Ontario Plant List (Newmaster et al. 2012) with updates from the NHIC database (2024). The ELC survey followed the ELC for Southern Ontario Protocol (Lee et al. 1998). Feature limits were defined through aerial interpretation and ground-truthing. Observations of rare, threatened or endangered species were documented and mapped during the field investigations, as present.

2.2.2 Terrestrial Habitat Review

A general wildlife screen was completed throughout the property to determine whether any suitable terrestrial habitat is present. Specifically, habitat for terrestrial species such as amphibians, reptiles and mammals were completed within the proposed development footprint.

2.2.3 Bat Acoustic Monitoring

Survey methods were developed based on guidance from MECP, professional experience and MNRF survey guidelines as outlined in “Bats and Bat Habitats: Guidelines for Wind Power Projects” (MNR 2011) and MECP’s 2022 “Maternity Roost Surveys (Forests/Woodlands)” note.

Surveys to detect bat species were carried out in June 2024 and were completed using one Wildlife Acoustics Song Meter SM4BAT recording device over a duration of ten consecutive evenings (June 14 - June 24). The station was located within the woodland and is shown on **Figure 4 (Appendix A)**. This location was specifically targeted where encroachments are proposed.

The passive acoustic recorder was programmed to begin recording at sunset and to end recording at sunrise. In addition, the SM4BAT passive recorder microphone was elevated approximately 2 m above the ground to reduce background noise and echo.

All ultrasonic recordings were filtered to eliminate recordings with high levels of noise or with no bat calls, and then further analyzed using SonoBat’s auto-classification tool. Any calls with a positive identification were manually vetted by a wildlife ecologist with training in bat species identification by sonogram. Calls that were not identifiable to species by SonoBat were manually reviewed by a wildlife ecologist with training in bat species identification by sonogram to identify those calls with characteristics of SAR bats (i.e. calls with frequencies greater than 40kHz). Where recorded, these calls are classified as Unknown Myotis calls in accordance with MECP guidance.



2.2.4 Aquatic Assessment

An aquatic assessment was completed within the tablelands of the Subject Lands to determine if any headwater drainage features were present in accordance with the Toronto and Region Conservation Authority (TRCA) and Credit Valley Conservation's (CVC) Headwater Drainage Feature Evaluation Guideline (2014). In addition to reviewing for potential headwater drainage features, a general aquatic assessment was completed within Prudhomme Creek. This assessment was informed in part by the Ontario Stream Assessment Protocol (Version 10; Stanfield 2017); however, the assessment was along the entire watercourse within the Subject Lands and no targeted habitat mapping was completed. Any fish noted during the assessment were documented.



3. Environmental Setting and Characteristics

3.1 Physical Environment

The Subject Lands previously hosted two commercial buildings that had designated trailer and car parking. The Subject Lands are generally located within a residential area; however, natural and naturalized areas are present immediately adjacent to the property. Specifically, Lake Ontario is found along the northern boundary of the property, while Millennium Forest Park is located immediately west of the site and Victoria Shores Park is immediately east of the site.

The Subject Lands are located in the physiographic region identified as the Sand Plains (Chapman and Putnam, 1984). The Sand Plains are generally concentrated around the Great Lakes and are the result of water-laid alluvial/beach deposits from early rivers.

Geotechnical and hydrogeological investigations were completed by Landtek Limited Consulting Engineerings (Landtek). As summarized within Landtek's Geotechnical Investigation (2023a), the Subject Lands are underlain by interbedded deposits of Lake Iroquois stratified sands and silt and clay till of the Halton Till Formation. Superficial geology was determined to be part of the red shale from the Queenston Formation. Borehole findings from their investigations found existing paved areas with a concrete thickness ranging from 150 mm to 475 mm, followed by a mixture of sands, silts, clays and silt tills.

Landtek's Hydrogeological Investigation (2024) identified that the Subject Lands are located within the Niagara Peninsula Source Protection Area in a Highly Vulnerable Aquifer Area. Groundwater elevation ranged on site between 3.0 to 12.1 mbgs with a suggested flow direction north towards Lake Ontario.

One valleyland is located along the eastern limit of the property. The valleyland contains Prudhomme Creek. The top of bank was staked by the NPCA on August 15, 2024 with Landtek.

3.2 Biological Environment

The Subject Lands occur within the Carolinian or Deciduous Forest Zone (also referred to as the Mixed Wood Plains), an area characterized by a relatively warmer climate that supports plant species typical of more southern areas. This zone is referred to by the Province as Ecoregion 7E. Broadleaved trees, including American Beech (*Fagus grandifolia*), Sugar Maple (*Acer saccharum*), Basswood (*Tilia americana*), Red Maple (*Acer rubrum*), White Oak (*Quercus alba*) and Bur Oak (*Quercus macrocarpa*), dominate natural upland forest cover in this region (Rowe, 1972). This region also contains Canada's main distribution of Black Walnut (*Juglans nigra*), Sycamore (*Platanus occidentalis*), Swamp White Oak (*Quercus bicolor*) and Shagbark Hickory (*Carya ovata*).



Figure 2 (Appendix A) depicts the broader landscape and potential movement and linkage corridors surrounding the Subject Lands for abiotic and biotic movement of organisms, matter and energy. As previously noted, the Subject Lands were previously developed and are located within a developed landscape. West of the Subject Lands are a mixture of agricultural and commercial businesses, while south and east of the Subject Lands is a residential community. Lands located approximately 550 m east of the Subject Lands are also currently being developed along Lake Ontario. Approximately 700 m south of the Subject Lands is the Queen Elizabeth Way (QEW), which would act as a barrier to movement within the landscape for terrestrial species.

The Prudhomme Creek Corridor appears to originate north of the QEW around the North Service Road. Between the North Service Road and Lake Ontario, there are four watercourse crossings before outletting into Lake Ontario. This corridor is present along the eastern extent of the Subject Lands and includes portions of the Victoria Shores Park. Prudhomme Creek appears to provide a north-south corridor, as it connects various habitats together within an urbanized area before outletting into Lake Ontario. Prudhomme Creek is expected to support various terrestrial and aquatic species within the area. No east-west movement corridors were identified within or immediately adjacent to the Subject Lands, except for the Lake Ontario shoreline.

Nearby road networks are assumed to facilitate the localized movement of small to medium sized wildlife (e.g., amphibians, reptiles, small to medium sized mammals, fish) provided that there are no perched or blocked culverts.

3.3 Terrestrial Ecology

3.3.1 Vegetation

Ecological Land Classification

The Subject Lands consist of tableland and shoreline topographic features. The tableland topographic features located on the Subject Lands show evidence of disturbance or human influence, while the shoreline features, although sparse in vegetation, consist of some natural communities. Three ELC community types were documented and classified to vegetation type.

ELC mapping of the Subject Lands is shown on **Figure 3 (Appendix A)**. A description of each ELC unit is provided in **Table 1 (Appendix C)**. No provincially rare vegetation communities were present on the Subject Lands (NHIC, 2021).

The limits of the woodland feature have been refined through ground-truthed feature staking with the Town of Lincoln, the Niagara Region, and the NPCA on August 15, 2024. The CUW boundary has been revised to reflect the staked dripline.

Botanical

A botanical inventory completed on the Subject Lands identified a total of 104 species of vascular plants. Of that number, 41 (39%) are native and 63 (61%) are exotic. A full species list is included in **Table 2 (Appendix C)**.



The majority of the native species (90%) are ranked S5 (secure in Ontario). Four species (10%) are ranked S4 (apparently secure in Ontario; NHIC, 2024) and no species ranked S1-S3 were observed. Four regionally uncommon native plants were observed, as per the Niagara Region rarity rankings (Oldham, 2010). None of the regionally rare species are considered rare in Ontario. None of the species recorded from the Subject Lands had a coefficient of conservatism value of 9 or 10.

Regionally uncommon species (U; Oldham, 2010) are summarized below:

- Pale Jewelweed (*Impatiens pallida*);
 - Observed infrequently along the watercourse; within the cultural woodland community amongst Spotted Jewelweed (*Impatiens capensis*)
- Eastern Black Nightshade (*Solanum emulans*);
 - Observed occasionally within the cultural meadow and cultural woodland communities
- Slippery Elm (*Ulmus rubra*); and
 - One specimen observed growing within the rock berm along Lake Ontario
- Eastern White Cedar (*Thuja occidentalis*);
 - One specimen observed within the cultural woodland community

One candidate Butternut individual was identified within the Prudhomme Creek corridor; however, upon further genetic analysis it was determined that this individual is a hybridized species with Japanese Walnut (*Juglans ailantifolia*). Genetic lab results are provided within **Appendix D**. Since this is not a pure Butternut, this species is not afforded protection under the ESA.

Pumpkin Ash, which was noted within the background review (see **Section 2.1.1**) was not observed on the Subject Lands and does not appear to be present on adjacent lands.

Invasive Species

Invasive species are those that can become (or presently are) a serious problem within a defined location. These species reproduce and spread aggressively, reducing the local biodiversity and threatening ecological function. Depending on existing conditions, some invasive species can outcompete all other species.

Urban Forest Associates (2002) provides a categorical ranking system for species known to be invasive in southern Ontario. Of the 62 non-native species observed on the Subject Lands, eight are ranked as Category 1.

Category 1 species are deemed to be the most invasive and can dominate a site to exclude all other species, remaining dominant on the site indefinitely. These are a threat to natural areas wherever they occur because they have very effective reproduction and dispersal mechanisms, allowing them to move long distances. These are regarded as a top priority for control, where eradication and follow-up monitoring are often necessary to ensure its effective removal, where sought. The eight Category 1 species observed on the Subject Lands are:

- Canada Thistle (*Cirsium arvense*)
 - Occasional in the cultural meadow community
- Dame's Rocket (*Hesperis matronalis*)
 - Observed infrequently within the cultural meadow community



- Garlic Mustard (*Alliaria petiolata*)
 - o Commonly observed in the cultural woodland community
- Maack's Honeysuckle (*Lonicera maackii*)
 - o Observed occasionally throughout the cultural meadow and woodland communities
- Purple Loosestrife (*Lythrum salicaria*)
 - o Observed infrequently along the watercourse and within the open gravel shoreline
- White Mulberry (*Morus alba*)
 - o Observed infrequently within the cultural woodland
- Multiflora Rose (*Rosa multiflora*)
 - o Observed occasionally within the cultural meadow and woodland communities
- Manitoba Maple (*Acer negundo*)
 - o Observed occasionally throughout the Subject Lands

It was also noted that many Green Ash (*Fraxinus pennsylvanica*) were in poor or dead condition bordering the edge of the cultural woodland community, as a result of the invasive Emerald Ash Borer (*Agrilus planipennis*).

Wetlands

Identification of wetlands generally relies on the '50/50 rule', where features having over 50% relative cover of wetland plants are classified as wetland. Based on this, no wetlands are present on the Subject Lands.

3.3.2 Terrestrial Habitat Review

The majority of the site is disturbed as it previously hosted two commercial buildings. Since these buildings (including their foundations) are no longer present within the Subject Lands, no anthropogenic habitat is present for roosting bats, overwintering snakes, nesting birds or other species.

The Prudhomme Creek corridor likely supports a variety of terrestrial species. As previously noted, no wetland habitat was recorded within the immediate vicinity of the Subject Lands to support breeding amphibians. Given that Prudhomme Creek supports fish, it is unlikely that amphibians would be able to successfully breed within the watercourse. The watercourse and Lake Ontario could potentially support turtle overwintering, while the Gravel Open Beach (BBO) could support turtle nesting habitat. The open water would likely support various foraging aerial insectivores. No large abundances of Milkweed (*Asclepias sp.*) were recorded along the corridor; thus, no significant habitat for Monarch would be present. Candidate bat snags may be present within the corridor to support roosting SAR bats; however, the scrubby nature of the cultural woodland would likely not provide high-quality habitat. Several dead snags (Decay Class 4-6) were recorded within the corridor; these snags would not generate the thermal properties required to support roosting bats. The eroded slopes could support bank-burrowing species (e.g., Muskrat); however, no evidence of burrowing was documented during the site visits. Foraging habitat for various terrestrial species (e.g., snakes, small mammals) may be present within the corridor. No rocky outcrops or other natural features were identified that could provide any subsurface access below the frost line to support snake overwintering.



Incidental wildlife observations included: Northern Raccoon (*Procyon lotor*), Deer Mouse (*Sorex sylvester*) and American Robin (*Turdus migratorius*). These species are listed as S5 (common and secure) and are not provincially or locally rare species. These species are commonly associated with urbanized spaces.

3.3.3 Bat Acoustic Survey

Four bat species were detected during the acoustic surveys: Big Brown Bat (*Eptesicus fuscus*), Silver-haired Bat (*Lasionycteris noctivagans*), Hoary Bat (*Lasiurus cinereus*), and Eastern Red Bat (*Lasiurus borealis*). During ten detector evenings of acoustic surveys, 1,025 calls were recorded and identifiable to species.

Of the 1,025 calls that were identifiable to species, 603 were Big Brown Bat, 278 were Silver-haired Bat, 138 were Hoary Bat, and 6 were Eastern Red Bat (**Table 3, Appendix C**). No calls showed *Myotis* characteristics (i.e., calls with frequencies greater than 40 kHz).

Since the detectors were deployed over ten evenings, the following call averages per night were recorded by species: 60.3 by Big Brown Bat, 27.8 by Silver-haired Bat, 13.8 by Hoary Bat and 0.6 by Eastern Red Bat. The average number of calls does not equate to the number of individuals using the feature. In general, this is a lower activity level considering that the station was located adjacent to two open water sources (Lake Ontario and Prudhomme Creek) where foraging activity is likely to occur. Furthermore, the timing of calls were relatively evenly distributed from the time of sunset to 02:00, with the highest concentration of calls occurring between 22:00 and 23:00. Bat roosting is most likely to occur during dusk and dawn, so the lack of dawn activity is an indicator that bats were most likely foraging, not roosting in the area.

3.4 Aquatic Ecology

3.4.1 Watercourse

The entire extent of Prudhomme Creek within the Subject Lands was assessed to understand the existing aquatic habitats present within the permanent watercourse. The assessment was generally completed in accordance with the Ontario Stream Assessment Protocols. A larger rain event had occurred within 48 hours of the assessment; however, this did not impact the assessment. No turbidity was observed within the feature upon assessment. Water temperature measurement at the time of the survey was 20°C (with air temperature also measured at 20°C). All features were visible within the reaches. No anthropogenic inputs (e.g., culverts, SWM outlets) were documented within the features to suggest alteration to stream hydrology.

Prudhomme Creek is a permanent natural defined channel located within a CUW community. The entire sampling reach was identified as one long run with little natural morphology (e.g., riffle, pool habitats) with mean wetted width estimated between 3-5m and mean bankfull depth measured between 40-50 cm. Minimal flow was recorded within the feature, except the downstream extent where the feature has been altered before entering into Lake Ontario. The mouth of the watercourse had been diverted through a cobble/sand beach area and ran parallel to the shoreline of Lake Ontario for approximately 2-3 m before ultimately connecting



into the lake. This extent of the watercourse was armoured by various larger substrates, including cobble and boulders.

Besides the downstream portion of the watercourse which has been altered, the majority of the feature consists of clay dominated substrates and some sand particles. The watercourse itself appears that it is entrenched within a defined valleyland. Since the feature is entrenched, it does not appear that it is well connected to the adjacent riparian areas. No riparian wetlands were recorded along the extent of the watercourse. Erosion was recorded throughout the sampling reach along both banks, with the walls near vertical along the left bank.

Dominant riparian vegetation immediately adjacent to the sampling reach included Manitoba Maple (*Acer negundo*), Green Ash (*Fraxinus pennsylvanica*), American Beech (*Fagus grandifolia*), Willows (*Salix* sp.), Wild Grape (*Vitis riparia*), Thicket Creeper (*Parthenocissus vitacea*) and Spotted Jewelweed (*Impatiens compensis*).

Instream habitat cover was relatively limited with approximately 60% of the stream containing no instream cover. The 40% instream cover consisted of approximately 15% cobble, 10% woody debris (both instream and overhanging), 5% organic debris and 5% instream vascular macrophytes. Minimal instream vegetation was recorded; however, some algae and duckweed was recorded in the upstream sections. No watercress (*Nasturtium* sp.) was recorded within the stream. No evidence of groundwater interactions (e.g., watercress, iron staining, bubbling) was recorded.

No seasonal or permanent barriers were recorded within the sampling reach, suggesting that fish from the watercourse and Lake Ontario are able to freely move between the two systems. During the assessment, dozens of young of year (YOY) were recorded throughout the channel. Species identification was not available as they were not captured; however, based on their size and shape they were assumed to be Minnows (*Cyprinidae* and *Leuciscidae*). The presence of YOY suggests that Prudhomme Creek provides nursery habitat for fish species.

3.4.2 Headwater Drainage Features

Ahead of conducting the site visit, GEI completed a desktop review to identify locations of potential headwater drainage features. This was completed through an ArcGIS mapping exercise using available LiDAR data to determine where potential flow paths may be located within the landscape based on topographic relief. Several potential flow paths were identified given the high level of sensitivity that was used to generate the mapping. Using this generated mapping, the entire site was reviewed in the field to determine whether drainage features were present. No headwater drainage features were identified within the Subject Lands despite survey effort. This is typical of developed/disturbed landscapes.

3.4.3 Lake Ontario

The Lake Ontario shoreline on and adjacent to the Subject Lands is generally relatively uniform, consisting predominantly of an armourstone revetment, which extends along the entire ~100 m of the Subject Lands frontage on Lake Ontario. Shoreplan (2024) has reported that the revetment has a crest elevation of approximately 77.8 m and a toe elevation of approximately 74.0 m, for an overall height of 3.8 m. They have also reported a revetment slope of approximately 2.5:1. Individual stones in the revetment were observed by Shoreplan to range from 2 to 5 tonnes in size. The Lake Ontario water level has been surveyed on two



occasions; it was 74.53 m on December 22, 2022, and 74.61 m on October 27, 2023 (Shoreplan 2024).

No information on lakebed sediments beyond the toe of the existing erosion protection structure is available as the area was not visible from the shoreline. Based on other similar areas along the south shore of Lake Ontario, it is expected that sediments consist of a mix of cobble, gravel and sand. This was observed within the Subject Lands within the BBO unit.

Vegetation is relatively limited on the revetment itself, with some ground cover, shrub and tree species scattered along its length. Meadow species are the dominant vegetation form adjacent to the top of the revetment. None of the vegetation species present along the shoreline are considered to be SAR or regionally rare species (GEI 2024).

Overall, aquatic habitat within the Subject Lands is relatively uniform and typical of exposed Lake Ontario shorelines where erosion protection has been installed. In accordance with DFO requirement, all areas of the shoreline and lakebed below elevation 75.32 m are considered to be fish habitat. Although the Subject Lands generally lacks complexity and is highly altered by the shoreline erosion protection materials, the area is expected to provide habitat for a range of fish species.



4. Analysis of Ecological and Natural Heritage Significance

Eight types of natural features are identified in the PPS (MMAH 2020):

- Significant wetlands;
- Significant coastal wetlands;
- Significant woodlands;
- Significant valleylands;
- SWH;
- Fish habitat;
- Habitat of endangered and threatened species; and
- Significant ANSIs.

The presence/absence of these natural features on the Subject Lands are discussed in the subsequent sections of this EIS. The NHRM (MNR 2010), TLOP (2018 Consolidation), Niagara Region OP (2022 Consolidation) and O. Reg. 41/24 were referenced to assess the potential significance of other natural features, and their associated forms and functions on the landscape. Where natural features are present on the Subject Lands, their sensitivities are discussed.

4.1 Significant Wetlands

Within Ontario, significant wetlands are identified by the MNRF or by their designates. Other evaluated or unevaluated wetlands may be identified for conservation by the municipality or the conservation authority. There are no PSWs identified on or within the general vicinity of the Subject Lands (as discussed above within **Section 2.1.2**).

No wetland units were identified on or immediately adjacent to the Subject Lands.

4.2 Significant Coastal Wetlands

Similar to significant wetlands, the MNRF or their designates identify significant coastal wetlands present on the landscape. Coastal wetlands are defined in the NHRM (MNR 2010) as:

- a) “any wetland that is located on one of the Great Lakes or their connecting channels (Lake St. Clair, St. Mary’s, St. Clair, Detroit, Niagara and St. Lawrence Rivers); or
- b) Any other wetlands that is on a tributary to any of the above-specified water bodies and lies, either wholly or in part, downstream of a line located two km upstream of the 1:100-year floodplain (plus wave run-up) of the large water body to which the tributary is connected.”

No significant coastal wetlands were identified within the vicinity of the Subject Lands (as discussed above within **Section 2.1.2**). Furthermore, no wetlands were recorded within the Subject Lands.



4.3 Significant Woodlands

Significant woodlands are identified by the planning authority in consideration of criteria established by the MNRF. Under the NHRM (2010), woodlands are defined as:

“...treed areas that provide environmental and economic benefits to both the private landowner and the general public, such as erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial levels.”

The Niagara Region OP (2022; Schedule L) defines woodlands as:

*“**Woodlands** means treed areas that provide environmental and economic benefits to both the private landowner and the general public, such as erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat, outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland products. Woodlands include treed areas, woodlots or forested areas and vary in their level of significance at the local, regional and provincial levels. Woodlands will be delineated according to the Province’s Ecological Land Classification system definition for forest (PPS, 2020). For the purposes of this definition, forests include terrestrial vegetation communities as defined in accordance with the Ecological Land Classification system, where the tree cover is greater than 60 per cent.”*

The Niagara Region OP (2022; Schedule L) defines significant woodlands as:

*“**Significant woodlands** means woodlands that are ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history (PPS, 2020).”*

The Niagara Region OP (2022; Schedule L) further defines the following criteria for significant woodlands:

“To be identified as significant, a woodland must meet the Ecological Land Classification definition of forest (as per the definition of ‘woodland’), and then meet one or more of the following criteria:

- a) two hectares or greater in size;*
- b) one hectare or greater in size meeting at least one of the following criteria*
 - i) naturally occurring (i.e., not planted) trees (as defined in the species list of Appendix D in the Greenbelt Technical Paper);*
 - ii) treed areas planted with the intention of restoring woodland;*
 - iii) 10 or more trees per hectare greater than 100 years old or 50 cm or more in diameter;*



- iv) *wholly or partially within 30 m of a provincially significant wetland or habitat of an endangered or threatened species;*
- v) *overlapping or abutting one or more of the following features:*
 - (1) *permanent streams or intermittent streams;*
 - (2) *fish habitat;*
 - (3) *significant valleylands;*
- c) *0.5 hectares or greater in size meeting at least one of the following criteria:*
 - i) *a provincially rare treed vegetation community with an S1, S2 or S3 in its ranking by the MNR's N.H.I.C.;*
 - ii) *habitat of a woodland plant species with an S1, S2 or S3 in its ranking or an 8, 9, or 10 in its Southern Ontario Coefficient of Conservatism by the NHIC, consisting of 10 or more individual stems or 100 or more sqm of leaf coverage;*
 - iii) *any woodland overlapping or abutting one or more of the following features:*
 - (1) *significant wildlife habitat;*
 - (2) *habitat of threatened species and endangered species; or*
 - (3) *non-provincially significant wetlands*
- d) *any size overlapping or abutting one or more of the following features:*
 - i) *provincially significant wetland; and*
 - ii) *life science area of natural and scientific interest"*

The CUWs are not considered forested ecosites in accordance with the ELC Manual; thus, are not considered woodlands or significant woodlands.

As per the Niagara Region OP (2022) Glossary of Terms, "Other Woodlands" as identified as "all terrestrial treed vegetation communities where present tree cover is greater than 25%". The CUW on site is considered to be an Other Woodland since it has >25% tree cover.

4.4 Significant Valleylands

Significant valleylands are defined and designated by the planning authority. General guidelines for determining significance of these features are presented in the NHRM (MNR 2010) for Policy 2.1 of the PPS. Recommended criteria for designating significant valleylands includes prominence as distinctive landform, degree of naturalness, and importance of its ecological functions, restoration potential and historical and cultural values.

It is recognized that the NHRM does not specify the number of criteria that are required to be met for a valleyland to be considered significant and recommends that the local planning authorities undertake a study that would determine which criteria should be applied for a valleyland to be considered significant.

The Niagara Region OP (2022; Schedule L) defines valleylands as:

"Valleylands means a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year (PPS, 2020)."



The Niagara Region OP (2022; Schedule L) further defines significant valleylands as:

“Significant valleyland means valleyland which is ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system. These are to be identified using criteria established by the Province (Growth Plan, 2019).”

The Niagara Region OP (2022; Schedule L) also lists the following significant valleyland criteria:

“Significant valleylands include any of the features identified in any of the following three categories:

- 1) all streams with well-defined valley morphology (i.e., floodplains, riparian zones, meander belts and/or valley slopes) of an average width of 25 metres or more; the physical boundary is defined by the stable top of bank (as defined by the conservation authority);*
- 2) all spillways and ravines with the presence of flowing or standing water for a period of no less than two months in an average year. Such features must be greater than 50 metres in length (as defined from the point of valley formation downstream to the confluence of the valley being assessed); 25 metres in average width with a well-defined morphology (i.e., two valley walls of 15 per cent slope or greater with a minimum height of 5 metres, and valley floor), and having an overall area of 0.5 hectares or greater; or*
- 3) additional features or areas beyond the ones described above that have been identified by the Region, Local Area Municipality, or the NPCA as providing one or more of the features or functions described in the table contained in Appendix A of the Greenbelt Plan 2005 Technical Definitions and Criteria for Key Natural Heritage Features in the Natural Heritage System of the Protected Countryside Area (MNRF, 2012).”*

As shown on Schedule E2 of the Niagara Region OP, no significant valleylands were identified along Prudhomme Creek; however, a significant valleyland was identified along Lake Ontario. Furthermore, based on a review of Table 8-1 of the NHRM, the Prudhomme Creek valleyland does not meet several of the criteria (e.g., landform prominence, distinctive geomorphic landforms, degree of naturalness, unique communities and species); therefore, no significant valleylands are present within the Subject Lands.

