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Appendix B

Natural Environment Report

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Natural Environment Report

Water Street Improvements between Brock Street South and South Blair Street
Municipal Class Environmental Assessment Schedule 'C'

Town of Whitby

60591304

October 2025

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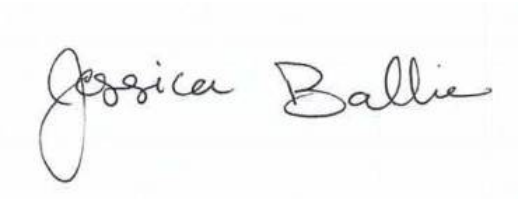
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Quality Information

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1. Introduction

AECOM Canada Ltd. (AECOM) was retained by the Town of Whitby (the Town) to complete a Natural Environment Report (NER), in support of a Schedule 'C' Municipal Class Environmental Assessment (MCEA) being undertaken by the Town to provide improvements to Water Street between Brock Street South and South Blair Street. The Study will identify opportunities to enhance the corridor experience along the Whitby Waterfront, accommodate active transportation and travel needs within the area, and address road alignment and drainage deficiencies.

This Natural Environment Report describes the existing terrestrial environmental conditions based on information collected through background information review and ecological field investigations and identifies significant natural heritage features and areas of environmental concern. It also provides input into potential impacts resulting from the works proposed and makes recommendations for mitigation to assist in minimizing adverse effects. No aquatic field investigations were completed as no online watercourses were identified during the desktop review.

1.1 Study Area

The Study Area includes Water Street between Brock Street South and South Blair Street in the Town of Whitby within the Regional Municipality of Durham. This report provides a summary of the natural heritage features found within the Study Area and a 120 m buffer area (hereafter referred to as "Terrestrial Review Area") to allow for the identification of natural heritage features on adjacent Lands as defined by the Natural Heritage Reference Manual (Ministry of Natural Resources and Forestry [MNRF], 2010). The Study Area and the Terrestrial Review Area are shown in **Figure 1.**





Legend

- Terrestrial Review Area (120m)
- Study Area
- Wooded Area
- Wetland Unevaluated as per Ontario Wetland Evaluation System
- Whitby Harbour PSW Complex
- CLOCA Regulated Areas

0 20 40 80