It is not typical for the Great Lakes to be considered a significant valleyland; instead it is likely that this hazard is associated with the erosion and shoreline hazards (as per NPCA mapping). Lake Ontario also does not meet the significant valleyland criteria identified under Table 8-1 of the NHRM.

One non-significant valleyland was identified along the eastern portion of the Subject Lands. This valleyland is associated with Prudhomme Creek and was staked by the NPCA and Landtek on August 15, 2024.



4.5 Significant Wildlife Habitat

SWH is one of the more complex natural heritage features to identify and evaluate. There are several provincial documents that discuss identifying and evaluating SWH including the NHRM (MNR 2010), the Significant Wildlife Habitat Technical Guide (MNR 2000), and the SWH Eco-Region Criterion Schedule (MNRF 2015). The Subject Lands are located in Eco-Region 7E and were therefore assessed using the 7E Criterion Schedule (MNRF 2015).

There are four general types of SWH:

- Seasonal concentration areas;
- Rare or specialized habitats;
- Habitat for species of conservation concern; and
- Animal movement corridors.

General descriptions of these types of SWH are provided in the following sections.

Seasonal Concentration Areas

Seasonal concentration areas are those sites where large numbers of a species gather together at one time of the year, or where several species congregate. Seasonal concentration areas include deer yards; wintering sites for snakes, bats, raptors and turtles; waterfowl staging and molting areas, bird nesting colonies, shorebird staging areas, and migratory stopover areas for passerines or butterflies. Only the best examples of these concentration areas are usually designated as SWH.

Rare or Specialized Habitats

Rare and specialized habitat are two separate components. Rare habitats are those with vegetation communities that are considered rare in the province. SRANKS are rarity rankings applied to species at the 'state', or in Canada at the provincial level, and are part of a system developed under the auspices of the Nature Conservancy (Arlington, VA). Generally, community types with SRANKS of S1 to S3 (extremely rare to rare-uncommon in Ontario), as defined by the NHIC (2024), could qualify. It is to be assumed that these habitats are at risk and that they are also likely to support additional wildlife species that are considered significant. Specialized habitats are microhabitats that are critical to some wildlife species. The NHRM (MNR 2010) defines specialized habitats as those that provide for species with highly specific habitat requirements, areas with exceptionally high species diversity or community diversity, and areas that provide habitat that greatly enhances species' survival.

Habitat for Species of Conservation Concern

Species of conservation concern include those that are provincially rare (S1 to S3), provincially historic records (SH) and Special Concern species. Several specialized wildlife habitats are also included in this SWH category, including Terrestrial Crayfish habitat, and significant breeding bird habitats for marsh, open country and early successional bird species. Habitats of species of conservation concern do not include habitats of endangered or threatened species as identified by the ESA (2021 Consolidation). Endangered and threatened species are discussed in Section 4.7.



Animal Movement Corridors

Animal movement corridors are areas that are traditionally used by wildlife to move from one habitat to another. This is usually in response to different seasonal habitat requirements, including areas used by amphibians between breeding and summer/over-wintering habitats, called amphibian movement corridors.

SWH Summary

As summarized within **Table 4 (Appendix C)**, the following candidate SWH types were identified within and adjacent to the Subject Lands:

- Shorebird Migratory Stopover Areas – associated with the BBO community;
- Turtle Wintering Areas – associated with Prudhomme Creek;
- Turtle Nesting Areas – associated with the BBO community; and
- Habitat for Special Concern and Rare Wildlife Species within Prudhomme Creek Corridor (Tufted Titmouse, Eastern Wood-Pewee, Purple Martin, Wood Thrush, Snapping Turtle).

4.6 Fish Habitat

Fish habitat, as defined in the federal Fisheries Act, c. F-14, means “spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes.” Fish, as defined in S.2 of the Fisheries Act, c. F-14, includes “parts of fish, shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals, and the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals.”

Both Prudhomme Creek and Lake Ontario would provide direct fish habitat. Both features are discussed further below.

Prudhomme Creek

Based on the fisheries data provided by NPCA (as discussed within **Section 2.1.7**) and the aquatic assessment (as discussed within **Section 3.4.1**), Prudhomme Creek appears to support cool to warmwater fish species. Two salmonid species were recorded by NPCA (Rainbow Trout and Brown Trout) suggesting that these species could be spawning within Prudhomme Creek. While unlikely to be spawning within the section of stream found within the Subject Lands since no riffles or pools were recorded within the Subject Lands, it is possible that this habitat is present upstream of the site. These salmonids are likely residents within Lake Ontario. The other species identified by NPCA could be residents both within Lake Ontario and Prudhomme Creek.



Lake Ontario

MNRF (2024) online fish community records were reviewed but no aquatic resource area survey points were identified in Lake Ontario adjacent to the Subject Lands. Therefore, no specific information on the fish community within Lake Ontario adjacent to the Subject Lands is known to be available. However, studies from other similar areas of the lake (Aquatic Habitat Toronto, undated) have shown that the nearshore fish community of open coast areas is generally dominated by Alewife (*Alosa pseudoharengus*), White Sucker (*Catostomus commersonii*), Emerald Shiner (*Notropis atherinoides*) and Spottail Shiner (*Notropis hudsonius*). Offshore areas likely provide habitat for several sportfish species including salmon and trout. Shoreline areas with cobble, gravel and sand substrate may provide spawning habitat for several fish species.

American Eel, designated as endangered in Ontario and threatened in Canada, may also be present in the nearshore areas of Lake Ontario as they are known to occupy habitats between the shoreline and 10 m depth. This species is known to be present in nearby Jordan Harbour (MNRF 2024).

The DFO aquatic SAR map (DFO 2024) identifies Lake Ontario adjacent to the Subject Lands as potentially providing habitat for the Shortnose Cisco (*Coregonus reighardi*), which is listed as endangered in Ontario and Canada. However, this species is expected to reside in deeper (>20 m), offshore environments (COSEWIC 2005) and therefore, would not be expected to use the immediate shoreline area adjacent to the Subject Lands where works are proposed.

4.7 Habitat for Endangered and Threatened Species

No SAR were documented during the site visits within or immediately adjacent to the Subject Lands.

GEI is currently consulting with MECP regarding candidate habitat for American Eel within Lake Ontario. If MECP is of the opinion that American Eel are present, further consultation with MECP will be required to ensure compliance with the ESA. Until a response from MECP is received, it is assumed that habitat is present. All works to support the development will be in compliance with the ESA, and responses from MECP, if received, and approaches to compliance will be discussed further within the SPA application. Engagement with DFO will also be required from a fish and fish habitat perspective.

4.8 Significant Areas of Natural and Scientific Interest

No ANSIs were identified on or within 120 m of the Subject Lands (**Figure 2, Appendix A**).



4.9 NPCA Regulated Features

Pursuant to Ontario Regulation 41/24, the NPCA has the authority to regulate development within its regulated areas. The NPCA regulates the following features:

- Lands adjacent to or close to the shoreline of the Great Lakes-St. Lawrence River System
- River or stream valleys that have depressional features associated with a river or stream, whether or not they contain a watercourse;
- Hazardous lands;
- Wetlands; and
- Other areas where development could interfere with the hydrologic function of a wetland, including areas up to 120 m of all PSWs and wetlands greater than 2 ha in size, and areas within 30 m of wetlands less than 2 ha in size.

Prudhomme Creek and Lake Ontario are regulated features. This is consistent with NPCA's Watershed Explorer (as discussed within **Section 1.3.3**).

4.10 Town of Lincoln – Natural Environment

The presence of components of the Town's Natural Environment (see **Section 1.3.1**) is reviewed below within **Table 4-1** (below).

Table 4-1: Review of Components of the Town's Natural Environment within or immediately adjacent to the Subject Lands

Component of the Town's Natural Environment	Presence within or adjacent to the Subject Lands?
Environmental Protected Areas	No – PSWs and ANSIs are not present within or adjacent to the Subject Lands.
Environmental Conservation Areas	Yes – Candidate habitat for special concern species and SWH was identified within the Prudhomme Creek corridor and Lake Ontario. Prudhomme Creek and Lake Ontario are identified as direct fish habitat.
Greenbelt Protected Areas	No – The Subject Lands are located within Town/Village areas within the Greenbelt.
Potential Natural Heritage Corridors	Candidate – No definition is provided within the TLOP and makes reference to a Schedule of the Region's OP that is no longer available. However, Prudhomme Creek likely acts as a corridor.



Schedule B1 of the TLOP Review Draft (2023) indicates that the Natural Environment extends along the southern edge of the Subject Lands. As discussed above within **Table 4-1** no components of the Natural Environment are found along the southern edge of the Subject Lands.

4.11 Niagara Region – Natural Environment System

The presence of components of the Region's Natural Environment System (see **Section 1.3.2**) is reviewed below within **Table 4-2** (below).

Table 4-2: Review of Components of the Regional Natural Environment System within or immediately adjacent to the Subject Lands

Component of the Regional Natural Environment System	Presence within or adjacent to the Subject Lands?
Natural Heritage System for the Growth Plan	No – No natural heritage system of the Growth Plan is identified within or adjacent to the Subject Lands.
Greenbelt Plan Natural Heritage System	No – The Greenbelt NHS is not present within the Subject Lands.
Wetlands (PSWs, Other Wetlands, Significant Coastal Wetlands)	No – No wetlands are present within or adjacent to the Subject Lands.
Habitat for endangered, threatened and special concern species	Yes – Candidate Tufted Titmouse, Eastern Wood-Pewee, Purple Martin, Wood Thrush and Snapping Turtle habitat may be present within Prudhomme Creek corridor. Candidate SAR American Eel within Lake Ontario.
Fish habitat	Yes – Prudhomme Creek and Lake Ontario provide direct fish habitat.
ANSIs (Life and Earth Science)	No – ANSIs are not present within or adjacent to the Subject Lands.
Significant valleylands	No – No significant valleylands are present within the Subject Lands.
Other woodlands	Yes – The CUW is identified as an other woodland.
SWH	Yes – The following candidate SWH were identified within the Subject Lands: • Shorebird Migratory Stopover Areas – associated with the BBO community; • Turtle Wintering Areas – associated with Prudhomme Creek; • Turtle Nesting Areas – associated with the BBO community; and • Habitat for Special Concern and Rare Wildlife Species within



Component of the Regional Natural Environment System	Presence within or adjacent to the Subject Lands?
	Prudhomme Creek Corridor (Tufted Titmouse, Eastern Wood-Pewee, Purple Martin, Wood Thrush, Snapping Turtle).
Permanent and Intermittent Streams	Yes – Prudhomme Creek is a permanent stream.
Inland lakes and their littoral zones	No – Not present within or adjacent to the Subject Lands.
Seepage areas and springs	To be reviewed by hydrogeologist
Significant groundwater recharge areas	To be reviewed by hydrogeologist
Highly vulnerable aquifers	To be reviewed by hydrogeologist
Significant surface water contribution areas	No – Not present within or adjacent to the Subject Lands.
Linkages (large, medium and small)	No – While Prudhomme Creek is approximately 75 m wide, it does not connect core areas with a combined area of 10 ha in size (approximately 7 ha in size south of QEW).
Supporting features and areas	No – Not present within or adjacent to the Subject Lands.
Buffers and vegetation protection zones (VPZ)	Yes – Buffers to identified features would be established through the development application (further discussed below within Section 4.12).
Shoreline areas	Yes – Lake Ontario shoreline is present along the northern extent of the Subject Lands.
NPCA regulated areas and their associated setbacks	Yes – Prudhomme Creek and Lake Ontario are regulated features.

One CUM community was identified within the Subject Lands; however, this feature was not identified as a supporting feature given the degradation and size of the feature. The meadow habitat is not significantly supporting the adjacent Prudhomme Creek corridor; rather, the main supporting feature for the Prudhomme Creek would be the CUW1 as it would provide thermal and soil stabilization benefits, in addition to supporting wildlife habitat. Additionally, the



valleyland is not considered an “other valleyland” since it is associated with a permanent watercourse and is regulated by the NPCA.

4.12 Summary of Ecological and Natural Heritage Significance

The PPS (MMAH 2020), TLOP (2018) and Region OP (2022) defines the important natural heritage features to consider in terms of impact assessment. The following components were considered for impact avoidance, mitigation and/or potential offsets:

- Other woodlands (CUW1);
- Non-significant valleyland (Prudhomme Creek);
- Candidate SWH (located within Prudhomme Creek and along Lake Ontario shoreline);
- Fish habitat (Prudhomme Creek and Lake Ontario);
- Candidate habitat for endangered and threatened species (American Eel);
- Regulated features (Prudhomme Creek and Lake Ontario);
- Components of the Town’s Natural Environment (Environmental Conservation Areas and Potential Natural Heritage Corridors associated with Prudhomme Creek); and
- Components of the Region’s Natural Environment System (habitat for endangered, threatened and special concern species, fish habitat, other woodlands, candidate SWH, permanent stream, buffers, shoreline areas and NPCA regulated areas).

Candidate and confirmed natural features are illustrated on **Figure 5 (Appendix A)**. The limits of these features have been refined based on the feature staking that was completed on August 15, 2024 with the NPCA, Town of Lincoln and Niagara Region.

4.13 Existing Ecological Constraints Analysis

A review of buffers/VPZ requirements by the municipalities and the NPCA was undertaken and is summarized below.

Town of Lincoln Requirements

Part 4 (Environmental and Water Management Resource Policies) identifies the following setbacks associated within the Natural Environment:

- 30 m from stable top of bank from Type 1 Critical fish habitat, with potential to reduce the setback to 15 m if supported by an EIS; and
- 7.5 m from stable top of bank for valleylands.

No other guidance for other natural feature setbacks was provided.

Niagara Region Requirements

The Subject Lands are located outside of the Provincial NHS and within settlement areas; thus, 30 m VPZs are not required to natural heritage features.



As discussed within Section 3.1.9.10.1, “within settlement areas, mandatory buffers from natural heritage features and areas are required” with “ecologically appropriate buffers” being determined through an EIS or hydrologic evaluation. The width of the buffer is to be determined based on the sensitivity of the feature and its functions as a result of the proposed development/site alteration.

NPCA Requirements

The NPCA’s Policy (2022) identifies the following setbacks from natural hazards:

- 7.5 m to 15 m from stable top of slope (per Sections 4.2.3.1 and 5.1.4.4), where supported by a geotechnical study; and
- 30 m from watercourse for Type 1 Critical habitat; however, the buffer may be reduced where supported by an EIS to 15 m (per Section 9.2.5.1).

Greenbelt Requirements

As discussed within **Section 1.3.4**, the Greenbelt policies for Key Natural Heritage Features and Key Hydrologic Features/Areas do not apply to the Subject Lands since they are located within Town/Village Areas.

Recommendations

Given the nature of Prudhomme Creek and its location within an urbanized landscape, a 30 m buffer from the watercourse is not warranted; instead a 15 m buffer is recommended. It is acknowledged that Prudhomme Creek does provide permanent, direct fish habitat for cool to warmwater fish and could potentially support spawning salmonids (offsite, upstream); however, the existing watercourse corridor is eroded and provides limited channel morphology (e.g., absence of riffle/pool morphology). A 15 m buffer will act as a mitigative tool to protect the existing functions of the watercourse. This 15 m buffer in some locations will re-incorporate and re-naturalize riparian areas adjacent to the watercourse.

Landtek’s Slope Stability Assessment Letter (2023b) recommended that a 6 m setback could be applied to the existing valleyland. From an ecological perspective, this setback will protect and enhance the existing functions of the valleyland. Similarly for the fisheries setback, the addition of this buffer will reincorporate existing anthropogenic areas into the NHS. No additional setback is warranted for this non-significant valleyland.

No specific woodland setback was defined by the Municipalities; rather, the Region indicates that an appropriate buffer should be recommended within the EIS. Given that this community is culturally influenced, dominated by invasive species and has been subject to continued alteration and disturbance, no buffer is warranted; rather, it is recommended that interventions occur to realign the community on a natural trajectory. Specifically, interventions could include removals, invasive management and revegetation with native plantings. This is further discussed below within **Section 6.2**.

The constraints are identified on **Figure 6 (Appendix A)**. The greatest constraint guided the proposed development limit.



5. Description of Development Proposal

The Subject Lands have had a long history of development. Aerial imagery review illustrates the northern portion of the Subject Lands hosting numerous structures (approximately five) with the southern half of the Subject Lands consisting of agricultural management in October 1934. The most recent development hosted two structures, trailer parking and driveways. All structures present on the Subject Lands appeared to encroach into the Prudhomme Creek corridor.

The proposed redevelopment concept is illustrated on **Figure 7 (Appendix A)**, which includes the following:

- Two residential towners (ranging from 4 to 17 stories);
- One hotel (ranging from 13 to 15 stories); and
- A passive recreational use pathway is also proposed along the Prudhomme Creek and Lake Ontario shoreline.
 - o It is GEI's understanding that the passive recreational use pathway will be on lands that are designated as Natural Environment in the TLOP and Prudhommes Secondary Plan. The Natural Environment designation permits passive recreational uses such as active transportation trails, subject to an EIS.
 - o The trail will be rezoned to Environmental Conservation (EC) Zone. This zoning permits Conservation Use as defined as "the use of an area of land that is generally in its natural state to preserve, protect, and/or improve components of the natural heritage system and may include, as an accessory use, hiking trails".

Two levels of basement parking are also proposed underneath the building footprints (Landtek 2023a). No fencing is proposed at this time between the proposed development and the Natural Heritage System (NHS).

The redevelopment concept in **Figure 7 (Appendix A)** does not display any of the shoreline protection removal and replacement efforts that have been identified by Shoreplan Engineering Ltd.

5.1 Shoreline Protection Considerations

Within the analysis conducted by Shoreplan (2024), it was concluded that improvements to the shoreline protection structure would be required to facilitate development within the shoreline hazard zone.

Accordingly, Shoreplan (2024) has identified two preliminary options to improve the shoreline protection structure.



The first option consists of an approximately 2:1 sloping armour stone revetment that is similar to the existing structure, but that has a higher crest elevation (~79.5 m based on the preliminary design) to prevent overtopping. The structure would replace the existing structure and would feature two layers of randomly placed armour stones underlaid by rip rap. The toe of the structure would consist of a double layer of stone at elevation 72.5 m.

The second option also consists of an approximately 2:1 sloping armour stone revetment with the lower portion of the structure being similar to the first option. However, at elevation 77.0 m, the structure would transition to a stacked armour stone wall, with a crest of 79.5 m.

To construct the enhanced shoreline protection, all existing armour stone and rip rap material would be removed and stockpiled on-site for reuse in the new structure. The bank would then be excavated to the design elevation/slope and rip rap and armourstone would then be added back to construct the new structure. All heavy equipment used to construct the site will be operated from land above the high-water mark, reaching down to the revetment as required to remove the existing structure, grade the underlying soils and install the new erosion protection material.

All disturbed shoreline areas adjacent to the erosion protection works will be restored with native vegetation species.

5.2 Stormwater Considerations

This section summarizes the key findings presented within Lithos Group Inc. (Lithos)'s Functional Servicing and Stormwater Management Report (FSSMR; 2024). It should be noted that the final version of the FSSMR was not available at the time of this submission. This discussion is based upon the most up-to-date version of the FSSMR at the time of this submission in addition to technical discussions with Lithos Group Inc.

No stormwater management ponds are required for the site; rather, all stormwater will be redirected into the sewer system. The stormwater system will be designed to the Town's total suspended solid (TSS) criteria of 80% removal.

As shown in Table 5-1 (Pre-Development Flow Contributions) and Table 5-3 (Post-Development Flow Contributions), the amount of drainage flowing towards Prudhomme Creek will be reduced by approximately 1.3 ha. Unmitigated there could be a loss in flow contributions to Prudhommes Creek; thus, Lithos has recommended several mitigation measures that will be explored during detailed design to match pre-development flow contributions.

5.3 Hydrogeological Considerations

As summarized within Section 4 of Landtek's Hydrogeological Investigation (2024), short-term and long-term groundwater control will be required. A review of their findings is provided below.

Open excavation will be required to install the underground parking, requiring short-term dewatering. The short-term dewatering rate is likely to be around 66,026 L/day.



Long-term dewatering will be required in order to support underground parking. Long-term dewatering volume is likely to be around 66,026 L/day and is expected to be implemented by either the use of (1) weeping tiles and perimeter drainage or (2) waterproofing.

An Environmental Activity and Sector Registry (EASR) registration and permit to take water was determined to be required as the estimated water taking is greater than 50,000 L/day and less than 400,000 L/day.

All water extracted during construction dewatering will be discharged into a sewer; no discharge will occur into the natural environment. The estimated radius of influence from the proposed dewatering is 5 m. As a result, Landtek has determined that no negative impacts are expected to Lake Ontario or NPCA regulated lands (including Prudhomme Creek); however, they recommended that monitoring occur during construction as a precautionary measure.

Section 5 of their report identifies their monitoring program, including contingency measures should dewatering activities not occur as predicted, and Section 6 outlines mitigation measures to limit adverse impacts.

5.4 Slope Stability Considerations

A review was completed by Landtek (2023b) of the proposed development footprint (including underground parking), which determined that an approximate 6 m setback from the Prudhomme Creek slope “will not have any adverse affect on the existing slope condition such that the global stability of the slope is compromised”.



6. Impact Assessment

The following Impact Assessment addresses potential disturbances to natural heritage features based on the development concept found in **Figure 8 (Appendix A)**. At the time of preparing this report, grading/construction disturbance footprints associated with the building and passive recreational use pathway are not understood. As a result, these impacts and encroachments will be evaluated at the Site Plan Application (SPA) stage.

Please refer to **Section 6.2.4** for any potential impacts to the Lake Ontario shoreline because of the required shoreline protection alterations.

It is GEI's understanding that the pedestrian passive recreational use pathway will be developed on lands that are designated as Natural Environment in the TLOP and Prudhommes Secondary Plan. The Natural Environment designation permits passive recreational uses such as active transportation trails, subject to an EIS. It is our understanding that the passive recreational use pathway will be three-season and constructed with pervious material. As a result, this passive recreational use pathway is permitted within the feature buffers and will not be included within buffer encroachment calculations. The exact width of the trail and its associated grading disturbance will be determined at SPA.

6.1 Alternative Assessment

A mitigation hierarchy review was completed to avoid and minimize the amount of disturbance to the existing natural heritage features and their associated functions as a result of the proposed redevelopment strategy. The mitigation hierarchy reviews the following three steps:

1. Avoidance – prevent harmful impacts from occurring
2. Mitigation – reduce harmful impacts via mitigation
3. Offsetting – counterbalance harmful impacts via offsetting

Step 1: Avoidance

The majority of the existing Prudhomme Creek corridor will be retained in place and buffered. The buffers will be comprised of native plant materials, which will work to protect, enhance and restore existing functions of the NHS.

Given the degraded nature of the existing Prudhomme Creek NHS, it is our opinion that avoidance of the entire NHS is not required to ensure that a “no negative impact” test is met. Given the existing health and functions of the system this test can be met through a mixture of mitigative and restorative measures. While the proposed redevelopment concept recommends 157.6 m² of encroachment into portions of the proposed features and their buffers (as shown on **Figure 8, Appendix A**), there are several mitigative tools that are available to minimize the potential for negative impact to the existing NHS.

Step 2: Mitigation

As discussed briefly within **Section 5** (above), some encroachment within the Prudhomme Creek NHS is expected as a result of the proposed development concept. Specifically, the following encroachment is proposed within the natural features and their associated buffers:



- 56.8 m² of alteration is proposed within the CUW1 (measured from the estimated dripline); and
- 100.8 m² of alteration is proposed within 15 m of the watercourse (measured from the estimated watercourse top of bank).

A minimum of 10 m between the proposed building and the watercourse top of bank will be maintained as a result of the redevelopment concept.

As previously noted, encroachments associated with the building grading/construction footprint pathway are not included within this OPA/ZBA submission and instead will be evaluated as part of the SPA. It is likely that additional encroachments will be identified within the natural heritage features during the SPA as a result of building grading requirements. As previously noted, passive recreational use pathway is a permitted use within the NHS and, therefore, are not included within the encroachment calculations.

Several mitigation measures can be proposed in order to minimize the potential for negative impacts to the existing NHS. These mitigation measures could include:

- Installing and monitoring tree protection fencing and Erosion and Sediment Control (ESC) measures along the proposed development limit prior to ground disturbance;
- Following Best Management Practices (BMPs) for undertaking construction activities within the vicinity of natural areas (e.g., regularly clean construction equipment to limit spread of invasive species, prepare a spill action and response plan, fell trees away from retained features);
- Complete construction activities outside of sensitive wildlife windows (e.g., cool to warmwater fisheries windows), when working within or immediately adjacent to sensitive habitats;
- Vegetate buffers with native plant materials that will enhance and protect the retained portions of the NHS;
- Incorporate wildlife enhancement structures within the NHS to provide additional habitat availability or enhance existing habitats;
- Incorporation of thorny native plant material along the edge of the NHS to discourage human interactions with the NHS;
- Complete invasive species management to increase the health of the existing system (e.g., increase in native flora);
- Direct new lighting away from the NHS to avoid impacts to wildlife activities;
- Consider usage of educational signage or brochures to educate residents about the importance of maintaining a strong and resilient NHS;
- Where encroachments are proposed, determine whether compensation for the loss of area is appropriate; and
- Conduct construction and post-construction monitoring to ensure mitigation and restoration measures are functioning as designed. If required, complete adaptive management.

Additional mitigation measures could also be employed, but the above noted list illustrates that there are a wide range of mitigation measures that can be undertaken to reduce potential impacts. It is also important to note that several of the above noted disturbances will occur within already developed areas that have been subject to ongoing disturbance from historical land-uses. Ultimately, the proposed redevelopment application will increase the size of the NHS within the Subject Lands through the incorporation of natural vegetated buffers.



Section 3.1.9.6.2 of the Region's OP states that development and site alteration should not occur within natural heritage features and areas, unless it has been demonstrated through an EIS that there will be no negative impacts on the features and their functions. This applies to other woodlands, significant valleylands, SWH and ANSIs. This analysis is provided below within **Section 6.2**.

Step 3: Offsetting

Ecological offsetting is a mitigation strategy that is often considered in an effort to achieve a net ecological benefit to projects, subject to the approval of the planning authority. This compensation strategy quantifies the loss of natural features in order to provide compensation through habitat re-creation or alternative consultation process. Ecological offsetting approaches are typically applied as a last resort (after avoidance and mitigation have been considered). In this case, ecological offsetting is proposed as a means to achieve additional ecological benefit by meeting and/or exceeding the replication requirement.

While the NPCA does not have a formal ecological offsetting guideline, several other local conservation authorities (TRCA, CVC and Lake Simcoe and Region Conservation Authority (LSRCA) have guidelines in place, recognizing that "ecosystem compensation becomes an important tool to help ensure that critical ecosystem functions and services lost through development and infrastructure are restored back on the landscape for the betterment of communities" (TRCA 2018).

It is acknowledged that Section 3.1.9.6.6 of the Region's OP states that they do not support the use of offsetting for any natural heritage features or areas, key natural heritage features or key hydrologic features.

No offsetting is required to compensate for the encroachment of existing features as the overall form and functions of the existing natural heritage system will be retained on the landscape. The complete removal of features is not recommended as part of this development application.

6.2 Impact Assessment

This Scoped EIS presents and discusses the natural heritage features and associated functions that occur on and/or adjacent to the Subject Lands. In addition to the concept plan, the following reports were reviewed to inform this impact assessment:

- Lithos Group FSSMR (2024);
- Landtek's Geotechnical Investigation (2023a);
- Landtek's Hydrogeological Investigation (2024);
- Landtek's Slope Stability Assessment Letter Report (2023b); and
- GEI's Arborist Report (2024).

The EIS assesses the potential effects on these natural heritage features and functions that could occur over various periods of time (short or long term) following the implementation and construction of the conceptual site plan. The EIS also identifies planning, design and construction practices that are recommended to maintain, and where possible, improve or restore the health, diversity and size of natural heritage features on and adjacent to the Subject Lands.



The potential direct, indirect and cumulative impacts of the proposed development concept are identified below. Since the Region's OP does not define cumulative impacts, the Environment and Climate Change Canada definition for cumulative effects has been assumed. Their definition of cumulative effects is "the combined effects from past, present and reasonably foreseeable future activities and natural processes".

6.2.1 Other Woodlands

One other woodland was identified within the Subject Lands: the cultural woodland. The cultural woodland community is associated with the Prudhomme Creek corridor and is located on either side of Prudhomme Creek. Several other natural heritage features are associated with this woodland including SWH and candidate habitat for endangered and threatened species. Potential impacts associated with those feature types are further discussed within **Sections 6.2.3 and 6.2.5**, respectively.

The majority of the woodland will be retained in place; however, minor encroachment (56.8 m² within the dripline) is proposed (as shown on **Figure 9A, Appendix A**). These encroachments were as a result of balcony overhang and physical above-ground building footprint (32.7 m²) as well as underground parking (56.8 m²).

The minor encroachment result in the removal of 44 trees (as discussed within Section 4.2 of the Arborist Report; GEI 2024). In accordance with the Town's compensation requirements 14 trees require compensation (based on the 20 cm DBH or greater compensation requirement), therefore, a total of 34 private trees will need to be compensated. The compensation calculations are provided within Section 6 of the Arborist Report (GEI 2024). It is likely that additional removals will be required as a result of the grading and construction requirements associated with the building and passive recreational use pathway. This will be further explored during the SPA stage,

As discussed above **within Section 4.13**, no vegetated buffer is recommended along the existing narrow wooded area; rather, enhancements within the existing woodland are recommended (in combination with other mitigation measures). The existing woodland is a narrow band that runs along the Prudhomme Creek Corridor and is highly invaded from historical disturbances and land-uses. Specifically, cultural woodland communities are culturally influenced meaning that there is ongoing human interference and interactions with these communities (i.e., they are not naturally occurring communities like Forest or Swamp communities). Historical imagery found on Google Earth clearly illustrates that the size of this corridor has changed significantly over the last 100 years with the land-use changes. Finally, broken tree limbs and garbage were recorded within the corridor during the ecological investigations. These vegetative plantings will provide natural heritage benefits to the overall NHS and retained woodland.

Where trees are proposed for removal, arboricultural best management practices should be undertaken to prevent damage to retained trees. Tree removals should be completed outside of the migratory bird breeding period (generally April 15 to August 15) and outside of the bat active period (generally April 1 to September 30), where possible. Potential impacts to the retained woodland community could include:

- edge effects associated with the tree removal (e.g., sunscald, windthrow, increased light penetration); and



- impacts associated with site grading and machinery (e.g., soil compaction, invasive colonization, stress/dieback).

Tree protection fencing and ESC measures will be installed adjacent to all retained trees at the edge of the buffer zone to mitigate against excessive disturbance caused by the proposed vegetation removals, ground disturbance and dislodgement of sediment. This will also protect the integrity of the NHS and aid in preventing adverse effects from ground disturbance.

Inclusion of thorny barrier plantings will also be installed along the edge of the VPZs to define the NHS boundary and discourage people from entering into the retained woodland. The thorny barrier plantings will be located on the NHS side of the proposed trail. Incorporation of educational signage could also be explored during detailed design to educate the residents about the importance of protecting the NHS and minimizing disturbance.

Other indirect impacts as a result of disturbance within or immediately adjacent to the woodland community could include noise and light disturbance, as well as the introduction of invasive and non-native plants along the disturbed margins of the development footprint. The proposed mitigative measures are recommended to reduce and/or minimize these negative impacts:

- Construction activities adjacent to the retained woodland should be timed outside of the nighttime and early morning periods during the bat breeding seasons (April 1 to September 30), in-keeping with the Town's noise by-law. Some localized movement of wildlife out of these edge areas may still occur during the construction phase; however, refuge habitats exist within the broader landscape;
- New lighting should be directed away from the woodland to avoid impact to wildlife activities. Lighting should follow the City of Toronto's Best Practices for Effective Lighting strategy (2017) to incorporate bird friendly solutions;
- Construction equipment should be regularly cleaned to reduce the potential for transportation of invasive material within and outside of the site;
- Heavy machinery should not be operated within the Tree Protection Zone (TPZ), including overhead swinging or machine arms;
- Construction materials, equipment, soil, construction waste or debris are not to be stored within the TPZ or dripline of trees identified for protection;
- Any tree removals, pruning or root cutting required is to be conducted by a qualified Arborist;
- No signs or objects should be displayed or affixed to any trees;
- Disposal of any liquids shall not occur within the TPZ;
- Should any additional, incidental or accidental tree injuries occur during construction, a qualified Arborist should be consulted to determine whether additional mitigation measures should be employed; and
- To slow the spread of invasive species (such as Emerald Ash Borer), all trees (not just Ash) should be disposed of locally to reduce transportation to other local municipalities.

Monitoring of the TPZ should be conducted or supervised by a Certified Arborist prior to and during construction to ensure compliance with tree protection guidelines. Proposed monitoring will assess the health and structure of the trees, identify changes to environmental conditions, and respond appropriately where necessary. The Certified Arborist must be on site at all times prior to and during any construction activity occurring within any TPZ to monitor root exposure, identify root disturbance, and propose site-specific mitigation where appropriate.



Given the degraded nature of the Prudhomme Creek corridor, instead of a robust vegetation protection zone which would be offering limited benefits to the existing function of the corridor as, it is recommended that invasive species management occur to manage existing Category 1 invasive species. As recorded within **Section 3.3.1**, the following Category 1 invasive species are known within the Prudhomme Creek corridor:

- Garlic Mustard
- Maack's Honeysuckle
- Purple Loosestrife
- White Mulberry
- Multiflora Rose
- Manitoba Maple

An invasive management plan should be prepared during detailed design to determine (1) the feasibility of managing these species and (2) determine appropriate management opportunities in accordance with Best Management Practices (e.g., Ontario Invasive Plant Council BMPs). Management of invasive species within the corridor will work to enhance and restore the degraded ecological functions. If they were not managed and a buffer was applied, the invasive species would colonize the buffer, reducing its ecological function.

No impacts to the hydrology of the CUW1 are expected as this is an upland community.

Cumulative impacts to the existing woodland community would be associated with ongoing development within the landscape. As previously mentioned, the Subject Lands previously hosted two structures, which have since been removed. As a result of the previous management of the site, the woodland has been disturbed from trailer parking, collection of debris and other materials. The evidence of continual disturbance is obvious within the community as several trees with broken limbs were observed and several invasive species were recorded throughout the community. The continuous disturbance within and adjacent to the existing corridor (including the removal of the two structures) likely resulted in the dislodgement of sediment and could have impacted some of the rooting zone associated with the trees.

Policy 3.1.19 of the NROP, any removal of treed areas within the Regional Natural Environment System necessitates the preparation of a Woodland Enhancement Plan. A Preliminary Woodland Enhancement Plan is provided within **Appendix E** with enhancements being provided immediately adjacent to the Subject Lands within the Prudhomme Creek corridor. A Final Woodland Enhancement Plan will be provided during detailed design once the development limit has been finalized. Additionally, as discussed within the Arborist Report (GEI 2024), compensation for the removal of private and public trees will be required.

No negative effects on the ecological function of the woodland are predicted as a result of the proposed site plan so long as the mitigative and restorative measures are enacted and maintained. Given that the previous development encroached along the entire edge of the existing woodland, the proposed establishment of a vegetated buffer with native plant materials is expected to provide additional enhancements and protection to the Prudhomme Creek corridor. No loss in woodland habitat availability will occur as a result of the proposed concept plan and the Preliminary Woodland Enhancement Plan, rather, an increase in productive habitat will be targeted through the proposed restoration concept (including invasive species management).



6.2.2 *Non-Significant Valleylands*

One non-significant valleyland is associated with Prudhomme Creek. No encroachment is proposed within the valleyland and its associated 6 m setback. Landtek has indicated that there are no negative impacts expected to the form of the valleyland (2023b). GEI defers to Landtek on any potential impacts as it relates to the natural hazard.

Unmitigated, the following indirect impacts could occur to the form and function as a result of the proposed redevelopment:

- Erosion of banks as a result of uncontrolled flows from the development (during and post construction);
- Human interactions with the valleyland resulting in disturbance or illegal dumping within the corridor; and
- Impacts to wildlife behaviours as a result of construction and permanent development along the corridor.

The establishment and regular monitoring of ESC measures during construction will minimize the potential for negative impacts to occur within the valleyland. The following ESC measures are recommended to minimize against potential impacts to downstream (receiving) natural features:

- Limit the size of disturbance;
- Limit the duration of soil exposure and prioritize restabilizing areas once construction is completed in an area;
- Preserve overland sheet flow and micro-drainage (avoid concentrated channel flows);
- Break and redirect flows to lower gradients;
- Design and implement staged stripping;
- Prevent disturbance of previously stripped and stabilized areas;
- Accumulated sediment shall be removed, as part of a maintenance program, from all control measures when accumulation reaches 50% of the height or volume of the control structure; and
- Stabilize stripped areas with temporary ESC controls (e.g., vegetative or mechanical controls).

ESC measures should follow the TRCA's Erosion and Sediment Control Guide for Urban Construction (2019). Following construction, all bare soils should be revegetated with native plant materials. The establishment of native vegetated buffers will help restore and enhance the existing valleyland. As previously stated, Landtek does not expect there to be any impacts to the stability of the valleyland (2023b) as a result of the proposed development activities.

The establishment of thorny native plant material along the edge of the NHS will discourage residents from interacting with the valleyland. Educational materials (e.g., signage and brochures) can be prepared and provided to residents to explain the importance of maintaining the Prudhomme Creek corridor in its enhanced condition.

Additional bioengineering measures presented within **Section 6.2.4** (below) will also help restore and enhance the valleyland and its associated functions. All temporarily disturbed areas will be revegetated with native plant material.



The wildlife within the existing Prudhomme Creek corridor would likely be urbanized species that are accustomed to a higher level of noise and light disturbance given the adjacent land-uses and previous site usage. Impacts to wildlife that may be using the valleyland are further discussed in subsequent sections; however, no negative impacts are expected to wildlife.

No negative impacts are expected to the valleyland provided that mitigation and restoration measures are enacted and monitored.

6.2.3 Candidate Significant Wildlife Habitat

Candidate SWH was identified within the Prudhomme Creek corridor including:

- Shorebird Migratory Stopover Areas – associated with the BBO community;
- Turtle Wintering Areas – associated with Prudhomme Creek;
- Turtle Nesting Areas – associated with the BBO community; and
- Habitat for Special Concern and Rare Wildlife Species within Prudhomme Creek Corridor (Tufted Titmouse, Eastern Wood-Pewee, Purple Martin, Wood Thrush, Snapping Turtle).

Cumulative impacts to SWH are largely associated with the ongoing development pressures within and immediately adjacent to the Subject Lands. Moreover, the alteration within Prudhomme Creek corridor (especially within proximity of the BBO) likely enhanced the existing shoreline habitat by (1) reducing erosion and (2) providing increased nesting and basking habitat for various wildlife (including turtles).

Shorebird Migratory Stopover Areas and Turtle Nesting Areas (BBO)

No alteration is proposed within or immediately adjacent to the BBO community, as it is located on the eastern side of Prudhomme Creek which is opposite to the proposed development (located on the western side of Prudhomme Creek).

No negative impacts are expected to the BBO community as it will be avoided by the proposed redevelopment application.

Turtle Wintering Areas (Prudhomme Creek)

No work within Prudhomme Creek is proposed that could negatively impact turtle wintering opportunities within the Prudhomme Creek corridor.

If no mitigation measures were provided to the Prudhomme Creek corridor, the following impacts could occur to candidate turtle wintering areas within the watercourse:

- Impairment of habitat due to sediment loading from site alteration and redevelopment;
- Mortality or health impacts due to accidental spills of toxic materials and sediment during or post-construction;
- Alterations to watercourse water balance (e.g., timing and volume of flows), which could impact the water levels supporting the overwintering habitat functions; and
- Human interactions with Prudhomme Creek which could disturb the turtles during overwintering processes or damage habitat.



The establishment of ESC measures and enactment of spill response measures will help avoid negative impacts to the Prudhomme Creek corridor during construction activities. Spill action and response measures should be followed during construction (e.g., refueling and stockpiles should be located greater than 30 m from the watercourse, if spills are to occur they must be reported to MECP Spill Action Centre. The establishment of native vegetation within the vegetated buffers will provide buffering functions between the existing corridor and the proposed redevelopment. No bare soils will be left on site; rather, all surfaces will either be developed or revegetated with native plant materials. All temporarily graded areas will be revegetated immediately with native seed and/or plant materials in accordance with approved restoration designs (to be prepared during the detailed design phase).

Given that the watercourse connects into Lake Ontario, it is not likely that the water levels would significantly change and negatively impact the overwintering habitat availability within the corridor. While a localized reduction of overland flow (approximately 1.3 ha) is currently proposed within the FSSMR, Lithos has committed to reviewing mitigation measures during the detailed design phase to match pre-development flow contributions into the system. These mitigation measures could include a mixture of low impact development strategies. Overwintering habitat is also available within the adjacent Lake Ontario.

The installation of thorny native plant material along the outer edge of the NHS will act as physical barriers to discourage residents from interacting with Prudhomme Creek. In addition, educational materials (e.g., signage, brochures) can be installed/provided to educate residents on the importance of Prudhomme Creek.

Finally, it is recommended that incorporation of bioengineering bank stabilization measures is considered within the Prudhomme Creek corridor during detailed design. It is our understanding that the proponent owns a portion of the watercourse but not the entirety. As a result, only areas within the proponents landholdings can be restored using bioengineering measures. Measures such as installation of live staked and/or fascines could stabilize the existing eroded banks, reducing the sedimentation within the system, while also working to increase the native riparian vegetation along the watercourse. These measures will be installed by hand to avoid large-scale disturbance that could occur with larger scale machinery. The installation of bioengineering measures will also help reduce in-stream and bank erosion.

Habitat for Special Concern and Rare Wildlife (CUW1)

As discussed above within **Section 6.2.1**, the majority of the CUW1 will be retained and buffered in place; however, minor encroachment will occur within the feature. The above noted mitigation and restoration measures identified above within **Section 6.2.1** are expected to minimize and mitigate negative impacts to the form and function of the CUW1. The removal of 17 private trees (within the woodland) are not expected to result in a loss of wildlife habitat availability, given the size of the Prudhomme Creek corridor on the landscape.

Noise from construction activities may result in wildlife avoidance of the edges abutting active work areas during the construction period. Where feasible, construction activities should be timed outside of the nighttime and early morning periods during the bat and bird breeding seasons (April 1 to September 30). Some localized movement of wildlife out of these edge areas may still occur during the construction phase. The wildlife in this area is expected to have generally adjusted to the existing urban level of background noise given the existing site conditions.



New lighting should be directed away from the existing woodlands to avoid impact to wildlife activities. Where possible, the incorporation of potential bird collision deterrent measures should be explored. Specifically, the incorporation of the City of Toronto's Bird Friendly Development Guidelines will be reviewed, including their Best Practices for Bird-Friendly Glass, as well as Best Practices for Effective Lighting. Installation of thorny plant material along the eastern limit (NHS side) of the passive recreational use pathway will discourage humans from interacting with the NHS. Educational signage will also inform residents about the importance of the Prudhomme Creek corridor to the local wildlife population.

Invasive management within the Prudhomme Creek corridor is likely to enhance the biodiversity of the system, which will enhance the existing habitat for these species using the CUW1. Moreover, the establishment of a vegetated buffer with native plant materials and incorporation of bioengineering solutions will help build a more resilient community.

The proposed Woodland Enhancements (as presented within the Preliminary Woodland Enhancement Plan; **Appendix E**) will help provide an increase in habitat availability for terrestrial species.

The wildlife within the existing Prudhomme Creek corridor would likely be urbanized species that are accustomed to a higher level of noise and light disturbance given the adjacent land-uses and previous site usage.

Summary

No negative impacts to candidate SWH are expected as a result of the proposed mitigative and restorative measures. Rather the proposed enhancements within the corridor (invasive management, bioengineering) will help restore degraded functions within Prudhomme Creek.

6.2.4 Fish Habitat

Lake Ontario and Prudhomme Creek both provide direct fish habitat. Prudhomme Creek is located along the eastern Subject Land boundary while Lake Ontario is located along the northern Subject Land boundary. Based on aerial interpretation, Prudhomme Creek like originates from the Ball's Falls Conservation Area then flows through series of actively managed agricultural fields before being culverted under the QEW. Ultimately the watercourse flows into Lake Ontario. Lake Ontario is located along the northern portion of the Subject Lands.

6.2.4.1 Prudhomme Creek:

Impacts associated with the stability of Prudhomme Creek valley and are discussed briefly in **Sections 6.2.2 and 6.2.6** and were informed by Landtek's report (2023b).

No alteration is proposed within Prudhomme Creek. A 15 m wide buffer from the estimated top of bank will be applied to Prudhomme Creek; however, approximately 100.8 m² of alteration is proposed within this setback (**Figure 9B, Appendix A**). The majority of this encroachment is as a result of the underground parking (100.8 m²); however, a small portion of the encroachment includes balcony overhang and above-ground building footprint encroachment (27.7 m²). A minimum of 10 m setback will be provided between the building footprint and Prudhomme Creek top of bank. Additional encroachments are likely as a result of grading and construction requirements; this will be further explored during the SPA.



As discussed above within **Section 4.13**, a reduction from a 30 m buffer to a 15 m buffer along Prudhomme Creek is warranted given the degradation of the existing habitat. Evidence of erosion was noted within the Subject Lands along the entire extent of Prudhomme Creek along both banks. While fish were documented within the watercourse and it is assumed to provide permanent fish habitat (Type 1), the watercourse also has limited channel morphology (thus variation in fish habitat). Given the degree of degradation because of surrounding land-uses (residential, commercial, agricultural), it is likely that this section of the watercourse will continue to have limited morphology unless active restoration within the stream occurs. The establishment of the vegetated setbacks to Prudhomme Creek will provide numerous benefits to the NHS including stabilization of adjacent riparian areas to provide flood and erosion control, while also providing shading opportunities to reduce thermal loading. The buffers will be planted with native plant materials to build a more resilient NHS.

Short-term and long-term dewatering is required in order to support the construction of the underground parking. It has been determined that an EASR and permit to take water is not required.

Unmitigated, the following potential indirect effects to fish habitat within the receiving waterbodies could occur as a result of the redevelopment application:

- Impaired fish habitat and/or negative impacts on aquatic biota (e.g., fish and benthic invertebrates), including deteriorated health or mortality, due to erosion and sediment from site alteration and development;
- Mortality or health impacts due to accidental spills of toxic materials during or post-construction;
- Alterations in watercourse water balance (e.g., timing and volume of flows) and associated negative impacts on fish habitat functions; and
- Long-term impairment of watercourse quality (including chemical contaminants, suspended solids and temperature) due to surface runoff from the proposed development.

The following mitigative measures are proposed to prevent or minimize negative effects on fish and fish habitat:

- Preparation and implementation of an ESC plan with associated mitigation measures to minimize the potential for negative impacts (i.e., silt fencing). ESC measures should be monitored throughout the construction period to ensure that they are functioning as designed. Where deficiencies are identified, ESC measures must be repaired immediately to prevent adverse impacts to receiving features;
- Construction equipment should be regularly maintained to prevent spills within and adjacent to the NHS. Preparation and implementation of a spill prevention and response plan to prevent or minimize the potential for spills of potentially toxic materials during construction. All spills (e.g., sediment, gasoline) must be reported to MECP's Spill Action Centre and the Project Ecologist;
- During the short term and long term dewatering activities, monitoring (per Section 5 of the Hydrogeological Investigation; 2024) and mitigation measures (per Section 6 of the Hydrogeological Investigation; 2024) should be implemented to limit the potential for adverse impacts. Landtek determined that no negative impacts are expected to Prudhomme Creek given that the radius of influence for the proposed dewatering is 5 m;



- All water extracted during construction will be discharged into the sewer. No discharge will occur into the natural environment;
- The proposed SWM strategy will be designed to remove 70% TSS in accordance with the Town's Guidelines. The SWM system will outlet into the sewer system and not into the natural environment;
- The passive recreational use pathway should be managed as a three-season pathway to avoid salt loading into the receiving waterbodies;
- Snow should be stored away from natural features and melt water should be conveyed into the storm sewer network. The installation of salt-tolerant plants will be included within the planting list within the vegetated buffers. These plants could include species such as Gray Dogwood (*Cornus acemose*), Red-osier Dogwood (*Cornus sericea*), Choke Cherry (*Prunus virginiana*), Wild Red Raspberry (*Rubus idaeus sp. Strigosus*) and Nannyberry (*Viburnum lentago*);
- Establishment of vegetated buffers. These vegetated buffers are expected to provide a number of supporting fish habitat functions including shading of the stream, provision of organic materials (e.g., leaves, twigs) to provide a source of forage for benthos and fish and stabilization of soils to minimize erosion potential. The buffer, when combined with other mitigative and restorative measures, is expected to protect and support the existing fish habitat. Installation of plant material (shrubs and trees) within vegetated buffer zones to further enhance and strengthen riparian functionality (e.g., enhance stormwater runoff control and management, enhance soil stability, shading and increased allochthonous inputs); and
- Incorporation of bioengineering measures along Prudhomme Creek to reduce ongoing erosion within the watercourse. This will work to naturally restore and stabilize the existing banks without using "harder" engineering principles, such as rock and concrete structures. Bioengineering materials are natural and provide long-term ecological benefits. For example, a combination of fascines and live stakes would be appropriate within the Prudhomme Creek to help restore the eroding banks. These solutions are typically constructed of native Dogwood (*Cornus*) and Willows (*Salix*) species. When installed they can re-establish native shrubs along the riparian corridor and provide several functional applications (e.g., surface protection, propagate vegetative growth, filter sediments and opportunities to provide long-term instream and adjacent riparian habitat). Bioengineering materials require limited disturbance as they are installed by hand and are generally installed above the bankfull limit.

As previously noted, currently the pre to post drainage contributions towards Prudhomme Creek will not be met (with a reduction of approximately 1.3 ha in drainage). As noted with the FSSMR (2024), mitigation measures will be reviewed during the detailed design stage in an effort to meet the pre to post drainage contributions. Mitigation measures could include low impact development tools (e.g., vegetated bioswales) or diversions of clean roof-top drainage. Given the larger upstream catchment area associated with Prudhomme Creek, the diversion of 1.3 ha is a small percentage of the overall drainage area; however, this will be confirmed through additional modelling at the detailed design stage. For this application process, it has been assumed that the drainage areas can be matched and/or the small percentage of drainage diversion will be determined by the Project Engineer that it has no significant impact to the hydrology of Prudhomme Creek.



Cumulative impacts to fish and fish habitat were likely impacted several times including (1) the development and removal of the numerous structures over the last century adjacent to Prudhomme Creek, (2) in-stream alteration near the mouth of Prudhomme Creek and (3) ongoing residential, commercial and agricultural land-uses upstream of the site. The in-stream alteration near the mouth of Lake Ontario does not appear to negatively impact the movement of fish and likely aided in the stabilization of the shoreline. Other impacts associated with long-term historic agricultural management could include excess sediment and nutrient loading into downstream habitats. Moreover, as illustrated in 1934 aerial imagery, Prudhomme Creek appears to be straightened between two agricultural fields. These activities would have impacted the hydrology, water quality and habitat availability within Prudhomme Creek and could have impacted Lake Ontario. Moreover, changes to Lake Ontario water levels as a result of climate change could have impacted the stability of the shoreline.

Positive impacts to aquatic habitat are predicted as a result of the proposed establishment of the vegetated buffers and instream bioengineering measures. Flow contributions will be maintained to downstream receiving habitats. Positive impacts to water quality are expected to downstream habitats through the stabilization of the site (currently disturbed) and incorporation of bioengineering measures.

To ensure that fish habitat is appropriately protected, monitoring of ESC measures and adherence to and effective spill prevention and response measures throughout the construction period is recommended. Post-construction monitoring of establishment of the vegetated buffers is recommended (as discussed within **Section 6.4**).

6.2.4.2 Lake Ontario

For potential fish habitat within Lake Ontario, the shoreline hazard assessment by Shoreplan Engineering Ltd., has indicated that shoreline protection work will require both shoreline and in-water work. It is assumed that the entire Lake Ontario shoreline will be altered as a result of the shoreline protection work required.

Implementation of the proposed shoreline stabilization works could potentially result in impacts on fish and fish habitat during the construction phase and cause long-term changes in fish habitat conditions. Potential impacts, proposed mitigative measures and expected net impacts are discussed in the following sections, by project phase.

6.2.4.2.1 Construction Phase Impacts

Construction of the proposed shoreline works is expected to require work in and near water. Potential negative impacts on fish and fish habitat that could occur include:

- Disturbance of fish due to noise and vibration associated with in-water and near water construction activities. Disturbance could potentially impact sensitive life history processes (e.g., reproduction) depending on the timing of construction;
- Injury to or mortality of fish due to contact with machinery operating in the water or material being installed within the lake;
- Increased turbidity levels within the lake due to suspension of fine sediments during in-water work that could cause injury or mortality of aquatic biota (e.g., fish, invertebrates, plankton) or altered habitat use (e.g., foraging);
- Erosion of sediment from the shorelands and transport to Lake Ontario could potentially result in increased turbidity and sedimentation of the lakebed; and



- Impaired water quality or injury/mortality of fish and other aquatic biota due to accidental spills of potentially contaminating material from heavy equipment use in and near water (e.g., fuel, oil, hydraulic fluid).

The following mitigative approaches are recommended to minimize the potential for, or the significance of, the above-noted potential negative impacts on fish and fish habitat:

- In-water construction in Lake Ontario should be completed between July 1 and September 14 to prevent disrupting sensitive fish life history processes during both spring and fall reproductive activities that may be occurring along the shoreline;
- The only equipment that operates in water should be the bucket/lower arm of an excavator that is otherwise operated from onshore above the water line;
- Prior to any work in water, the equipment operator should attempt to scare fish out of the work area by banging the excavator bucket on rocks to minimize the potential for fish injury/mortality due to contact with equipment or shoreline fill materials; Erosion of sediment from the shorelands and transport to Lake Ontario could potentially result in increased turbidity and sedimentation of the lakebed;
- The size of the in-water work area associated with removal of existing erosion protection materials and installation of new materials should be minimized to the extent possible to minimize temporary impacts on fish habitat;
- Installation of a turbidity curtain or cofferdam has not been identified as being required by Shoreplan during in-water construction activities. However, in-water work should not occur during periods of high-waves or high-water levels in Lake Ontario to minimize the potential for sediment disturbance and suspension, particularly after the existing erosion protection material is removed, exposing the underlying finer materials;
- Disturbance to the native soils on the lakebed should be minimized to the extent possible in those areas where excavation is required to prepare for installation of the new erosion protection materials;
- ESC should be installed on-land adjacent to the work area to minimize the potential for erosion and sedimentation from the Subject Lands into the lake throughout the duration of construction;
- A spill prevention and response plan should be prepared outlining the measures that will be implemented to minimize the potential for accidental spills of potentially contaminating material into the lake;
- Equipment should arrive on-site in a clean condition and be regularly inspected, particularly prior to work in or near water to ensure it is clean (i.e., free of surface films of oil or hydraulic fluid) and not leaking;
- Only clean material, free of fine sediment, should be installed in the lake to avoid introducing fine sediments that could negatively impact fish and fish habitat; and
- Regular monitoring of ESC's and spill prevention and response measures should be completed throughout the duration of in-water and near-water construction.

Consideration was given to completing the in-water work under dry conditions (i.e., isolating and dewatering the work area); however, it was determined that the above noted mitigative measures should be effective in preventing harm to fish. Ongoing discussions with reviewing agencies (e.g., DFO) will be required to confirm the proposed construction mitigation approaches.



With implementation of appropriate mitigative measures, supplemented with monitoring and execution of remedial actions to address any identified deficiencies (as required), it is expected that negative impacts on fish and fish habitat will be limited to temporary alterations and disturbance due to in-water work. While it is expected that fish (potentially including American Eel, if they are present in the area) will move out of the work area due to disturbance and the habitat will be temporarily unusable during active construction periods, this is not expected to have any significant negative impact on overall fish community productivity in this relatively homogeneous, simple shoreline area during the less sensitive summer period. No impacts on Shortnose Cisco are expected to occur, as this species is expected to reside in deeper, offshore areas outside the potential zone of impact of this proposed project.

6.2.4.2.2 Long-Term Impacts

The proposed shoreline stabilization work will result in a minor long-term change in fish habitat conditions along the ~100-m long shoreline on the Subject Lands. However, the proposed works are not expected to have any negative impact on fish habitat, since the existing footprint is expected to be maintained with no expansion of the footprint of the structure into adjacent native lakebed material. This will be confirmed following detailed design. In addition, the surficial armourstone will be re-used in the new structure, so no material impacts on substrate in the lake are expected. Based on the Shoreplan (2024) design cross-sections (presented within Appendix A of their report), some minor lowering of the toe of the structure within the lake may occur, which would result in a minor permanent increase in fish habitat volume below elevation 75.32 m.

Overall, the proposed shoreline erosion protection works are not expected to have any negative impact on fish habitat conditions relative to the existing shoreline condition. The proposed work is not expected to cause the HADD of fish habitat, but this will need to be confirmed with DFO following completion of the detailed design.

6.2.4.2.3 Monitoring Requirements

The following monitoring is recommended during construction:

- Monitoring of ESC measures should occur regularly throughout the duration of in and near-water construction activities. Remedial actions should be implemented as necessary to address any observed deficiencies;
- Visual monitoring of in-water turbidity should occur when the existing bank materials (below the existing armour stone and rip rap) are being excavated to the design elevation. If excessive turbidity is observed to be spreading along the shoreline due to wave or current action, excavation should cease until lake conditions are calmer (to minimize the distribution of a suspended sediment plume). If a plume cannot be controlled in this manner, it may be necessary to consider other mitigative approaches such as installation of a turbidity curtain or cofferdam. The requirements for this should be determined by the on-site engineer; and
- Monitoring of adherence to the spill prevention and response should be completed throughout the duration of in and near-water construction activities.



Following installation, no specific ecological monitoring associated with fish or fish habitat is proposed. Vegetation survival monitoring should be completed during the warranty period to verify that planted vegetation survival thresholds have been met. Additional plantings may be required if thresholds are not met. Additional structural monitoring may be recommended by the coastal engineer to verify structure performance.

6.2.4.2.4 Potential Permitting Requirements

Depending on the final design for the proposed replacement erosion control works, the following permits may be required:

- Authorization under the Fisheries Act from DFO. A Request for Review should be prepared and submitted to DFO to determine if an Authorization is necessary; and
- Development permit from NPCA for works within the regulated area.

As discussed previously in **Section 4.7**, any requirements under the ESA or the federal Species at Risk Act as it relates to potential habitat for American Eel are being determined in consultation with MECP and DFO, respectively.

Following completion of the detailed design for the shoreline stabilization works, review of the federal Canadian Navigable Waters Act and Ontario Public Lands Act should be completed to determine if there are permitting requirements under either Act. The Canadian Navigable Waters Act could be triggered if the proposed works extend beyond the current footprint of the structure. The Public Lands Act permitting process could be triggered if work on publicly owned lands on the lakebed are required. Consultation with the MNR may be required to confirm if there are permitting requirements under the Public Lands Act.

6.2.5 *Candidate Habitat for Endangered and Threatened Species*

Candidate habitat for SAR species, American Eel, may be present on the Subject Lands within Lake Ontario.

As discussed previously in **Section 4.7**, any requirements under the ESA or the federal Species at Risk Act as it relates to potential habitat for American Eel are being determined in consultation with MECP and DFO, respectively.

6.2.6 *Other Mitigation Measures*

In addition to the mitigation and restorative measures identified within the above noted sections, the following general mitigation measures may be considered during detailed design.

Exclusionary Fencing

Exclusion fencing could be installed prior to working in or around natural areas, to prevent wildlife from entering work zones. If wildlife does enter a work zone it should be carefully relocated prior to commencing work. In general, wildlife should not be trapped for relocation, but should be either allowed to relocate of their own volition, or should be directed away from the area. If it is determined that they are injured or unable to move, a biologist or wildlife rescue organization should be contacted to assist.



Invasive Species Management

Invasive species were recorded within the Subject Lands. Detailed invasive species mapping will be completed as part of the detailed design phase to understand the presence, abundance and extent of the species within retained natural heritage features.

Disturbance activities can promote the spread of invasive plant species which could substantially alter the structure and function of mature vegetation communities that will be retained in a post-development scenario. The introduction of invasive and non-native plant species along disturbed margins of the development footprint may also displace some native flora.

It is not always possible or even desirable to completely remove all non-native species; however, as part of the detailed design process an invasive species review will be completed to understand whether management of existing populations is warranted. Additionally, all created natural heritage features will be monitored in an effort to detect the presence of invasive species early. Management may be warranted within created features in the early years while plants are establishing to reduce the competition.

To further mitigate the spread of invasive species during construction, the following recommendation measures are proposed:

- Equipment working in identified invasive species locations must be thoroughly cleaned prior to moving from the site into retained or created habitats;
- Soil removed from sites with high incidence of non-native species should not be re-used for any vegetation restoration sites unless it is placed in an area that will be actively and regularly managed. Otherwise, such soil should be buried below impervious surfaces (e.g., developed areas); and
- Herbicide applications may be considered by the Project Ecologist following construction and post-construction monitoring as part of the adaptive management strategy. Any herbicide application should be applied by a licensed applicator. The preferred application method would be with an applicator that directly applies the herbicide with a wicking device/wand to mitigate spray drift onto the targeted species.

Vegetation Clearing Measures

Vegetation removal shall be restricted to the areas identified within approved drawings and permits. These boundaries should be clearly delineated on construction specifications and plans in the field. Appropriate vegetation clearing techniques should be used. Efforts to minimize clearing and grading should occur.

Felled trees may be left onsite within natural areas to decompose, where approved by the Project Ecologist, or should be taken to be mulched. Where trees are proposed to be mulched, this should occur as soon as possible to prevent wildlife from occupying them. Compaction of soil and root zones around trees within retained features should be avoided through the installation of temporary fencing as per the Arborist Report.



Salt Management and Snow Storage Measures

Salt impacts are a recognized impact with the proposed development and urbanization. While they cannot be fully avoided, efforts to reduce the amount of salt entering into the NHS should be undertaken. Winter maintenance standards and other strategies explored in accordance with the municipal standards.

6.2.7 NPCA Regulated Features

Prudhomme Creek and Lake Ontario are regulated features and both have natural hazards associated with them. No wetlands were identified within or adjacent to the Subject Lands.

No alteration is proposed within Prudhomme Creek. As discussed within Landtek's Slope Stability Report (2023b), no negative impacts are expected to the long term stable top of slope associated with both features. The form of both Prudhomme Creek is expected to be maintained as a result of the proposed setbacks.

Please refer to **Sections 6.2.2** and **6.2.4** for impacts, mitigation and restoration measures related to the Prudhomme Creek and its associated valleyland.

No negative impacts are expected to NPCA regulated features related to Prudhomme Creek, provided that mitigation and restoration measures are enacted and monitored.

Alteration is proposed within Lake Ontario in order to update failing shoreline protection works. GEI defers to the engineering team for their review of potential impacts on this natural hazard.

6.2.8 Components of the Town's Natural Environment

Components of the Town's Natural Environment (Environmental Conservation Areas and Potential Natural Heritage Corridors) were identified within the Prudhomme Creek NHS. Specifically, candidate habitat for special concern species and SWH was identified within the Prudhomme Creek corridor. Prudhomme Creek and Lake Ontario are also identified as direct fish habitat. As previously discussed within **Section 4.10**, no components of the Natural Environment are located along the southern portion of the Subject Lands (as currently shown within Schedule B1 of the Draft TLOP).

Please refer to **Section 6.2.3** for potential impacts, mitigation and restoration measures for SWH (including special concern species).

Please refer to **Section 6.2.4** for potential impacts, mitigation and restoration measures to fish habitat.

The Prudhomme Creek corridor will generally be protected in place and enhanced through restorative plantings. Prudhomme Creek is expected to continue to act as a north-south corridor within an urbanized landscape. The connectivity within the landscape will be maintained. Prudhomme Creek will continue to support various terrestrial and aquatic species within the area. Incorporation of wildlife enhancement structures within the buffers will be explored to increase habitat availability for terrestrial species. The use of bioengineering measures will work to enhance and restabilize eroded soils within the corridor. Efforts to increase the native diversity of plants will be explored through native plantings within the



adjacent buffers. Overall, the proposed restoration concept (as discussed further within **Section 6.3**) is expected to result in a positive impact to the historically altered corridor.

Alterations along the Lake Ontario shoreline are required to address shoreline hazard requirements. Updated shoreline protection measures were recommended by Shoreplan given that the existing shoreline protection is older and would require significant adjustments in order to meet existing protection requirements. Discussions with reviewing agencies, including MECP and DFO, will be required to permit in-water work in order to update the shoreline protection.

As discussed in the above noted sections, no negative impacts are expected to the Town's Natural Environment as a result of the proposed development application. Enhancements proposed within and adjacent to the existing NHS through establishment of native vegetated buffers are expected to enhance the existing form and functions of the features on site.

It is our interpretation that the proposed development is in compliance with the ecological policies identified within Part 3 and Part 4 of the TLOP. Please refer to the Planning Justification Report prepared by Landwise's for additional justification.

6.2.9 Components of the Region's Natural Environment System

The following components of the Region's Natural Environment System were identified on or immediately adjacent to the Subject Lands:

- Candidate habitat for endangered, threatened and special concern species (Tufted Titmouse, Eastern Wood-Pewee, Purple Martin, Wood Thrush and Snapping Turtle)
- Fish Habitat (Prudhomme Creek and Lake Ontario)
- Other Woodlands (CUW1)
- Candidate SWH
 - Shorebird Migratory Stopover Areas – associated with the BBO community;
 - Turtle Wintering Areas – associated with Prudhomme Creek;
 - Turtle Nesting Areas – associated with the BBO community; and
 - Habitat for Special Concern and Rare Wildlife Species within Prudhomme Creek Corridor (Tufted Titmouse, Eastern Wood-Pewee, Purple Martin, Wood Thrush, Snapping Turtle).
- Permanent Stream (Prudhomme Creek)
- Buffers and Vegetation Protection Zones
- Shoreline Areas (Lake Ontario shoreline)
- NPCA regulated areas

For potential impacts, mitigation and restoration measures to the natural environment system, please refer to the following sections:

- **Section 6.2.1** for Other Woodlands
- **Section 6.2.3** for Candidate SWH (including special concern species)
- **Section 6.2.4** for Fish Habitat and Permanent Stream
- **Section 6.2.5** for Candidate Habitat for Endangered and Threatened Species
- **Section 6.2.6** for NPCA Regulated Areas



A review of Policies 3.1.9 from the Region's OP was completed as the Subject Lands are located outside of the Provincial NHS and outside of the Niagara Escarpment Plan Areas. They are also located within a settlement area; thus, the 30 m VPZs prescribed within Section 3.1.9.2 of the ROP doesn't apply. As discussed within **Section 4.13**, the Region's OP does not prescribe setbacks to the natural environment rather it recommends that "ecologically appropriate" buffers are provided to the candidate and confirmed natural features, with the width of the buffer being determined based on the sensitivity of the feature and its functions (Section 3.1.9.10.1). The following buffers were recommended based on the degraded nature of the natural features within Prudhomme Creek:

- Fisheries setback: 15 m from the watercourse top of bank
- Valleyland setback: 6 m from stable top of slope

Given the development history within the Subject Lands coupled with the historic alteration of Prudhomme Creek (as observed within historical Google Earth imagery) and recent encroachments into the NHS (resulting in invasive colonization, broken tree limbs, garbage and debris accumulation), the existing corridor is quite degraded and would benefit from restoration and enhancement. Discussion on the buffers was also provided throughout **Section 6.2**. The proposed restoration and enhancement concept is provided within **Section 6.3**. Once reviewing agencies have provided high-level buy-in to the proposed concept, a detailed NHS Design Brief will be prepared.

As discussed throughout **Section 6.2**, no negative impacts are expected to the ecological features and their associated functions as a result of the proposed redevelopment activity provided that the mitigation measures are enacted and monitored, and the restoration/enhancement measures are also undertaken. As a result, it is our opinion that the proposed application is in compliance with the ROP, specifically Section 3.1.9.6.2 (other woodlands) and Section 3.1.9.10 (buffers).

6.3 Alteration is proposed within Lake Ontario in order to update failing shoreline protection works. GEI defers to the engineering team for their review of potential impacts on this natural hazard. Conceptual Restoration and Enhancement Plan

The proposed restoration concept has been designed with recognition of existing landscape opportunities and constraints. The restoration goals are to protect, enhance and where possible, restore the existing ecological functions within the Prudhomme Creek Corridor. The conceptual restoration design includes establishment of vegetated buffer zones along the retained portions of the Prudhomme Creek corridor. In accordance with Policy 3.1.19 of the NROP, a Preliminary Woodlands Enhancement Plan (**Appendix E**) has been prepared to demonstrate the enhancement within the adjacent Prudhomme Creek Corridor NHS.

As discussed above in **Section 5**, Shoreplan (2024) has identified two preliminary options to improve the shoreline protection structure within the Subject Lands. If any restoration work is required given the selected shoreline protection measure, ecological restoration opportunities will be explored during detailed design.



As discussed within **Section 4.13**, the following setbacks have been applied to the existing NHS:

- Fisheries setback: 15 m from the watercourse top of bank
- Valleyland setback: 6 m from stable top of slope

While the Prudhomme Creek Corridor is present within the landscape, it is highly degraded given historic alterations and disturbances associated with the watercourse, valleyland and cultural vegetation communities. As a result, the proposed restoration concept will work to enhance the existing degraded functions of the NHS. Specifically, this will be achieved by:

- Invasive species management for Category 1 species, as determined through the Invasive Species Management Plan;
- Establishment of native plant buffers with a mixture of planted stock (shrubs and trees) and seed mix;
- Incorporation of wildlife enhancement structures (e.g., brush piles, pollinator plantings); and
- Installation of bioengineering measures (e.g., fascines, live stakes) to mitigate against additional in-stream erosion and work to re-establish a gentle vegetated slope within Prudhomme Creek.

Additional invasive species investigations will be completed during the detailed design phase to map the physical extent and abundance of each Category 1 species. From there, an Invasive Species Management Plan will be prepared as part of the Natural Heritage Design Brief. The Invasive Species Management Plan will review the feasibility associated with management of each Category 1 species (i.e., should management occur), and if it is determined that management is recommended, what the best management practices are in accordance with the Ontario Invasive Plant Council.

A Natural Heritage Design Brief will be prepared during detailed design in accordance with the NPCA's Planning and Permitting Procedure Manual (November 2022). Specifically, the following documents will be reviewed from the Planning and Permitting Procedure Manual (2022):

- Appendix K – Draft NPCA Landscaping Plan Guideline; and
- Appendix M – Draft NPCA Best Practices for Preserving and Restoring Soil Health.

The Natural Heritage Design Brief will provide a detailed review into the restoration concept including site preparation requirements, selection of targeted vegetation community, soil considerations, planting and seed list, wildlife enhancement structures and opportunities, bioengineering considerations and timing considerations. As discussed within the TLOP, plantings within the NHS will include non-invasive, drought-tolerant plantings that integrate, compliment and support the adjacent environment features in a naturalized, self sustaining manner. The Natural Heritage Design Brief will be informed by the ecological restoration objectives defined below:

- Manage existing Category 1 invasive species, where possible (to be determined as part of the invasive management plan);
- Increase overall natural cover in comparison to existing conditions through the establishment of native vegetated buffers;



- Stabilize soils through the incorporation of bioengineering measures along Prudhomme Creek;
- Include nectaring plants and Milkweed species within groundcover planting areas to attract/support local insect populations including Monarch; and
- Provide wildlife habitat structures for a variety of wildlife (e.g., reptiles, mammals, birds) to increase breeding, roosting, nesting, refugia opportunities.

It is recognized that portions of the setbacks provided to the natural features are currently vegetated; however, the restoration concept will focus on areas that currently are not vegetated and/or where temporary grading work is proposed that will result in temporary vegetation removal. Additionally, the restoration concept will work to identify if in-planting is warranted depending on the level of invasive species management required.

Further restoration may be required to address the proposed upgrades to shoreline protection; suitable restoration recommendations to protect and restore the Lake Ontario shoreline will be reviewed during the SPA and/or as part of ecological permitting requirements with NPCA, MECP and/or DFO.

6.4 Monitoring Program

The proposed ecological monitoring program is intended to ensure that:

- Protective mitigation strategies and actions (**Section 6.2**) are effectively implemented;
- Ecological restoration measures (**Section 6.3**) are effectively implemented; and
- Created features and associated functions are developing along projected trajectories.

Baseline monitoring is required to understand the significance and function of Prudhomme Creek and provide a baseline for comparisons to future function. This monitoring was completed in 2023 in accordance with the approved TOR. No additional baseline monitoring is warranted; however, as discussed above within **Section 6.3**, invasive species mapping is recommended as part of the detailed design stage to more accurately represent existing conditions of the retained features prior to construction activities commencing.

Construction monitoring is intended to monitor the effectiveness of measures and practices designed/implemented to manage impacts due to construction. This form of monitoring most often translates into ensuring that all ESC measures are in place and functioning; however, other aspects of construction monitoring can relate to the Tree Protection Zone (TPZ), the installation of plant material or other parameters of concern.

Post-construction compliance monitoring is driven by the need to comply with permits or other approvals. It is intended to demonstrate that measures are constructed as designed. This monitoring is relatively local in scale and associated with specific works. For the Subject Lands, it would apply to the vegetated buffer along Prudhomme Creek. Post-construction performance monitoring relates to the functionality of the vegetated buffer. The scale of performance monitoring is typically broader than compliance monitoring and provides a means of comparison against the initial baseline monitoring.

Where necessary, adjustments through adaptive management should be applied to ensure that performance standards are achieved and to address any unanticipated impacts or deficiencies.



The following sections provide the methodology to be used for each component of the monitoring program; however, a detailed monitoring program will be prepared in detailed design.

6.4.1 Construction Monitoring

Construction monitoring components are defined and described in the following sections and are intended to ensure that potential impacts as a result of construction are effectively managed and mitigated. This construction monitoring section is specific to impacts addressed within this report.

Additional monitoring efforts typically associated with construction not addressed herein are required, including the reporting of deficiencies and landscaping survival assessments. These activities should be conducted in a standard manner to provide a level of certainty to approval agencies that works have been constructed as designed and approved.

Dewatering Monitoring

During the short term and long term dewatering activities, monitoring (per Section 5 of the Hydrogeological Investigation; 2023b) and mitigation measures (per Section 6 of the Hydrogeological Investigation; 2023b) should be implemented to limit the potential for adverse impacts. No groundwater dewatering will be diverted into the natural environment; rather, it will be piped into the sewers.

Turbidity Monitoring

Shoreline protection monitoring measures suggest visual monitoring of in-water turbidity occur when the existing bank materials (below the existing armour stone and rip rap) are being excavated to the design elevation. If excessive turbidity is observed to be spreading along the shoreline due to wave or current action, excavation should cease until lake conditions are calmer (to minimize the distribution of a suspended sediment plume). If a plume cannot be controlled in this manner, it may be necessary to consider other mitigative approaches such as installation of a turbidity curtain or cofferdam. The requirements for this should be determined by the on-site engineer

Vegetation Monitoring

Ecological restoration and invasive species management oversight should be conducted on all construction and works associated with ecological design aspects (vegetative components of the buffer), which will include the following tasks:

- Identify suitable native species substitutions and/or stock size adjustments and secure approval for these substitutions with NPCA and other reviewing agencies, if required;
- Review layout of plant material prior to/during installation, including species type, location and densities;
- Observation of installations of planting, mulch, beds, seeding, and topsoil amendments;
- Verify native vegetation at the site prior to installation, as per the Issued for Construction Drawings; and



- Provision of monitoring and identification of management options for local outbreaks of aggressive (i.e., Category 1) invasive species that threaten the establishment, health and/or success of the native vegetation or pose a danger to human health within the restoration area.

Post-development, vegetation monitoring will be conducted once per year for two years to ensure that all works are established during the warranty period.

These efforts will aim to prevent non-native and/or invasive species from being installed on site.

As noted above, ecological guidance will also be provided regarding suitable native plant substitutions should certain plant materials not be available for installation. All plant material substitutions will be reviewed by the Project Ecologist to ensure that all plant materials installed follow the planting requirements outlined within the Landscape Plan.

Tree Protection Zone

Monitoring of the TPZ should be conducted or supervised by a Certified Arborist prior to and during construction to ensure compliance with tree protection guidelines. Proposed monitoring will assess the health and structure of the trees, identify changes to environmental conditions, and respond appropriately where necessary. The Certified Arborist must be on site at all times prior to and during any construction activity occurring within any TPZ to monitor root exposure, identify root disturbance, and propose site-specific mitigation where appropriate.

All other construction monitoring should be conducted on a bi-weekly basis (at a minimum) during the active construction period. Accidental damage to any part of a tree, including accidental incursion into the TPZ, must be reported to the Certified Arborist within six hours.

Erosion and Sediment Control

An ESC Plan will be prepared at detailed design by the Project Engineer to ensure that all natural heritage features and functions will be protected. ESC measures will be applied to prevent the release of sediment from the construction site. Additionally, monitoring of ESC measures should occur regularly throughout the duration of in and near-water construction activities. Remedial actions should be implemented as necessary to address any observed deficiencies.

Spill Prevention

A spill prevention and response plan will be prepared at detailed design outlining the measures that will be implemented to minimize the potential for accidental spills of potentially contaminating material into the lake. Monitoring of adherence to the spill prevention and response should be completed throughout the duration of in and near-water construction activities.

Post-Construction Compliance Monitoring

Post-construction compliance monitoring is intended to demonstrate compliance with permits or other approvals through local monitoring to verify that measures have been constructed as designed. This type of monitoring applies to the vegetated buffer.



All landscaped works within the vegetated buffer will be reviewed weekly during the construction period to ensure all planting and surface treatments are installed per specifications. It is also anticipated that the works will be inspected with both the Town and/or NPCA once substantially complete. An additional inspection will be arranged once a year for the two-year compliance period following implementation to ensure that all works are established. At acceptance, the Owners' Compliance Monitoring obligations will be satisfied.

6.4.2 Post-Construction Performance Monitoring

The below post-construction performance monitoring is recommended based on the proposed tableland development and as part of the shoreline protection measures.

A detailed post-construction monitoring program will be prepared during detailed design once reviewing agencies have confirmed they are supportive of the restoration concept and the extent of invasive species management has been determined. That being said, it is likely that a two to five year monitoring program will be required post-construction to understand whether the restoration goals and objectives (as defined within Section 6.3) are on the appropriate restoration trajectory. The extent of the monitoring would be determined by the extent of restoration activities that are undertaken and will be scoped based on the NHS Design Brief.

Monitoring should commence one growing season after vegetation or other restoration measures are implemented (i.e., planted material installed Fall 2024/Spring 2025 would trigger monitoring the following year in Spring 2026). Reporting requirements will be confirmed with reviewing agencies during the detailed design process.

Following installation of the shoreline protection measures, no specific ecological monitoring associated with fish or fish habitat is proposed. Vegetation survival monitoring should be completed during the warranty period to verify that planted vegetation survival thresholds have been met. Additional plantings may be required if thresholds are not met. Additional structural monitoring may be recommended by the coastal engineer to verify structure performance.

The above noted post-construction performance monitoring may be refined during the ecological permitting process with NPCA, MECP and/or DFO.



7. Next Steps

Throughout the EIS several commitments have been made to complete additional items during the detailed design phase. Those commitments as well as other higher-level next steps are summarized below:

- Continue to consult with MECP and DFO regarding candidate American Eel habitat to ensure compliance with the ESA and SARA.
- Complete additional modelling to determine (1) if mitigation measures are warranted given that pre to post drainage contributions will not be met (currently FSSMR has presented a loss of approximately 1.3 ha), and if so (2) determine which mitigation measures are appropriate and update design accordingly;
- Complete a detailed invasive species mapping within retained features closer to construction to evaluate the presence and extent of Category 1 invasive species. Following the completion of the invasive species mapping, an invasive species management plan will be prepared;
- Prepare a NHS Design Brief confirming the restoration design approach for the retained and created NHS. The NHS Design Brief will include planting details (such as the native plant selections for each community) and review bioengineering opportunities based on site specific conditions;
- Finalize the Woodland Enhancement Plan to demonstrate that compensation and enhancement for the proposed removals within the woodland area aligns with Policy 3.1.19 of the NOP. This plan will include a fulsome planting list and landscape/ planting plans;
- Complete landscape design plans in accordance with NHS Design Brief. Landscape design plans are to be prepared by a Landscape Architect in good standing with the OALA;
- Update Arborist Report with finalized grading limits to finalize the preservation and removal trees. Once the final number of tree removals are understood, opportunities to compensate for these removals on site will be reviewed.
 - o Opportunities to compensate for all trees within the Subject Lands will be prioritized. Compensation will occur within the streetscape and within VPZs. If all trees cannot be compensated on-site, they will be compensated through cash-in lieu.
- Prepare a Monitoring Plan that will complement the conceptual restoration and incorporate invasive species management, as required. Within the Monitoring Plan detailed station mapping will be prepared showing where the monitoring stations will be located within both created and retained features; and
- Apply for NPCA permits (O. Reg. 41/24).



8. Conclusions and Recommendations

This Scoped EIS addresses the natural heritage features and associated functions found on and adjacent to the Subject Lands. Previously, the Subject Lands hosted two industrial buildings that have since been removed from the landscape. Natural heritage features are located along the eastern property boundary (Prudhomme Creek corridor) and northern property boundary (Lake Ontario).

Ecological investigations were completed in accordance with the approved TOR (**Appendix B**) to determine whether natural heritage features were present within the property, and if so, identify the form and function of the features.

The following natural heritage features were identified in accordance with the PPS (MMAH 2020), Town OP (2018) and Region OP (2022):

- Other woodlands (CUW1);
- Non-significant valleyland (Prudhomme Creek);
- Candidate SWH (located within Prudhomme Creek and along Lake Ontario shoreline);
- Fish habitat (Prudhomme Creek and Lake Ontario);
- Candidate habitat for endangered and threatened species (American Eel);
- Components of the Town's Natural Environment (Environmental Conservation Areas and Potential Natural Heritage Corridors associated with Prudhomme Creek); and
- Components of the Region's Natural Environment System (habitat for endangered, threatened and special concern species, fish habitat, other woodlands, candidate SWH, permanent stream, buffers, shoreline areas and NPCA regulated areas).

These features are illustrated on **Figure 5 (Appendix A)**. Two NPCA regulated features were also identified (Prudhomme Creek and Lake Ontario).

The proposed development concept includes a mixture of hotel, commercial, and condominium buildings with underground parking. One passive recreational use pathway is proposed along the outer limit of the development along the Lake Ontario shoreline and Prudhomme Creek corridor.

A total of 157.6 m² of encroachment is proposed as a result of the proposed redevelopment strategy. This encroachment only includes the physical footprint of the building and does not include any grading requirements to construct the building. Additionally, the encroachment values do not include the passive recreational use pathways as this is a permitted use within the NHS. During the SPA, these encroachment values will be reviewed. It is likely that additional encroachment will be required as a result of grading and construction requirements, and compensation in line with that proposed herein will be provided to address any additional required encroachments.

An alternatives review was completed within **Section 6.1** that determined that most natural heritage features could be avoided as part of the development application; however, encroachment into portions of the NHS was acceptable given the degraded nature of the existing communities. Several mitigation and restoration measures were identified within **Section 6.2** in order to protect and enhance, where feasible, the existing NHS on site. As determined through the impact assessment, a no negative impact threshold can be met; however, several commitments were made in order to meet this threshold. These



commitments are identified within **Section 7** of the report and would be completed as part of the detailed design phase.

A conceptual restoration and enhancement plan is provided within **Section 6.3** which outlines the restoration objectives, while **Section 6.4** outlines a preliminary monitoring program for construction and post construction monitoring.

Following the SPA application, environmental permitting will be required to facilitate construction within the Lake Ontario shoreline.

For planning justifications and policy conformance review, please refer to Landwise's Planning Justification Report.

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Appendix A

Figures





NOTES:
 1. Coordinate System: NAD 1983 UTM Zone 17N.
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2023.

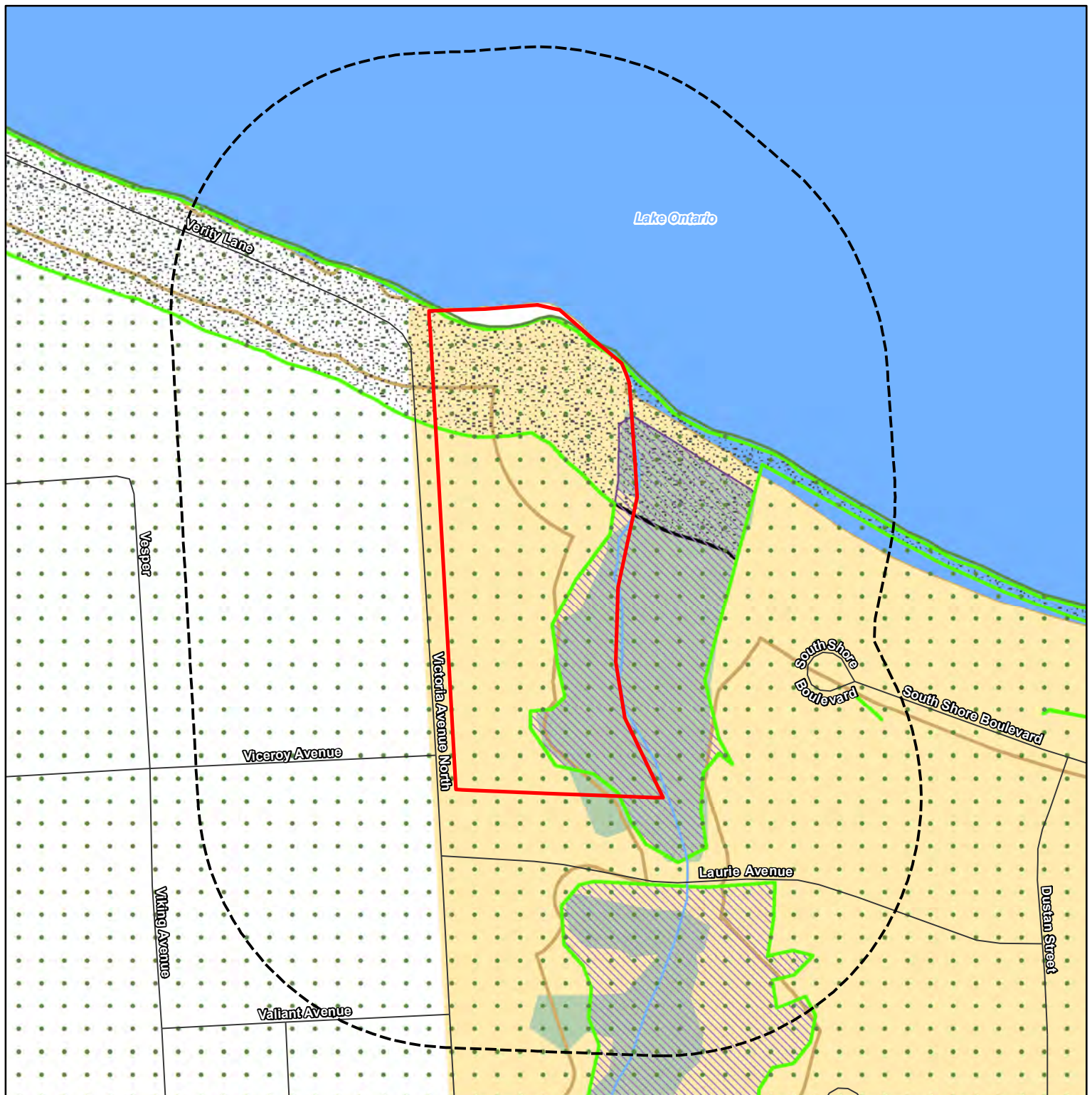
- Legend**
- Subject Lands
 - Highway
 - Road
 - Watercourse
 - Waterbody
 - Wooded Area

4933 Victoria Avenue Scoped EIS
 Court Holdings Ltd.

Figure 1
 Location of Subject Lands

0 100 m
 1:10,000





Project 2302940

NOTES:

1. Coordinate System: NAD 1983 UTM Zone 17N.
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2024; Town of Lincoln, 2024; Niagara Region, 2024.

Legend

Subject Lands

Subject Lands + 120 metres

Land Information Ontario

— Road

— Watercourse

Waterbody

Wooded Area

Greenbelt Plan Area

Protected Countryside

Towns and Villages

Town of Lincoln Official Plan

Significant Valleyland

Significant Woodland

Niagara Region Official Plan

Natural Environment System

Niagara Peninsula Conservation Authority

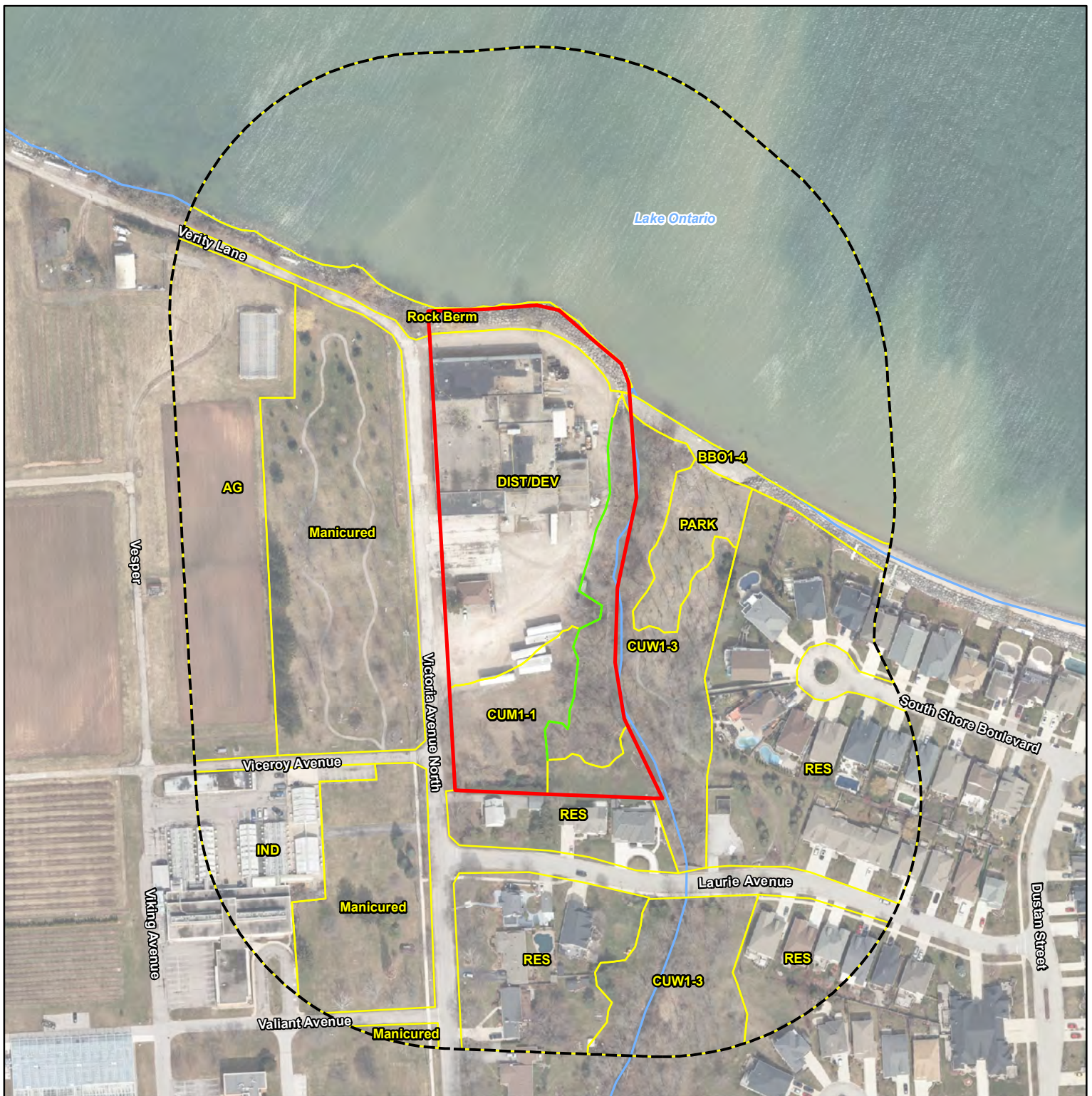
Approximate Regulation Limit

4933 Victoria Avenue Scoped EIS
Court Holdings Ltd.

Figure 2 Landscape Setting

0 50 m
1:2,500





NOTES:
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 3. Orthoimagery © First Base Solutions, 2024. Imagery taken in 2018.

Legend

- Subject Lands
- Subject Lands + 120 metres
- Watercourse
- Waterbody
- Staked Dripline (August 15, 2024)
- Ecological Land Classification

ELC Legend

- AG, Agricultural
- BBO1-4, Gravel Open Beach
- CUM1-1, Mineral Cultural Meadow
- CUW1-3, Black Walnut-Mixed Cultural Woodland
- DIST, Disturbed
- IND, Industrial
- RES, Residential

4933 Victoria Avenue Scoped EIS
 Court Holdings Ltd.

Figure 3 Ecological Land Classification

0 50 m
 1:2,500



Project 2302940



NOTES:

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Legend

- Subject Lands
- Subject Lands + 120 metres
- Watercourse
- Waterbody
- Bat Acoustic Monitor
- Staked Dripline (August 15, 2024)
- Ecological Land Classification

ELC Legend

- AG, Agricultural
- BBO1-4, Gravel Open Beach
- CUM1-1, Mineral Cultural Meadow
- CUW1-3, Black Walnut-Mixed Cultural Woodland
- DIST, Disturbed
- IND, Industrial
- RES, Residential

4933 Victoria Avenue Scoped EIS
Court Holdings Ltd.

Figure 4 Bat Acoustic Figure

0 50 m
1:2,500



Project 2302940



NOTES:

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Legend

- Subject Lands
- Subject Lands + 120 metres
- Watercourse (LIO)
- Waterbody (LIO)
- Fish Habitat
- Permanent Stream
- Other Valleylands
- Staked Dripline (August 15, 2024)
- Shoreline Area

- Candidate Habitat for Endangered and Threatened Species
 - Candidate Significant Wildlife Habitat
- ELC Legend**
- AG, Agricultural
 - BB01-4, Gravel Open Beach
 - CUM1-1, Mineral Cultural Meadow
 - CUW1-3, Black Walnut-Mixed Cultural Woodland
 - DIST, Disturbed
 - IND, Industrial
 - RES, Residential

4933 Victoria Avenue Scoped EIS
4933 Vic Court Globizen LP

Figure 5 Candidate and Confirmed Natural Heritage Features

0 20 m
1:2,500



Project 2302940



Project 2302940

NOTES:

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Legend

- Subject Lands
- Subject Lands + 120 metres
- Watercourse (LIO)
- Waterbody (LIO)
- Ecological Land Classification
- Watercourse Top of Bank
- Staked Dripline (August 15, 2024)
- Staked top of bank (August 15, 2024)
- Candidate and Confirmed Natural Heritage Feature
- Buffers/Vegetation Protection Zones**
- Watercourse Top of Bank + 15 metres
- Valleyland Top of Bank + 6 metres (Landtek 2023)

ELC Legend

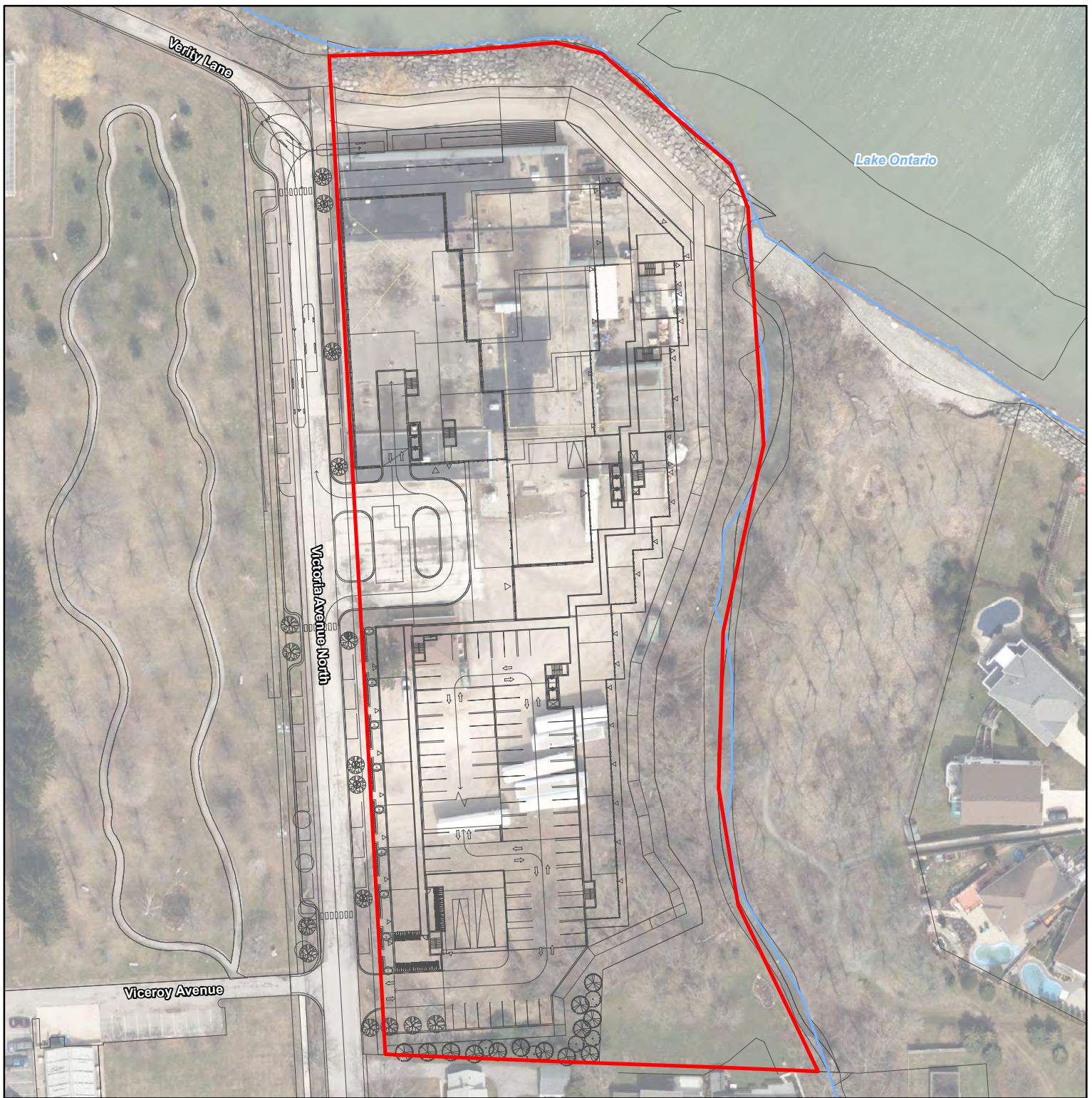
- AG, Agricultural
- BBO1-4, Gravel Open Beach
- CUM1-1, Mineral Cultural Meadow
- CUW1-3, Black Walnut-Mixed Cultural Woodland
- DIST, Disturbed
- IND, Industrial
- RES, Residential

4933 Victoria Avenue Scoped EIS
4933 Vic Court Globizen LP

Figure 6 Environmental Constraints

0 40 m
1:2,500





Project 2302940

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 3. Orthoimagery © First Base Solutions, 2024. Imagery taken in 2018.

Legend

- Subject Lands
- Concept Plan
- Watercourse
- Waterbody

4933 Victoria Avenue Scoped EIS
 4933 Vic Court Globizen LP

Figure 7 Concept Plan

0 20 m
 1:1,200





NOTES:

1. Coordinate System: NAD 1983 UTM Zone 17N.
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2024; © Niagara Peninsula Conservation Authority, 2024.
3. Orthoimagery © First Base Solutions, 2024. Imagery taken in 2018.

Legend

- Subject Lands
- Subject Lands + 120 metres
- Concept Plan
- Watercourse (LIO)
- Waterbody (LIO)
- Ecological Land Classification
- Watercourse Top of Bank
- Valleyland
- Staked Dripline (August 15, 2024)
- Staked top of bank (August 15, 2024)
- Candidate and Confirmed Natural Heritage Feature
- Limit of Development

Buffers/Vegetation Protection Zones

- Watercourse Top of Bank + 15 metres
- Valleyland Top of Bank + 6 metres (Landtek 2023)

Proposed Encroachment from Building Footprint into the NHS (157.6 m²)

- Woodland (56.8 m²)
- Watercourse Top of Bank Buffer (100.8 m²)

ELC Legend

- AG, Agricultural
- BB01-4, Gravel Open Beach
- CUM1-1, Mineral Cultural Meadow
- CUW1-3, Black Walnut-Mixed Cultural Woodland
- DIST, Disturbed
- IND, Industrial
- RES, Residential

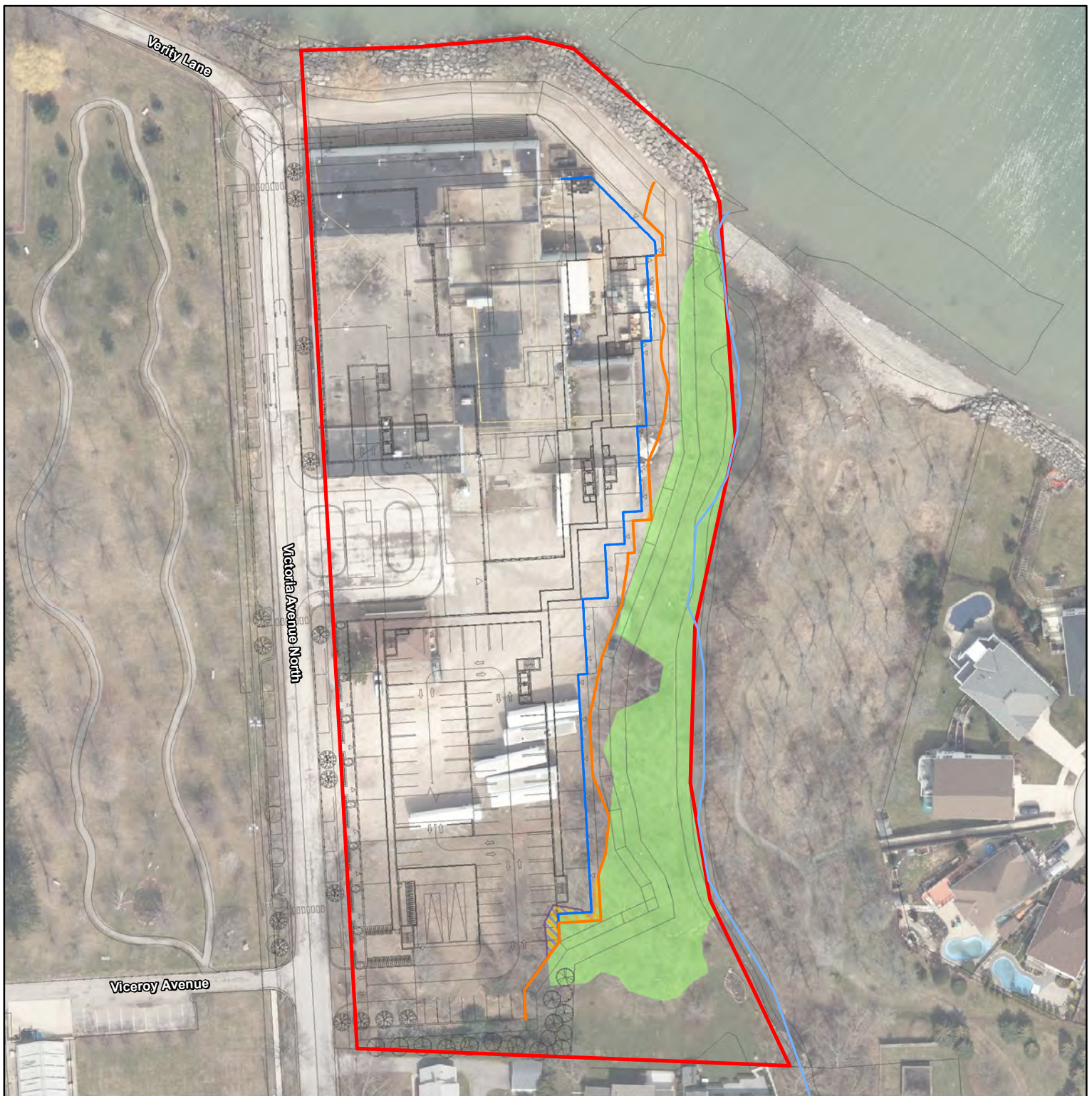
4933 Victoria Avenue Scoped EIS
4933 Vic Court Globizen LP

Figure 8 Concept Plan with Environmental Constraints

0 30 m
1:2,500



Project 2302940



NOTES:
 1. Coordinate System: NAD 1983 UTM Zone 17N.
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 3. Orthoimagery © First Base Solutions, 2024. Imagery taken in 2018.

Legend

- Subject Lands
- Watercourse (LIO)
- Concept Plan
- Building Limit
- Limit of Development
- Other Woodland
(TOTAL AREA OF ENTIRE FEATURE - 4082 m²)

Development Encroachment

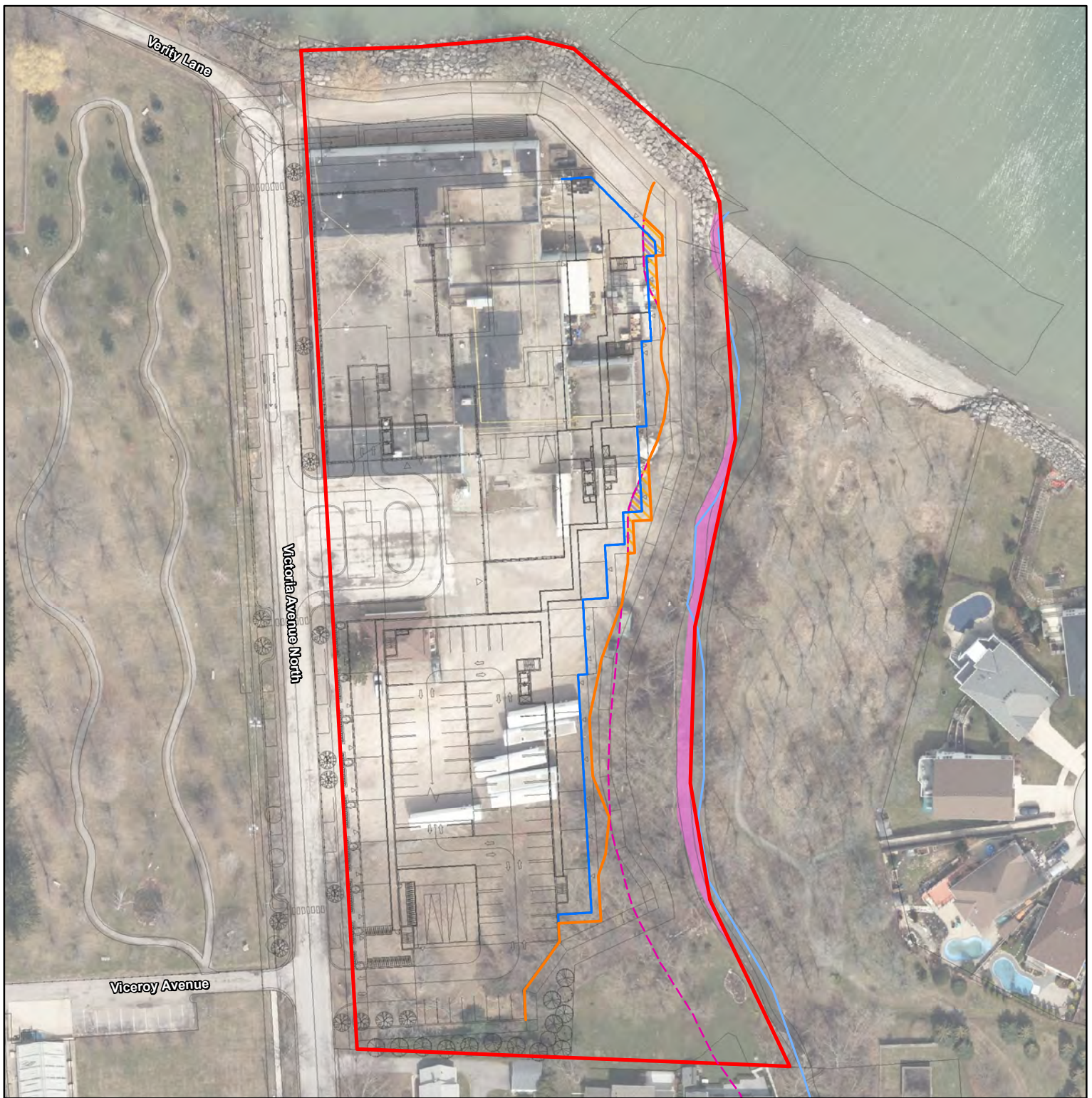
- (TOTAL ENCROACHMENT AREA - 56.8 m²)
- Balcony/Building (32.7 m²)
- Underground Parking (56.8 m²)

4933 Victoria Avenue Scoped EIS
 4933 Vic Court Globizen LP

Figure 9a Concept Plan and Other Woodland Encroachment

0 20 m
 1:1,200





Project 2302940

NOTES:

1. Coordinate System: NAD 1983 UTM Zone 17N.
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2024; © Niagara Peninsula Conservation Authority, 2024.
3. Orthoimagery © First Base Solutions, 2024. Imagery taken in 2018.

Legend

- Subject Lands
- Concept Plan
- Watercourse (LIO)
- Building Limit
- Limit of Development
- Watercourse Top of Bank
(TOTAL AREA OF ENTIRE FEATURE - 364 m²)
- Watercourse Top of Bank Buffer (Watercourse Top of Bank + 15 metres)
- (TOTAL ENCROACHMENT AREA - 100.8 m²)**
- Balcony/Building (27.7 m²)
- Underground Parking (100.8 m²)

4933 Victoria Avenue Scoped EIS
4933 Vic Court Globizen LP

Figure 9b Concept Plan and Watercourse Top of Bank Buffer Encroachment

0 20 m
1:1,200



Appendix B

Approved Terms of Reference





July 21, 2023

Niagara Peninsula Conservation Authority
250 Thorold Road, 3rd Floor West
Welland, ON
L3C 3W2

Attention: Sarah Mastroianni – Manager, Planning and Development

Dear Ms. Mastroianni:

**RE: Scoped Environmental Impact Study and Arborist Report – Terms of Reference
4933 Victoria Ave N., Lincoln**

GEI Consultants (GEI) has been contracted by Court Holdings and Globizen to complete a Scoped Environmental Impact Study (EIS) and Arborist Report for the property located at 4933 Victoria Avenue North in the Town of Lincoln, Ontario (herein referred to as the Subject Lands; **Figure 1, Appendix A**). The Subject Lands are generally located east of Victoria Avenue and the Millennium Forest Park, north of Laurie Avenue and south of Lake Ontario.

The Subject Lands previously hosted two buildings; however, those buildings have since been removed from the landscape. Currently there is a wooded community located along the eastern limits of the Subject Lands, which hosts a regulated watercourse that outlets into Lake Ontario. The proposed development of this property includes mixed use hotel and residential condominium development which will generally respect the existing eastern woodlot (**Figure 2, Appendix A**).

This Terms of Reference (TOR) is intended to be submitted to both the Niagara Peninsula Conservation Authority (NPCA), the Town of Lincoln (Town) and the Region of Niagara (Niagara Region) to gain preliminary buy-in to the proposed ecological and arborist scope of work in support of the proposed redevelopment activity.

GEI intends to conduct ecological and arborist inventories in Summer 2023 to characterize the Subject Lands in support of the Scoped EIS and Arborist Report.

This TOR will act as a guidance document for the Scoped EIS and Arborist Report, which will allow reviewing agencies the opportunity to review and buy-in to the proposed scope of work. The TOR provides an outline for the Scoped EIS report in accordance with the Niagara Region's Environmental Impact Study Guidelines (2018) and the NPCA's Interim Environmental Impact Study Guideline (2022). The approved TOR will be included as an appendix in the final Scoped EIS.

1. SCOPED EIS CONTENT

The technical investigations to be conducted as part of the Scoped EIS will focus on the Subject Lands. Impacts to adjacent lands (i.e., within 120 m of the Subject Lands, as identified within the Natural Heritage Reference Manual; MNR 2010) will also be considered.

The Scoped EIS will consider and include the following information:

- Description of the proposal and purpose;
- Description of the surrounding environment;
- Review of relevant legislation, regulations and policies;
- Description of background review;
- Description of field investigations;
- Analysis of natural heritage features;
- Identification and assessment of the potential impacts of the proposal on the environment and the significant features and functions (includes watercourses found on the Subject Lands and features located on adjacent lands);
Identification of positive effects of the proposal such as opportunities for enhancement and/or restoration of significant features, as appropriate;
- Evaluation of the feasibility of alternative mitigation measures or techniques and the ability of such measures to prevent or minimize impacts;
- Recommendation on the suitability of proceeding with the proposal, appropriate mitigation measures, whether changes to the proposal are advised; and
Recommendation for a monitoring plan and contingency plans and funds should the proposal result in any unexpected impacts to natural features, if necessary.

All figures provided within the Scoped EIS will utilize the most up-to-date aerial imagery available. A proposed Table of Contents for the Scoped EIS is provided within **Appendix B**. The remainder of this TOR has been prepared to align with the requirements of the Niagara Region Environmental Impact Study Guidelines (2018)'s list of key components of an EIS and Steps Involved in the Environmental Impact Study Process.

2. ARBORIST REPORT CONTENT

GEI will prepare an Arborist Report and Tree Management Plan that will document the results of the tree inventory, assess impacts to trees, delineate tree ownership and document the number of trees to be removed and/or preserved based on the latest site and/or grading plan. This report will also include recommendations for tree protection and outline any compensation planting and/or cash in-lieu requirements as a result of tree removals. The Arborist Report and Tree Management Plan will follow the outlines listed in Town's Tree Protection and Enhancement Guidelines (2020) and the Region's Tree Preservation Guidelines.

3. PLANNING CONTEXT AND BACKGROUND INFORMATION REVIEW

An assessment of the quality and extent of natural heritage features found on, and adjacent to, the Subject Lands and the potential impacts to these features from the proposed development was undertaken to comply with requirements of the Town, Niagara Region and NPCA, as well as provincial and federal policies. The following documents will be reviewed and included within the Scoped EIS:

- Town of Lincoln Official Plan (2018 Consolidation);
- Niagara Region's Official Plan (2022 Consolidation);
- NPCA Ontario Regulation 155/06 and NPCA Policy Document: Policies for Planning and Development in the Watersheds of the Niagara Peninsula Conservation Authority (2022 Consolidation);

- Provincial Policy Statement (MMAH 2020);
- *Endangered Species Act* (2021 Consolidation of S.O. 2007, c. 6);
- *Fish and Wildlife Conservation Act* (2021 Consolidation of S.O. 1997, c. 41);
- *Migratory Birds Convention Act* (1994); and
- *Fisheries Act* (R.S.C., 1985, c. F-14).

This is not an exhaustive list and additional documents may be reviewed in support of the Scoped EIS.

4. BACKGROUND REVIEW

GEI has reviewed the following background materials which has informed the proposed fieldwork program:

- MNRF's Natural Heritage Information Centre (NHIC) database (2023);
- MNRF's Land Information Ontario (LIO) database (2023);
- Bird Studies Canada's Atlas of the Breeding Birds of Ontario (BSC et al. 2008);
- Ontario Nature's Reptile and Amphibian Atlas (2023);
- Toronto Entomologists' Association's (TEA) Ontario Butterfly and Moth Atlases (2023 a, b);
- Fisheries and Oceans Canada's (DFO) Aquatic Species at Risk (SAR) Map (2023); and
- Online citizen science databases (e.g., eBird and iNaturalist).

Additional background reports that are made available to GEI by reviewing agencies will be reviewed and incorporated into the Scoped EIS, as appropriate.

4.1 Natural Heritage Information Centre

The NHIC (MNRF 2023) was searched for records of provincially significant plants, vegetation communities and wildlife on and in the vicinity of the Subject Lands. The database provides occurrence data by 1 km² area squares, with one square overlapping the Subject Lands (17PH3083). Four species of interest is noted:

- Eastern Meadowlark (*Sturnella magna*) – Threatened in Ontario;
- Least Bittern (*Ixobrychus exilis*). Threatened in Ontario;
- Pumpkin Ash (*Fraxinus profunda*) – S1 (Extremely Rare in Ontario); and
- Tufted Titmouse (*Baeolophus bicolor*) – S3 (Rare to Uncommon in Ontario).

4.2 Land Information Ontario

Based on the MNRF LIO geographic database, two natural features were found along the eastern boundary of the Subject Lands: woodlands and watercourse. Lake Ontario is identified immediately along the northern boundary of the Subject Lands.

No other known natural heritage features were identified within or adjacent to the Subject Lands.

4.3 Ontario Breeding Bird Atlas Results

The Ontario Breeding Bird Atlas (OBBA) contains detailed information on the population and distribution status of Ontario birds (Cadman et al. 2007). The data is presented on 100 km² area squares with one square overlapping the Subject Lands (17PH38). It should be noted that the Subject Lands are a small component of the overall bird atlas square, and therefore it is unlikely that all bird species are found within the Subject Lands. Habitat type, availability and size are all contributing factors in bird species presence and use.

A total of 86 bird species were recorded in atlas square, with the following species of interest noted:

- Species listed as Threatened or Endangered on the SARO List:
 - o Bank Swallow (*Riparia riparia*) – Threatened;
 - o Bobolink (*Dolichonyx oryzivorus*) – Threatened;
 - o Chimney Swift (*Chaetura pelagica*) – Threatened;
 - o Eastern Meadowlark – Threatened; and
 - o Yellow-breasted Chat (*Icteria virens*) - Endangered.
- Species of Conservation Concern (i.e., listed as Special Concern on the SARO List or identified as an S1–S3 species):
 - o Common Moorhen (*Gallinula chloropus*) – S3B;
 - o Eastern Wood-Pewee (*Contopus virens*) – Special Concern;
 - o Purple Martin (*Progne subis*) – S3B;
 - o Tufted Titmouse – S3; and
 - o Wood Thrush (*Hylocichla mustelina*) – Special Concern.

Detailed investigations will confirm whether suitable habitat is present and/or if these species are present within the Subject Lands.

4.4 Ontario Reptile and Amphibian Atlas Results

The Ontario Reptile and Amphibian Atlas contains detailed information on the population and distribution status of Ontario herpetofauna (Ontario Nature 2019). The data is presented on 100 km² area squares with one square overlapping the Subject Lands (17PH38). It should be noted that the Subject Lands are a small component of the overall atlas square, and therefore it is unlikely that all herpetofauna species are found within the Subject Lands. Habitat type, availability and size are all contributing factors in herpetofauna species presence and use.

A total of 15 species were recorded in the atlas square that overlaps with the Subject Lands, of which one is a salamander species, eight are frog and toad species, three are turtle species and three are snake species. Of these species, the following species is of interest were noted:

- Species listed as Threatened or Endangered on the SARO List:
 - o Gray Ratsnake (*Pantherophis spiloides*) – Endangered.
- Species of Conservation Concern (i.e., listed as Special Concern on the SARO List or identified as an S1–S3 species):
 - o Snapping Turtle (*Chelydra serpentina*) – Special Concern; and
 - o Northern Watersnake (*Nerodia sipedon*) – Special Concern.

The last observations of the Gray Ratsnake occurred in 1985. Detailed investigations will confirm whether suitable habitat is present and/or if these species are present within the Subject Lands.

4.5 Ontario Butterfly and Moth Atlases Results

The Ontario Butterfly and Moth Atlases (Toronto Entomologists' Association 2023a, 2023b) contain detailed information on the population and distribution status of butterflies and moths in Ontario. The database provides occurrence data by 10 km x 10 km squares. The Study Area is located within the atlas square (17PH38), which was used to determine a potential butterfly and moth species list for the area. The Study Area is a small component of the overall atlas square, and therefore all the butterfly and moth species listed for this atlas square may not be found within the Study Area. Habitat type, availability, and size are all contributing factors to reptile and amphibian species presence and use.

A total of 17 species including 10 butterfly species and 7 moth species were recorded in atlas square. Of these reported species, one species of interest is noted: Monarch (*Danaus plexippus*), which is listed as Special Concern in Ontario.

Detailed investigations will confirm whether suitable habitat is present and/or if these species are present within the Subject Lands.

4.6 Aquatic SAR Distribution Mapping Results

The DFO Aquatic SAR Map (2023) was reviewed to identify any known occurrences of aquatic SAR, including fish and mussels, in nearby Lake Ontario and the regulated watercourse located within the Subject Lands. One species of note was identified: Shortnose Cisco (*Coregonus reighardi*). This species is listed as Endangered in Ontario and would be located within Lake Ontario.

Detailed investigations will confirm whether suitable habitat is present and/or if these species are present within the Subject Lands.

4.7 Online Citizen Science

4.7.1 eBird

The eBird (2023) database is a large citizen science-based project with a goal to gather bird diversity information in the form of checklists of birds, archive it, and share it to power new data-driven approaches to science, conservation and education. As the observations can be submitted by anyone, and the records are not officially vetted, the data obtained from this tool should not be used as a clear indicator of species presence, and species may be filtered out based on habitat and target survey efforts.

This online database was examined to identify observations made within the Subject Lands. However, no significant bird species were found on the Subject Lands or within 120 meters of its boundaries.

4.7.2 iNaturalist

The iNaturalist (2023) database is a large citizen science-based identification and data collection app. It allows any citizen to submit observations to be reviewed and identified by other naturalists and scientists to help provide accurate species observations. As the observations can be submitted by anyone, and the records are not officially vetted, the data obtained from this tool should not be used as a clear indicator of species presence, and species may be filtered out based on habitat and target survey efforts.

This online database was examined to identify observations made within the Subject Lands that were research grade. However, no significant species were found on the Subject Lands or within 120 meters of its boundaries.

5. BIOPHYSICAL INVENTORY

A scoped ecological field survey program is warranted to support the Scoped EIS. Information from the below noted fieldwork program will be used to determine whether any natural heritage features are found within or immediately adjacent to the Subject Lands. All of the proposed ecological inventories will be completed during the 2023 field season.

Based on GEI's review of aerial imagery, background information and the proposed site plan the following ecological fieldwork program is recommended. It is important to note that the proposed redevelopment application will largely occur within existing developed lands and the eastern natural features (wooded feature and associated watercourse) will largely be retained and buffered.

The following ecological field studies are proposed to support the redevelopment application:

- Scoped botanical inventory, including a review for SAR vegetation;
- Delineate vegetation communities by Ecological Land Classification (ELC) unit;
- General terrestrial habitat review;
- Characterize existing surface drainage features in accordance with Headwater Drainage Feature Assessment Guidelines (2014);
- Aquatic assessment within the regulated watercourse to understand whether fish habitat is present; and
- Tree inventory.

As previously noted, the buildings that previously occupied the Subject Lands have since been removed from the landscape. It is GEI's understanding that no site alteration will occur within regulated watercourse and its associated valleyland, except where a potential SWM outlet is proposed. If determined to be necessary following detailed engineering review, the location of the outfall will be explored through the Scoped EIS and Arborist Report. As shown within the concept plan (**Figure 2, Appendix A**), these features will be protected in-place and enhanced (through plantings of native buffer zones). Since no significant alteration is proposed within the regulated watercourse corridor, no targeted wildlife surveys are proposed.

No fish community sampling is warranted within regulated watercourse. Instead, GEI will complete a data request NPCA to understand the fish community within the vicinity of the Subject Lands. This fisheries data coupled within the aquatic assessment will be used to inform the Scoped EIS.

Should any species be incidentally observed, they will be recorded and provided within the Master Wildlife Table. All species identified will include federal, provincial and local status rankings.

Survey methodologies are outlined below.

5.1 Flora Assessment

One botanical inventory and ELC survey will be completed during the summer on the Subject Lands. Vegetation communities within the Subject Lands will be delineated through the review of aerial imagery and ground truthed in the field. A botanical inventory list will be compiled to understand the flora present within the Subject Lands. Flora nomenclature will be based on the Ontario Plant List (Newmaster et al. 2012) with updates from the NHIC database (2023). The ELC survey will follow the ELC for Southern Ontario Protocol (Lee et al. 1998). Feature limits will be defined through aerial interpretation and ground-truthing. Observations of rare, threatened or endangered species will be documented and mapped during the field investigations.

Should any Butternut (*Juglans cinerea*) be identified within the Subject Lands, a Butternut Health Assessment will be completed by a certified Butternut Health Assessor.

5.2 Terrestrial Habitat Assessment

A general wildlife screen will be completed throughout the property to determine whether any suitable terrestrial habitat is present. Since the buildings have been removed from the landscape, it is unlikely that there is suitable habitat for terrestrial species outside of the eastern wooded feature. If potentially suitable habitat for other terrestrial species (e.g., amphibians) is identified within the proposed development footprint, targeted wildlife surveys will be completed.

5.3 Aquatic Assessment

GEI will complete a desktop review to identify locations of potential headwater drainage features within the tablelands of the Subject Lands using available LiDAR data. This mapping exercise will help determine where potential flow paths may be based on relative topographic relief. The presence of features will be confirmed during a site investigation. Headwater drainage features will be classified in accordance with Toronto and Region Conservation Authority and Credit Valley Conservation's Headwater Drainage Feature Evaluation Guideline (2014).

In addition to reviewing for potential headwater drainage features, a general aquatic assessment will be completed within regulated watercourse. The aquatic habitat assessment will generally follow the Ontario Stream Assessment Protocol (Version 10; 2017); however, the assessment will be along the entire watercourse within the Subject Lands. No targeted habitat mapping will be completed; rather, the assessment is meant to understand stream characteristics such as stream morphology (e.g., riffles, runs, pools), channel bed and bank substrate, in-stream cover (e.g., woody debris, undercut banks), bank stability and in-stream and riparian vegetation communities to determine the overall fish habitat available within the system, as well as the suitability of habitat for providing a range of life cycle functions for the fish community. Any fish noted during the assessment will be documented.

5.4 Tree Inventory

A tree inventory will be conducted in the Summer. Any wooded features (including hedgerow features) will be assessed during the tree inventory. As per the Town's Tree Protection and Enhancement Policy and Site Alteration By-law No. 2020-64 and the Niagara Region Tree Preservation Guideline (2020), all trees measuring 10 cm diameter at breast height (DBH) or greater must be included in the inventory. Each tree will be mapped using a sub-meter capable device and will have the following information recorded: species, DBH, biological and structural

health. Each tree will also be assigned a unique identification number and tagged. Trees adjacent to the Subject Lands (i.e., within 6m) will be remotely assessed from the property boundary, where possible, but will not be tagged. Any observations of rare, threatened or endangered plant species (e.g., Butternut) will be documented and mapped.

6. BIOPHYSICAL ANALYSIS

Eight types of significant natural heritage features are defined in the PPS (MMAH 2020), as follows:

- Significant wetlands;
- Significant coastal wetlands;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Fish habitat;
- Habitat of endangered and threatened species; and
- Significant areas of natural and scientific interest.

All eight types of significant natural heritage feature types will be evaluated following guidance provided within the relevant Official Plans, and/or the NHRM. SWH will be assessed using the Significant Wildlife Habitat Technical Guide (MNR 2000) and the SWH Eco-Region Criterion Schedule 7E (MNRF 2015). All four general types of SWH (seasonal concentration areas, rare or specialized habitats, habitat for species of conservation concern, and animal movement corridors) will be evaluated.

In addition, the presence of natural features be explored in accordance with Town and Region OPs. The Scoped EIS will also address whether any NPCA regulated features (watercourses, wetlands, shorelines or other hazardous lands) are present within the Subject Lands.

A constraints analysis will be completed to inform the development limit associated with natural heritage features on the Subject Lands. As part of this constraints analysis, a buffer assessment will be completed, and enhancement areas identified to protect and enhance natural heritage features.

SAR and their habitats are considered provincially sensitive information. Due to the sensitive nature of this information, if required, all correspondence and precise location-related information will remain with the Ministry of Environment, Conservation and Parks (MECP). If required, all SAR information will be disclosed to the MECP through their Information Gathering Form, or a similar process upon completion of the Scoped EIS prior to site alteration/development.

7. IMPACT ASSESSMENT

The Scoped EIS will present and discuss potential impacts to natural heritage features and associated functions within the Subject Lands. Where available, engineering reports (e.g., Functional Servicing Report) will be incorporated into the impact assessment to assess potential impacts to the Subject Lands.

7.1 Alternative Assessment

Approaches to identify and assess alternatives to avoid and minimize impacts will be outlined following the mitigation hierarchy (first step to avoid creating impacts to natural heritage systems).

7.2 Impact Assessment

An impact assessment will consider the direct, indirect (including induced) and cumulative impacts resulting from the proposed development.

The impact assessment will be informed from geotechnical and stormwater studies (and other available documents) for a comprehensive understanding of the potential impacts to the site features. Secondary sources will be consulted, and methodologies used to determine impacts will be explained to support the assessment of impacts to natural areas.

7.3 Mitigation

Mitigation measures that effectively address predicted impacts resulting from the proposed development will be provided in this section including an analysis of buffers and setbacks relevant to the potential impacts. Recommendations for enhancement and restoration will also be considered. The Scoped EIS will identify planning, design and construction practices that are recommended to maintain, and where possible, improve or restore the health, diversity and size of natural heritage features on and adjacent to the Subject Lands. References will be made to the Region's Tree Preservation Guidelines (2020) and NPCA's Policy Document (2022) for any proposed compensation of impacts that cannot be mitigated or avoided, as appropriate.

7.4 Monitoring Program

If a monitoring program is required, one will be developed and included in the Scoped EIS. If a monitoring program is not required, rationale will be provided. Monitoring plans will be designed to measure the impacts of development on the natural features over time, including construction and post-construction monitoring. Adaptive management opportunities will be explored should unanticipated negative impacts be identified during construction and post-construction monitoring.

8. PROPOSED TIMELINE

Below is the proposed timeline for the Scoped EIS and Arborist Report.

Time Period	Key Activities
Summer 2023	Conduct Ecological Field Program
Fall 2023	Prepare Scoped EIS and Arborist Report

9. CONCLUSION

We trust that the above information and proposed Scoped EIS and Arborist Report TOR will be met with your approval. Should you have any questions or comments, please do not hesitate to contact the undersigned.

Yours truly,

GEI Consultants

A handwritten signature in black ink that reads "Olivia Robinson".

Olivia Robinson
Project Manager
647-988-2849
orobinson@geiconsultants.com

A handwritten signature in black ink that appears to read "Sean Male".

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APPENDICES (2)

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Appendix A

Figures



NOTES:
 1. Coordinate System: NAD 1983 UTM Zone 17N.
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2023.

- Legend**
- Subject Lands
 - Highway
 - Road
 - Watercourse
 - Waterbody
 - Wooded Area

4933 Victoria Avenue North, Lincoln
 Court Holdings Ltd.

Figure 1
 Location of Subject Lands

0 100 m
 1:10,000





NOTES:
 1. Coordinate System: NAD 1983 UTM Zone 17N.
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2023.
 3. Orthoimagery © First Base Solutions, 2023. Imagery taken in 2018.

Legend

- Subject Lands
- Concept Plan
- Watercourse
- Waterbody

Project 2302940

4933 Victoria Avenue North, Lincoln
 Court Holdings Ltd.

Figure 2 Concept Plan

0 20 m
 1:1,200



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Sample EIS Table of Contents

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Tables



Table 1: Ecological Landscape Characterization (ELC) Community Descriptions

ELC TYPE	COMMUNITY DESCRIPTION	S-RANK (NHIC 2022)
CULTURAL		
Cultural Meadow		
CUM1-1 Dry-Moist Old Field Meadow	- This community lacks well defined canopy and understory layers and is dense in ground cover vegetation. Species commonly included Common Burdock (<i>Arctium minus</i>), White Vervain (<i>Verbena urticifolia</i>), Yellow Foxtail (<i>Setaria pumila</i>), Orchard Grass (<i>Dactylus glomerata</i>), Tall Goldenrod (<i>Solidago altissima</i>), Wild Chicory (<i>Cichorium intybus</i>), Canada Thistle (<i>Cirsium arvense</i>) and English Plantain (<i>Plantago lanceolata</i>). - Evidence of disturbance and human influence including metal fencing and waste throughout this community.	S5
Cultural Woodland		
CUW1-3* Black Walnut Mixed Cultural Woodland	- This woodland community had a relatively low canopy cover and shows evidence of human influence including plastic, metal and tire scraps throughout with some understory areas mowed. - Mid-age canopy consisting primarily of Black Walnut (<i>Juglans nigra</i>). Other mixed woody species include Manitoba Maple (<i>Acer negundo</i>), Green Ash (<i>Fraxinus pennsylvanica</i>; many of which are dying from Emerald Ash Borer), Crack Willow (<i>Salix x fragilis</i>), Horsechestnut (<i>Aesculus hippocastanum</i>) and Norway Maple (<i>Acer platanoides</i>). - Moderate vegetation cover in the understory includes Riverbank Grape (<i>Vitis riparia</i>), Multiflora Rose (<i>Rosa multiflora</i>) and Thicker Creeper (<i>Parthenocissus inserta</i>). - Ground cover vegetation commonly included Garlic Mustard (<i>Alliaria petiolata</i>), Poison Ivy (<i>Toxicodendron radicans</i>) and Eastern Black Nightshade (<i>Solanum emulans</i>).	N/A
BEACH/BAR		
Open Beach		
BBO1-4* Gravel Open Beach	- This community is sparse in vegetation and located along the gravel shoreline of Lake Ontario. - Species infrequently observed include Black Locust (<i>Robinia pseudoacacia</i>) and Manitoba Maple (<i>Acer negundo</i>) saplings, Riverbank Grape (<i>Vitis riparia</i>), Spotted Lady's-Thumb (<i>Persicaria maculosa</i>), Devil's Beggar Ticks (<i>Bidens frondosa</i>), Purple Loosestrife (<i>Lythrum salicaria</i>) and Rough Cocklebur (<i>Xanthium strumarium</i>).	N/A

* Vegetation community codes marked with an asterisk are additional to those included in the original 1998 version of the ELC manual.

		LOCAL / REGIONAL STATUS														
		ORDER	FAMILY	LATIN NAME	COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	OWES WETLAND SPECIES	WEEDINESS INDEX	INVASIVE EXOTIC RANK (Urban Forest Associates 2002)	PROVINCIAL STATUS (S-RANK)	GLOBAL STATUS (G-RANK)	SARO (MECP)	SARA Schedule 1	NIAGARA (Oldham 2010)	AUTHORITY
29	x	DICOTYLEDONS	Amaranthaceae	Amaranthus retroflexus	Redroot Amaranth		3		-1		SNA	GS			IC	L
50	x	DICOTYLEDONS	Amaranthaceae	Chenopodium album	Common Lamb's-Quarters		3		-1		SNA	GS			IC	L
87	x	DICOTYLEDONS	Anacardiaceae	Rhus typhina	Staghorn Sumac	1	3				SS	GS			C	L
89	x	DICOTYLEDONS	Anacardiaceae	Toxicodendron radicans var. radicans	Eastern Poison Ivy	2	0	T			SS	GST5			C	(L) Kuntze
113	x	DICOTYLEDONS	Apiaceae	Daucus carota	Wild Carrot		5		-2		SNA	GNR			IC	L
147	x	DICOTYLEDONS	Apocynaceae	Apocynum androsaemifolium	Spreading Dogbane	3	5				SS	GS			C	L
159	x	DICOTYLEDONS	Apocynaceae	Asclepias syriaca	Common Milkweed	0	5				SS	GS			C	L
192	x	DICOTYLEDONS	Asteraceae	Ambrosia artemisiifolia	Common Ragweed	0	3				SS	GS			C	L
215	x	DICOTYLEDONS	Asteraceae	Arctium minus	Common Burdock		3		-2		SNA	GNR			IC	(Hill) Bernh.
226	x	DICOTYLEDONS	Asteraceae	Artemisia biennis	Biennial Wormwood		-3		-1		SNA	GS			IU	Willd.
236	x	DICOTYLEDONS	Asteraceae	Artemisia vulgaris	Common Wormwood		5		-1	P	SNA	GU			IU	L
245	x	DICOTYLEDONS	Asteraceae	Bidens frondosa	Devil's Beggarticks	3	-3	I			SS	GS			C	L
276	x	DICOTYLEDONS	Asteraceae	Cichorium intybus	Wild Chicory		5		-1		SNA	GNR			IC	L
277	x	DICOTYLEDONS	Asteraceae	Cirsium arvense	Canada Thistle		3		-1	1	SNA	GS			IC	(L) Scop.
285	x	DICOTYLEDONS	Asteraceae	Cirsium vulgare	Bull Thistle		3		-1		SNA	GNR			IC	(Savi) Tenore
308	x	DICOTYLEDONS	Asteraceae	Erigeron annuus	Annual Fleabane	0	3				SS	GS			C	(L) Pers.
309	x	DICOTYLEDONS	Asteraceae	Erigeron canadensis	Canada Horseweed	0	3				SS	GS			C	(L)
393	x	DICOTYLEDONS	Asteraceae	Lapsana communis	Common Nigellewort		3		-2	P	SNA	GNR			IC	L
407	x	DICOTYLEDONS	Asteraceae	Matricaria discolor	Pineappleweed		3				SNA	GS			IR	de Candolle
432	x	DICOTYLEDONS	Asteraceae	Picris hieracioides	Hawkweed Ontongue		5		-1		SNA	GS			IU	L
456	x	DICOTYLEDONS	Asteraceae	Senecio vulgaris	Common Ragwort		5		-1		SNA	GNR			IU	L
462	x	DICOTYLEDONS	Asteraceae	Solidago altissima var. altissima	Tall Goldenrod	1	3				SS	GS			C	L
468	x	DICOTYLEDONS	Asteraceae	Solidago canadensis	Canada Goldenrod	1	3				SS	GS			C	L
505	x	DICOTYLEDONS	Asteraceae	Sonchus oleraceus ssp. arvensis	Field Sow-Thistle		3				SNA	GNR			IC	L
530	x	DICOTYLEDONS	Asteraceae	Symphoricarpon lateriflorum var. lateriflorum	Calico Aster	3	0	T			SS	GST5			C	(L) Á. & D. Löve
571	x	DICOTYLEDONS	Asteraceae	Xanthium strumarium	Rough Cocklebur	2	0	T			SS	GS			C	(L) Á. & D. Löve
572	x	DICOTYLEDONS	Balsaminaceae	Impatiens capensis	Spotted Jewelweed	4	-3	I			SS	GS			C	Meerburgh
574	x	DICOTYLEDONS	Balsaminaceae	Impatiens pallida	Pale Jewelweed	7	-3	T			S4	GS			U	Nuttall
658	x	DICOTYLEDONS	Brassicaceae	Alliaria petiolata	Garlic Mustard		0		-3	1	SNA	GNR			IC	(M. Bieb.) Cavara & Grande
731	x	DICOTYLEDONS	Brassicaceae	Hesperis matronalis	Dame's Rocket		3		-3	1	SNA	G4G5			IC	L
770	x	DICOTYLEDONS	Brassicaceae	Thlaspi arvense	Field Pennycress		5		-1		SNA	GNR			IC	L
805	x	DICOTYLEDONS	Caprifoliaceae	Dipsacus fullonum	Common Teasel		3		-1	3	SNA	G7T7			IC	L
818	x	DICOTYLEDONS	Caprifoliaceae	Lonicera maackii	Maack's Honeysuckle		3		-2	1	SNA	GNR			IR	(Ruprecht) Herder
997	x	DICOTYLEDONS	Cucurbitaceae	Echinocystis lobata	Wild Cucumber	3	-3	T			SS	GS			C	(Michx.) Torr. & A. Gray
1061	x	DICOTYLEDONS	Euphorbiaceae	Acalypha rhomboides	Common Three-Seed Mercury	0	3				SS	GS			C	Raf.
1165	x	DICOTYLEDONS	Fabaceae	Medicago lupulina	Black Medick		3		-1	4	SNA	GNR			IC	L
1169	x	DICOTYLEDONS	Fabaceae	Mellilotus albus	White Sweet-Clover		3		-3	2	SNA	GS			IC	Medik.
1183	x	DICOTYLEDONS	Fabaceae	Robinia pseudoacacia	Black Locust		3		-3	2	SNA	GS			IC	L
1200	x	DICOTYLEDONS	Fabaceae	Trifolium pratense	Red Clover		3		-2	4	SNA	GNR			IC	L
1202	x	DICOTYLEDONS	Fabaceae	Trifolium repens	White Clover		3		-1	4	SNA	GNR			IC	L
1269	x	DICOTYLEDONS	Geraniaceae	Geranium robertianum	Herb-Robert	2	3		-2		SS	GS			IC	L
1311	x	DICOTYLEDONS	Hypericaceae	Hypericum perforatum ssp. perforatum	Common St. John's-Wort		5		-3	4	SNA	GNR			IC	L
1323	x	DICOTYLEDONS	Juglandaceae	Juglans nigra	Black Walnut	5	3				S47	GS			C	L
1325	x	DICOTYLEDONS	Juglandaceae	Juglans x bixbyi	Burtrnut		3				SNA	GNA				Rehd.
1344	x	DICOTYLEDONS	Lamiaceae	Glechoma hederacea	Ground-Ivy		3		-2	4	SNA	GNR			IC	L
1353	x	DICOTYLEDONS	Lamiaceae	Leonurus cardiaca ssp. cardiaca	Common Motherwort		5		-2		SNA	GNR			IC	L
1354	x	DICOTYLEDONS	Lamiaceae	Lycopus americanus	American Water-Horehound	4	-5	I			SS	GS			C	Muhlenb. ex Bartram
1380	x	DICOTYLEDONS	Lamiaceae	Nepeta cataria	Catnip		3		-2	4	SNA	GNR			IC	L
1385	x	DICOTYLEDONS	Lamiaceae	Prunella vulgaris ssp. vulgaris	Common Self-Heal		0		-1		SNA	GSTU			C	L
1399	x	DICOTYLEDONS	Lamiaceae	Scutellaria lateriflora	Mad-Dog Skullcap	5	-5	I			SS	GS			C	L
1447	x	DICOTYLEDONS	Lythraceae	Lythrum salicaria	Purple Loosestrife		-5	I			1	SNA	GS		IC	L
1469	x	DICOTYLEDONS	Malvaceae	Tilia americana	Basswood	4	3				SS	GS			C	L
1483	x	DICOTYLEDONS	Moraceae	Morus alba	White Mulberry		0		-3	1	SNA	GNR			IC	L
1502	x	DICOTYLEDONS	Oleaceae	Fraxinus americana	White Ash	4	3				S4	G4			C	L
1505	x	DICOTYLEDONS	Oleaceae	Fraxinus pennsylvanica	Red Ash	3	-3	T			S4	G4			C	Marshall
1520	x	DICOTYLEDONS	Onagraceae	Circaea canadensis ssp. canadensis	Canada Enchanter's Nightshade	2	3				SS	GST5			C	(L) Hill
1595	x	DICOTYLEDONS	Oxalidaceae	Oxalis stricta	European Wood-Sorrel		3				SNA	GS			C	L
1601	x	DICOTYLEDONS	Papaveraceae	Chelidonium majus	Greater Celandine		5		-3		SNA	GNR			IC	L
1613	x	DICOTYLEDONS	Plantaginaceae	Digitalis grandiflora	Large Yellow Foxglove		3		-1		SNA	GNR			IR	Miller
1660	x	DICOTYLEDONS	Plantaginaceae	Plantago lanceolata	English Plantain		3		-1		SNA	GS			IC	L
1661	x	DICOTYLEDONS	Plantaginaceae	Plantago major	Common Plantain		3		-1		SNA	GS			IC	L
1713	x	DICOTYLEDONS	Polygonaceae	Fallopia convolvulus	Eurasian Black Bindweed		3		-1		SNA	GNR			IU	(L) Á. Löve
1727	x	DICOTYLEDONS	Polygonaceae	Persicaria maculosa	Spotted Lady's-Thumb		-3	T			SNA	G3G5			IC	Gray
1737	x	DICOTYLEDONS	Polygonaceae	Polygonum aviculare ssp. aviculare	Prostrate Knotweed		3		-1		SNA	GSTNR			IU	L
1754	x	DICOTYLEDONS	Polygonaceae	Rumex crispus	Curled Dock		0	T	-2		SNA	GNR			IC	L
1987	x	DICOTYLEDONS	Rosaceae	Fragaria virginiana	Wild Strawberry	2	3				SS	GS			C	Miller
1991	x	DICOTYLEDONS	Rosaceae	Geum canadense	White Avena	3	0	T			SS	GS			C	Jacquin
2033	x	DICOTYLEDONS	Rosaceae	Potentilla recta	Sulphur Cinquefoil		3		-2		SNA	GNR			IC	L
2059	x	DICOTYLEDONS	Rosaceae	Prunus virginiana var. virginiana	Chokecherry	2	0				SS	GST5			C	L
2073	x	DICOTYLEDONS	Rosaceae	Rosa multiflora	Multiflora Rose		3		-3	1	SNA	GNR			IC	Thunberg
2095	x	DICOTYLEDONS	Rosaceae	Rubus occidentalis	Black Raspberry	2	5				SS	GS			C	L
2218	x	DICOTYLEDONS	Salicaceae	Salix x fragilis	Hybrid Crack Willow		0	T	-3	3	SNA	GNA			HYB	L
2228	x	DICOTYLEDONS	Sapindaceae	Acer negundo	Manitoba Maple	0	0				SS	GS			C	L
2231	x	DICOTYLEDONS	Sapindaceae	Acer platanoides	Norway Maple		5		-3	2	SNA	GNR			IC	L
2232	x	DICOTYLEDONS	Sapindaceae	Acer pseudoplatanus	Sycamore Maple		5		-1	2	SNA	GNR			IC	L
2240	x	DICOTYLEDONS	Sapindaceae	Aesculus hippocastanum	Horse Chestnut		5		-1	3	SNA	GNR			IU	L
2265	x	DICOTYLEDONS	Scrophulariaceae	Verbascum blattaria	Moth Mullein		3		-1		SNA	GNR			IU	L
2269	x	DICOTYLEDONS	Scrophulariaceae	Verbascum thapsus ssp. thapsus	Common Mullein		5		-2		SNA	GNR			IC	L
2292	x	DICOTYLEDONS	Solanaceae	Solanum dulcamara	Bittersweet Nightshade		0	T	-2	3	SNA	GNR			IC	L
2293	x	DICOTYLEDONS	Solanaceae	Solanum emulans	Eastern Black Nightshade	1	3				SS	GS			U	Rafinesque
2294	x	DICOTYLEDONS	Solanaceae	Solanum lycopersicum	Tomato		5		-1		SNA	GNR			L	
2305	x	DICOTYLEDONS	Ulmaceae	Ulmus americana	White Elm	3	0	T			SS	G4			C	L
2311	x	DICOTYLEDONS	Ulmaceae	Ulmus rubra	Slippery Elm	6	0				SS	GS			C	Muhlenberg
2318	x	DICOTYLEDONS	Urticaceae	Urtica dioica ssp. dioica	European Stinging Nettle		0		-1	3	SNA	GST5?			C	L
2323	x	DICOTYLEDONS	Verbenaceae	Verbena hastata	Blue Vervain	4	-3	I			SS	GS			C	L
2327	x	DICOTYLEDONS	Verbenaceae	Verbena officinalis	White Vervain	4	0	T			SS	GS			C	L
2373	x	DICOTYLEDONS	Vitaceae	Parthenocissus vitacea	Thicket Creeper	4	3				SS	GS			C	(Knerr) Hitchcock
2376	x	DICOTYLEDONS	Vitaceae	Vitis riparia	Riverbank Grape	0	0				SS	GS			C	Michaux
2382	x	GYMNOSPERMS	Cupressaceae	Juniperus virginiana var. virginiana	Eastern Red Cedar	4	3				SS	GST5			C	L
2383	x	GYMNOSPERMS	Cupressaceae	Thuja occidentalis	Eastern White Cedar	4	-3	T			SS	GS			U	L

2	x	ORDER	FAMILY	LATIN NAME	COMMON NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	OWES WETLAND SPECIES	WEEDINESS INDEX	INVASIVE EXOTIC RANK (Urban Forest Associates 2002)	PROVINCIAL STATUS (S-RANK)	GLOBAL STATUS (G-RANK)	SARO (MECP)	SARA Schedule 1	NIAGARA (Oldham 2010)	AUTHORITY
2387	x	GYMNOSPERMS	Pinaceae	Picea abies	Norway Spruce		5		-1		SNA	GS			IC	(L.) Karsten
2398	x	GYMNOSPERMS	Pinaceae	Pinus sylvestris	Scots Pine		3		-3	2	SNA	GNR			IC	L.
3088	x	MONOCOTYLEDONS	Poaceae	Dactylis glomerata	Orchard Grass		3		-1	3	SNA	GNR			IC	L.
3114	x	MONOCOTYLEDONS	Poaceae	Digitaria ischaemum	Smooth Crabgrass		3		-1		SNA	GNR			IU	(Schreb.) Muhlenberg
3119	x	MONOCOTYLEDONS	Poaceae	Echinochloa crus-galli	Large Barnyard Grass		-3	T	-1		SNA	GNR			IC	(L.) Palisot de Beauvois
3133	x	MONOCOTYLEDONS	Poaceae	Elymus repens	Quackgrass		3		-3	3	SNA	GNR			IC	(L.) Gould
3187	x	MONOCOTYLEDONS	Poaceae	Leersia oryzoides	Rice Cutgrass	3	-5	I			SS	GS			C	(L.) Swartz
3221	x	MONOCOTYLEDONS	Poaceae	Panicum capillare ssp. capillare	Common Panicgrass	0	0				SS	GS			C	L.
3222	x	MONOCOTYLEDONS	Poaceae	Panicum dichotomiflorum ssp. dichotom	Fall Panicgrass		-3		-1		SNA	GS			IU	Michaux
3252	x	MONOCOTYLEDONS	Poaceae	Poa compressa	Canada Bluegrass		3				SNA	GNR			IC	L.
3257	x	MONOCOTYLEDONS	Poaceae	Poa pratensis	Kentucky Bluegrass	0	3			2	SS	GS			IC	L.
3283	x	MONOCOTYLEDONS	Poaceae	Setaria pumila ssp. pumila	Yellow Foxtail		0		-1	4	SNA	GNR			IC	(Poir.) Roemer & Schultes
3312	x	MONOCOTYLEDONS	Poaceae	Triticum aestivum	Common Wheat		5		-1		SNA	GNR			L.	
3320	x	MONOCOTYLEDONS	Poaceae	Zea mays ssp. mays	Corn		5		-1		SNA	GNR			IR	L.
3544	x															
3545	x															
3546	x															
3547	x															
3548	x															
3549	x															
3550	x															
3551	x															
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3579	x															
3580	x															
3581	x															

STATISTICS

Species Diversity

Total Number of Species:	104	
Native Species:	41	39%
Exotic Species:	63	61%
S1-S3 Species:	0	0%
S4 Species:	4	10%
S5 Species:	37	90%

Floristic Quality Assessment (FQA)

Mean Co-efficient of Conservation (CC)	2.5	
CC 0 - 3 = lowest sensitivity	28	68%
CC 4 - 6 = moderate sensitivity	12	29%
CC 7 - 8 = high sensitivity	1	2%
CC 9 - 10 = highest sensitivity	0	0%
Floristic Quality Index (FQI)	16	

Weedy & Invasive Species

Mean Weediness Index (Oldham et al):	-1.7	
-1 = low potential invasiveness	33	52%
-2 = moderate potential invasiveness	13	21%
-3 = high potential invasiveness	13	21%
Mean Exotic Rank (Urban Forest Associates):	2	
Category 1	8	13%
Category 2	6	10%
Category 3	7	11%
Category 4	7	11%
Potentially Invasive (P)	2	3%

Wetland Species

Mean Wetness Index	2.0	
Upland	23	22%
Facultative upland	47	45%
Facultative	16	15%
Facultative wetland	12	12%
Obligate wetland	4	4%

Acoustic Monitoring Station	ELC Community						High Frequency Calls								Total
		Hoary Bat	Big Brown Bat	Silver-haired Bat	Unknown Low Frequency	Total Low Frequency Calls	Eastern Red Bat	Eastern Small-footed Myotis	Northern Myotis	Little Brown Myotis	Tri-colored Bat	Unknown Myotis (40K Myotis Characteristics)	Unknown High Frequency	Total High Frequency Calls	
VIC-1	CUW1	138	603	278	234	1253	6	0	0	0	0	0	0	6	1259
Total		138	603	278	234	1253	6	0	0	0	0	0	0	6	1259

Table 4: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
1. SEASONAL CONCENTRATION AREAS					
Waterfowl Stopover and Staging Areas (terrestrial)	Yes – one CUM vegetation community was identified within the Subject Lands.	No - This area does not have historical waterfowl stopover use and is not an area known for sheet water use.	No	N/A	Not Present
Waterfowl Stopover and Staging Areas (aquatic)	No– MAS, SAS, SAM, or SWD vegetation communities are absent within the Subject Lands.	N/A	No	N/A	Not Present
Shorebird Migratory Stopover Areas	Yes - one BBO vegetation community is present within and immediately adjacent to the Subject Lands.	Candidate – Lake Ontario shoreline	No – Candidate habitat is present within the Subject Lands; however, all suitable habitat is located outside of the developable footprint. Targeted field investigations are not warranted.	N/A	Candidate
Raptor Wintering Areas	No – Forested habitat is absent from the Subject Lands.	N/A	No	N/A	Not Present
Bat Hibernacula	No– CCR and CCA vegetation communities are absent within the Subject Lands.	N/A	No	N/A	Not Present
Bat Maternity Colonies	No – FO and SW vegetation communities are absent from the Subject Lands.	N/A	No	N/A	Not Present
Turtle Wintering Areas	Yes– While SW, OA, SA vegetation communities are absent within the Subject Lands, a permanent watercourse (Prudhomme Creek) is present within the property.	Candidate – The portion of Prudhomme Creek within the Subject Lands may provide sufficient hydroperiod and/or wetland depth to provide ice-free overwintering conditions for turtles.	No – Candidate habitat is present within the Subject Lands; however, all suitable habitat is located outside of the developable footprint. Targeted field investigations are not warranted.	N/A	Candidate
Reptile Hibernacula	Yes – Ecosites are present within the Subject Lands.	No - No anthropogenic or natural features provide any subsurface access below the frost line. Watercourse corridor is eroded and would not be expected to support hibernacula.	No	N/A	Not Present

Table 4: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
Colonial Bird Nesting Sites (bank/cliff)	Yes– One CUM vegetation community is present within the Subject Lands.	No - No large exposed eroding banks were visible within the CUM community. This community appeared well vegetated. The exposed banks within Prudhomme Creek were not large enough to attract Cliff Swallows into the CUW community.	No	N/A	Not Present
Colonial Bird Nesting Sites (tree/shrubs)	No– SWM, SWD and FET vegetation communities are absent within the Subject Lands.	N/A	No	N/A	Not Present
Colonial Bird Nesting Sites (ground)	No– Rocky islands or peninsulas are absent within the Subject Lands.	N/A	No	N/A	Not Present
Migratory Butterfly Stopover Areas	No – Forest habitat is not present within or adjacent to the Subject Lands.	N/A	No	N/A	Not Present
Migratory Landbird Stopover Areas	No – FO and SW vegetation communities are not present within or adjacent to the Subject Lands.	No	No	N/A	Not Present
Deer Winter Congregation Areas	No – Mapping from the MNRF LIO database did not depict any deer wintering areas on or adjacent to the Subject Lands.	N/A	No	N/A	Not Present
2. RARE VEGETATION COMMUNITIES OR SPECIALIZED HABITAT FOR WILDLIFE					
2a. Rare Vegetation Communities					
Rare Vegetation Types (cliffs, talus slopes, sand barrens, alvars, old-growth forests, savannahs, and tallgrass prairies)	No – Rare vegetation communities are not found on the Subject Lands.	N/A	No	N/A	Not Present
Other Rare Vegetation Types (S1 to S3 communities)	No – No S1-S3 vegetation communities were found within the Subject Lands.	N/A	No	N/A	Not Present

Table 4: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
2b. Specialized Wildlife Habitat					
Waterfowl Nesting Area	No – Wetland vegetation communities are absent on the Subject Lands.	N/A	No	N/A	Not Present
Bald Eagle and Osprey Habitats	No – FO and SW vegetation communities are absent from the Subject Lands.	N/A	No	N/A	Not Present
Woodland Raptor Nesting Habitat	No – FO, SW and CUP vegetation communities are absent from the Subject Lands.	N/A	No	N/A	Not Present
Turtle Nesting Areas	Yes – One BBO vegetation community is present within and adjacent to the Subject Lands.	Yes – This shoreline is sand and cobble dominated.	No – Candidate habitat is present within the Subject Lands; however, all suitable habitat is located outside of the developable footprint. Targeted field investigations are not warranted.	N/A	Candidate
Seeps and Springs	No – Forested habitats are absent from the Subject Lands.	N/A	No	N/A	Not Present
Woodland Amphibian Breeding Habitats (within or < 120m from woodland)	No – FO and SW vegetation communities are absent from the Subject Lands.	N/A	No	N/A	Not Present
Wetland Amphibian Breeding Habitats (wetland >120m from woodland)	No – Wetland vegetation communities are absent on the Subject Lands	N/A	No	N/A	Not Present
Woodland Area-Sensitive Bird Breeding Habitat	No – FO and SW vegetation communities are absent from the Subject Lands.	N/A	No	N/A	Not Present
3. SPECIES OF CONSERVATION CONCERN					
Marsh Bird Breeding Habitat	Yes – While MAM, SA, FEO vegetation communities are absent on the Subject Lands, one CUM is present within the Subject Lands.	No – The CUM is heavily disturbed and is not expected to support breeding Green Herons.	No	N/A	Not Present

Table 4: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
Open Country Bird Breeding Habitat	Yes – One CUM community is present within the Subject Lands.	No - Minimum size criteria was not met (>30 ha).	No	N/A	Not Present
Shrub/Early Successional Bird Breeding Habitat	Yes – CUW are present within the Subject Lands.	No - Minimum size criteria was not met (>10 ha).	N/A	N/A	Not Present
Terrestrial Crayfish	No – MAM, MAS and SWD vegetation communities are absent on the Subject Lands.	N/A	N/A	N/A	Not Present
Special Concern and Rare Wildlife Species					
(i) Pumpkin Ash (<i>Fraxinus profunda</i>)	N/A	No – Typically associated with swamp or wet habitats. No natural communities were identified within the Subject Lands; rather, only upland cultural communities were identified.	N/A	N/A	Not Present
(ii) Tufted Titmouse (<i>Baeolophus bicolor</i>)	N/A	Yes – Woodlands are present within the Subject Lands.	No – Candidate habitat is present within the Subject Lands; however, all suitable habitat is located outside of the developable footprint. Targeted field investigations are not warranted.	N/A	Candidate
(iii) Common Moorhen (<i>Gallinula chloropus</i>)	N/A	No – Marsh habitat is absent from the Subject Lands.	N/A	N/A	Not Present
(iv) Eastern Wood-Pewee (<i>Contopus virens</i>)	N/A	Yes – Woodlands are present within the Subject Lands.	No – Candidate habitat is present within the Subject Lands; however, all suitable habitat is located outside of the developable footprint. Targeted field investigations are not warranted.	N/A	Candidate
(v) Purple Martin (<i>Progne subis</i>)	N/A	Yes – Woodlands are present within the Subject Lands. Snags were recorded within the Prudhomme Creek corridor.	No – Candidate habitat is present within the Subject Lands; however, all suitable habitat is located outside of the developable footprint. Targeted field investigations are not warranted.	N/A	Candidate
(vi) Wood Thrush (<i>Hylocichla mustelina</i>)	N/A	Yes – Woodlands are present within the Subject Lands.	No – Candidate habitat is present within the Subject Lands; however, all suitable habitat is located outside of the developable footprint. Targeted field investigations are not warranted.	N/A	Candidate

Table 4: Significant Wildlife Habitat Assessment

SIGNIFICANT WILDLIFE HABITAT (SWH) TYPE	ELC ECOSITE(S) PRESENT	HABITAT CRITERIA MET	TARGETED FIELD STUDIES REQUIRED	DEFINING CRITERIA MET (MINIMUM ABUNDANCES AND/OR DIVERSITY REQUIRED TO CONFIRM SWH)	SWH TYPE PRESENT
(vii) Snapping Turtle (<i>Chelydra serpentina</i>)	N/A	Candidate – The portion of Prudhomme Creek within the Subject Lands may provide sufficient hydroperiod and/or wetland depth to provide ice-free overwintering conditions for turtles. Lake Ontario shoreline (BBO) may provide suitable nesting habitat.	No – Candidate habitat is present within the Subject Lands; however, all suitable habitat is located outside of the developable footprint. Targeted field investigations are not warranted.	N/A	Candidate
(viii) Northern Watersnake (<i>Nerodia sipedon</i>)	N/A	No - No anthropogenic or natural features provide any subsurface access below the frost line. Watercourse corridor is eroded and would not be expected to support hibernacula.	No	N/A	Not Present
(ix) Monarch (<i>Danaus plexippus</i>)	N/A	No – Large abundances of Common Milkweed were not documented within the Subject Lands.	No	N/A	Not Present
4. ANIMAL MOVEMENT CORRIDORS					
Amphibian Movement Corridors	N/A	No – No amphibian breeding SWH types are absent from the Subject Lands.	No	N/A	Not Present

Appendix D

Butternut Genetic Results





BUTTERNUT HYBRIDITY TESTING RESULTS

Order number:	NA-SO00312
Report number:	NM-PNE036
Company:	GEI Consultants Ltd.
Contact:	Olivia Robinson
Project:	4933 Victoria Ave (PN 2302940)
BC Project:	4933 Victoria Ave
Sample type:	Plant tissue (leaves and bark, only leaves processed)
Date of report:	25 September 2023
Number of samples:	1

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

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

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

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

OVERVIEW OF YOUR RESULTS

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



FULL REPORT

Sample composition

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

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

All laboratory controls performed as expected.

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

Customer ID	Barcode	Date arrived	trnT-R RFLP	ITS RFLP	15R-8 RFLP	22-5 SCAR	Identification
Butternut 2	NAS-01-H0452	15-Sep-23	<i>J. ailantifolia</i>	<i>J. ailantifolia</i>	Hybrid	Hybrid	Hybrid



METHODS

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

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

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

Markers and corresponding restriction digests:

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

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

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

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

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

END OF REPORT

Report issued by: **Natalia Ivanova**

Report reviewed by: **May Mei**

Contact: team@naturemetrics.co.uk

REFERENCES

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



GLOSSARY

Butternut

Juglans cinerea L. hybrid event between butternut (*J. cinerea* L.) and Japanese Walnut (*J. ailantifolia* Carr.)

Extraction Blank

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

Gel Electrophoresis

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

Inhibitors/inhibition

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

Hybrid

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

IUCN Red List

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

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

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

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

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

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

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

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

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



Negative Control PCR

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

Used to determine if PCR reactions are contaminated.

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

RFLP

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

Positive Control Primers

Used to determine whether the assay is working correctly.

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

SCAR

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

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

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

Taxonomy

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

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

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

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

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

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

Appendix E

Preliminary Woodland Enhancement Plan



October 4, 2024
Project No. 2302940

Submitted to:
4933 Vic Court Globizen LP
310 Limeridge Road West, Suite 6
Hamilton, ON L9C 2V2

**Re: Preliminary Woodland Enhancement Plan
4933 Victoria Ave North
Lincoln, Ontario**

Dear Mr. Sole:

GEI Consultants Canada Ltd. (GEI) is pleased to present 4933 Vic Court Globizen LP with a Preliminary Woodland Enhancement Plan (PWEP) for the property located at 4933 Victoria Avenue North in the Town of Lincoln, Ontario (herein referred to as the Subject Lands; **Figure 1, Appendix A**). The Subject Lands are generally located east of Victoria Avenue and the Millennium Forest Park, north of Laurie Avenue, and south of Lake Ontario.

1. Introduction

In accordance with Policy 3.1.19 of the Niagara Official Plan (NOP), any removal of treed areas within the Regional Natural Environment System (NES) necessitates the preparation of a Woodland Enhancement Plan. This plan is to demonstrate that enhancement in woodland area will be achieved either on the same property, or within a reasonable proximity. This PWEP aligns with Policy 3.1.19 of the NOP and has been prepared based on the most current conceptual site plan provided by 4933 Vic Court Globizen LP.

As the final development boundaries were not yet approved by the reviewing agencies at the time of this plan's preparation, this PWEP serves as a preliminary compensation framework and is to accompany the Environmental Impact Study (EIS). A comprehensive Woodland Enhancement Plan, including a detailed planting list, landscape and/or planting plans, will be finalized during detailed design.

In accordance with Policy 3.1.19 of the NOP, the Woodland Enhancement Plans must include the following criteria;

- If the removals occur within the *Urban Area* that the enhancement also be provided in the *Urban Area*;
- That the enhancement be in the form of a *woodland* and not just the planting of individual trees;
- The goal of the woodland enhancement is to create a native woodland of equal or greater size;
- Landscape ecology principals including size, patch shape, connectivity, edge to area ratio should be considered;

- Responsibilities will be determined for who will undertake the restoration of the woodland and the schedule for implementing the plan;
- The woodland enhancement plan includes a program for the long-term maintenance and management of the restoration woodland until such time as it is deemed to be self-sufficient or when a public agency assumes responsibility for it;
- The plan includes a monitoring plan and periodic reporting to determine if the woodland is progressing toward the approved goal(s) and objectives of the plan.

The PWEP was completed in satisfaction of all criteria as outlined in the NOP.

2. Existing Conditions

A wooded community is currently located along the eastern limits of the Subject Lands. As outlined within the EIS (GEI, 2024a), this community was identified as a Black Walnut-Mixed Cultural Woodland (CUW1-3) and was found to host a watercourse (Prudhomme Creek) that outlets into Lake Ontario. As per the NOP Glossary of Terms, “Other Woodlands” are identified as “all terrestrial treed vegetation communities where percent tree cover is greater than 25%”. By definition, the CUW on site is considered to be an “other woodland”.

The woodland community has a relatively low canopy cover and shows evidence of human influence including plastic, metal and tire scraps throughout with some understory areas mowed. The canopy is mid-age and comprised primarily of Black Walnut (*Juglans nigra*). The community consists of other mixed woody species include Manitoba Maple (*Acer negundo*), Green Ash (*Fraxinus pennsylvanica*), Crack Willow (*Salix x fragilis*), Horsechestnut (*Aesculus hippocastanum*) and Norway Maple (*Acer platanoides*). Moderate vegetation cover in the understory includes Riverbank Grape (*Vitis riparia*), Multiflora Rose (*Rosa multiflora*) and Thicker Creeper (*Parthenocissus inserta*). Ground cover vegetation commonly included Garlic Mustard (*Alliaria petiolata*), Poison Ivy (*Toxicodendron radicans*) and Eastern Black Nightshade (*Solanum emulans*).

Cultural woodland communities are culturally influenced meaning that there is ongoing human interference and interactions with these communities (i.e., they are not naturally occurring communities like Forest or Swamp communities). Historical images from Google Earth reveal considerable changes in the corridor’s size over the past century due to land use changes. Given the development history within the Subject Lands, the historical alteration of Prudhomme Creek, and recent encroachments into the NES, the existing CUW corridor is highly degraded. Previous commercial development of the Subject Lands encroached along the entire edge of the existing woodland resulting in invasive colonization, broken tree limbs, and garbage and debris accumulation. Within the existing CUW, five Category 1 species were observed. Category 1 species are deemed to be the most invasive and can dominate a site to exclude all other species, remaining dominant on the site indefinitely. It was also noted that many Green Ash (*Fraxinus pennsylvanica*) were in poor or dead condition bordering the edge of the cultural woodland community, as a result of the invasive Emerald Ash Borer (*Agrilus planipennis*).

3. Proposed Redevelopment Strategy

The proposed redevelopment concept of this property includes a mixed-use hotel and residential condominium development. As a result of the proposed redevelopment of the Subject Lands, the majority of the woodland will be retained in place; however, minor encroachment (56.8 m² within the dripline) is proposed, which will result in the removal of 44 trees (as discussed within Section 4.2 of the Arborist Report; GEI 2024b). This encroachment area is likely to increase once grading associated with construction of the building is understood in detailed design. It is understood that trees provide a variety of functions including canopy cover, energy conservation, mental health benefits, and wildlife habitat, to the overall community and are integral to minimizing impacts to air pollution and climate change, as well as enhancing biodiversity (PPS 2020 Section 1.1 h, 1.1.3.2 c, 1.8.1 f, g). Hence, compensation for the encroachment is required by the Niagara Region.

As discussed within Section 6.2.1 of the EIS (GEI 2024a), no negative impact to the existing CUW1-3 community is expected as a result of the encroachment given that it is a relatively small area that is proposed for removal and the majority of the community will be retained.

Compensation for the encroachment into the woodland community will occur on an area basis at a minimum of a 1:1 ratio. Specifically, based on the presently understood limits of encroachment into the woodland community, 56.8 m² of woodland habitat will be enhanced. This area for enhancement will increase as required to match the final limits of encroachment established during detailed design as discussed above. Further discussion on the compensation ratio is provided below within **Section 4.1**.

4. Preliminary Woodland Enhancement Plan

GEI is proposing compensation through the enhancement of a 56.8 m² area of Parkland to a Forested vegetation community. The proposed enhancement area is highlighted on **Figure 2 (Appendix A)** and was selected to round-out a portion of the existing Natural Heritage System (NHS). Different configurations of the enhancement area can be reviewed further with reviewing agencies during the detailed design stage.

Given the enhancement area is in the immediate vicinity of the Subject Lands and is located adjacent to the woodland that is proposed for encroachment, this area will provide benefits to the existing Prudhomme Creek corridor. Planting a forested ELC in this location will increase biodiversity within the existing NHS. In accordance with the ELC manual, the forest ELC community will consist of >60% tree cover. The exact ecotype will be determined during detailed design.

GEI has ground-truthed the limit of the CUW1-3 community on the eastern side of Prudhomme Creek. While the parkland area has individual trees, the intention is to further plant this parkland to meet the woodland density requirements to create a forested habitat. Through initial discussions with the Town of Lincoln, it was determined that recreational uses of the parkland was to be maintained; therefore, plantings have been targeted along the existing eastern limit of the CUW1-3. This will increase the width of the existing Prudhomme Creek corridor and also provide an additional physical and visual barrier between the parkland and existing adjacent residential area.

The proposed enhancement area is currently vegetated with isolated trees largely consisting of Black Walnuts. This is consistent with the adjacent CUW1-3 community that currently exists within the Prudhomme Creek corridor. To enhance herbaceous native species diversity and stability the soils within the restoration area, a native seed mix and suitable cover crop are proposed. Consideration of plantings within immediate vicinity of Black Walnut trees have been taken into account, given that Black Walnut roots release juglone, which can inhibit the growth of other plants nearby. Additional discussion surrounding the conceptual planting list is provided below within **Section 4.3**.

4.1. Woodland Compensation Location

According to Section 3.1.19.2 of the NOP, enhancement in woodland areas must be achieved either on the same property, or in a reasonable proximity. As sufficient space is not available on the Subject Lands for compensation measures, compensation will occur within the adjacent lands.

As previously discussed, GEI is proposing that compensation take place within the existing parkland located east adjacent of the Subject Lands (**Figure 2, Appendix A**). The existing parkland did not meet woodland stem density requirements; thus, the proposed enhancement work will plant additional stems to meet the density requirements of the NOP woodland criteria. The western portion of the parkland will be utilized for enhancement compensation measures (in-planting), while the eastern portion of the parkland will not be altered. This ensures that the eastern portion of the parkland allows for pedestrian access to the lake and current community functionality of the parkland is not impacted.

A 1:1 compensation is recommended given that the existing 56.8 m² of woodland habitat that is being encroached upon within the Subject Lands is highly invaded, low quality and highly altered as a result of historical land-uses on the site. A higher compensation ratio is not warranted. Through the enhancement of the existing parkland, additional functional benefits can be incorporated into the design to create a higher quality and more resilient community. Specifically, creation or enhancement of wildlife habitat can be built (e.g., create pollinator habitat, enhance bat roosting opportunities) while increasing the native diversity within the corridor by planting native species.

It is acknowledged that the compensation area will likely increase once grading footprints are understood during detailed design. As shown on **Figure 2 (Appendix A)**, the existing parkland has availability to accommodate a larger compensation area should the grading footprint result in more woodland removal.

The PWEP has considered landscape ecology principles.

4.2. Goal of Woodland Enhancement

The overarching goal of the PWEP is to create a native woodland stand that is equal in size to what is being proposed for encroachment but greater in ecological functionality through an increase in species diversity and wildlife habitat availability, and thus, resiliency. This will be achieved through additional planting of native species within the existing woodland while maintaining the existing native vegetation. This planting will create a healthier naturalized area of woodland within the landscape resulting in an increase in NHS resilience. Incorporation of wildlife enhancements (e.g., pollinator habitat and bat roosting habitat) will be reviewed during detailed design. Currently the availability of these types of habitats are limited or poor quality within the Subject Lands.

The compensation area will feed into the larger ecological landscape, which includes both the Prudhomme Creek corridor and the Lake Ontario Shoreline. This compensation will occur adjacent to the same natural heritage system as the proposed encroachment, enhancing habitat availability for terrestrial species while maintaining connectivity within the system. By expanding and enhancing natural features adjacent to the NHS, the compensation efforts will improve biodiversity, support native species, and mitigate the impacts of development.

GEI has prepared a preliminary plant list including a native seed mix that is thought to be best suited for compensation planting purposes (shown below within **Table 1**). The Preliminary Plant List was assembled by a Senior Vegetation Ecologist and is considered to be well suited for the Black Walnut community that is currently present within the parkland. Species selection has also considered specific moisture, soil and sun requirements. The soil moisture regime was assumed to be “fresh to slightly moist” based on the tree species recorded on site. Some species (e.g., Ash, Elm) have not been selected due to pest and disease concerns that could impact their survivability. Only species listed as Common (C) or Uncommon (U) by Oldham (2010) are included. No species considered to be historic records, rare or introduced (to the Region or to the Province) have been included.

Table 1: Proposed Tree and Shrub List

Scientific Name	Common Name	Status in Niagara Region*
Tree Species		
<i>Pinus strobus</i>	Eastern White Pine	C
<i>Thuja occidentalis</i>	Eastern White Cedar	U
<i>Acer saccharum</i>	Sugar Maple	C
<i>Acer nigrum</i>	Black Maple	U
<i>Carya ovata</i>	Shagbark Hickory	C
<i>Carya cordiformis</i>	Bitternut Hickory	C
<i>Quercus alba</i>	White Oak	C

Scientific Name	Common Name	Status in Niagara Region*
<i>Quercus macrocarpus</i>	Bur Oak	U
<i>Juglans nigra</i>	Black Walnut	C
<i>Platanus occidentalis</i>	Sycamore	U
<i>Liriodendron tulipifera</i>	Tulip Tree	C
<i>Populus deltoides</i>	Eastern Cottonwood	C
<i>Tilia americana</i>	Basswood	C
Shrub Species		
<i>Rubus odoratus</i>	Purple-flowering Raspberry	C
<i>Rubus idaeus strigosus</i>	Red Raspberry	C
<i>Prunus virginiana</i>	Choke Cherry	C
<i>Amelanchier arborea</i>	Downy Serviceberry	C
<i>Amelanchier laevis</i>	Smooth Serviceberry	U
<i>Parthenocissus vitacea</i>	Thicket Creeper	C
<i>Ribes americana</i>	Wild Black Currant	C
<i>Ribes cynosbati</i>	Prickly Currant	C

Scientific Name	Common Name	Status in Niagara Region*
<i>Cornus racemosa</i>	Grey Dogwood	C
<i>Cornus rugosa</i>	Round-leaved Dogwood	C
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood	C
<i>Diervilla lonicera</i>	Northern Bush Honeysuckle	U
<i>Sambucus racemosa</i>	Red Elder	C

*C = Common, U = Uncommon

As per the request of the Town of Lincoln, coniferous trees were incorporated into this plant list. Only two species are included within **Table 1** as they are the only native coniferous species that are not considered locally rare within Niagara Region and that are expected to thrive in the conditions of the site. Discussions with municipalities is recommended during detailed design to determine whether other species (e.g., Eastern Red Cedar and Eastern Hemlock) may be suitable to add to this restoration area. The conifers will act as a visual barrier, obstructing the view of the development for the benefit of local residents. This plant list is preliminary and may be altered depending on comments provided by reviewing agencies. A finalized plant list and native seed mix with associated planting sizes/seeding rates will be provided along with the finalized Woodland Enhancement Plan during detailed design.

The type of planting stock is dependent on the species and their modes of reproduction, as well as practicality. The following plant stock will be considered within the NHS:

- Herbs (forbs, graminoids): seeds, plugs;
- Shrubs: 1-gallon pots, stem cuttings, rootstock cuttings; and
- Trees: seed, bareroot, ball and burlap, whips, potted seedlings.

A cover crop will also be recommended during detailed design and would be mixed with the native seed mix. Consideration of site preparation (e.g., the need for soil amendments) will be reviewed during the detailed design stage. Native plant materials should be sourced from native plant nurseries and seed suppliers within 100 km of the Subject Lands, if possible, to reduce transplant shock. All plant materials will be obtained and installed in accordance with the Canadian Nursery Stock Standard.

4.3. Responsibilities for Restoration

4933 Vic Court Globizen LP assumes all responsibility for the implementation of the compensation measures outlined within the finalized Woodland Enhancement Plan.

4.4. Schedule for Implementation of Restoration Measures

The schedule for the implementation of restoration and compensation measures is to be determined once the development schedule is finalized; however, compensation within the adjacent parkland can occur prior to the encroachment within the existing woodland on the Subject Lands.

4.5. Monitoring

Construction monitoring details are discussed within Section 6.4.1 of the EIS (GEI, 2024a). No baseline monitoring is warranted within the proposed restoration area as the enhancement will occur within an existing parkland that borders the Prudhomme Creek Corridor, which has been characterized by the EIS (GEI 2024a).

A fulsome post-construction performance monitoring program will be prepared during the detailed design stage. It is likely that the post-construction monitoring will be a two to five year monitoring program that will be designed to understand whether the restoration goal has been met. Monitoring should commence one growing season after vegetation or other restoration measures are implemented.

Milestone reporting requirements will also be outlined within the final Woodland Enhancement Plan, which will be prepared during the detailed design stage.

4.6. Natural Heritage System Assumption

It is our understanding that the Town of Lincoln will assume the created NHS. Since the restoration work is also occurring on their land, it is assumed that the Town will continue to be the owners and stewards of the restoration area once monitoring has been completed. This will be confirmed with the Town during the detailed design stage.

The Woodland Enhancement Plan will be designed such that long-term maintenance is not required. Any maintenance would be at the discretion of the Town as it relates to their long-term objectives for this area.

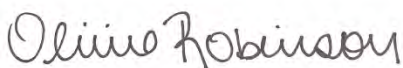
5. Closing

The PWEP has been developed as a part of the planning process for the 4933 Victoria Avenue project located in Lincoln, Ontario. The PWEP has been prepared to support minor encroachment as a result of the proposed redevelopment strategy within the Subject Lands. This document has been prepared to outline the compensation requirements for the restoration area, which aims to maintain and enhance existing natural heritage feature functions, manage invasive species, and provide social benefits. The Woodland Enhancement Plan will be finalized upon detailed design. The Woodland Enhancement Plan will ensure that proposed restoration measures are implemented as per the design and will validate performance standards to demonstrate that the intended compensation trajectories have been achieved.

If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

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Appendices

Appendix A Figures

References and Background Materials

GEI Consultants Canada Ltd. 2024a. Scoped Environmental Impact Study, 4933 Victoria Avenue North, Lincoln, Ontario.

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Appendix A Figures

Figure 1 Location of Subject Lands

Figure 2 Preliminary Woodland Encroachment and Compensation Locations



NOTES:
 1. Coordinate System: NAD 1983 UTM Zone 17N.
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © King's Printer for Ontario, 2024.

- Legend**
- Subject Lands
 - Highway
 - Road
 - Watercourse
 - Waterbody
 - Wooded Area

4933 Victoria Avenue

Figure 1
Location of Subject Lands

0 100 m
1:10,000



Project 2302940



NOTES:

1. Coordinate System: NAD 1983 UTM Zone 17N.
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2024; © Niagara Peninsula Conservation Authority, 2024.
3. Orthoimagery © First Base Solutions, 2024. Imagery taken in 2018.

Legend

- Subject Lands
- Subject Lands + 120 metres
- Concept Plan
- Watercourse (LIO)
- Waterbody (LIO)
- Ecological Land Classification
- Staked Dripline (August 15, 2024)

Woodland Refinements

- Proposed Woodland Enhancement (57 m²)
- Proposed Woodland Encroachment (57 m²)

ELC Legend

- AG, Agricultural
- BB01-4, Gravel Open Beach
- CUM1-1, Mineral Cultural Meadow
- CUW1-3, Black Walnut-Mixed Cultural Woodland
- DIST, Disturbed
- IND, Industrial
- RES, Residential

4933 Victoria Avenue

Figure 2
Preliminary Woodland
Encroachment and Compensation
Locations

0 30 m
1:2,500



Project 2302940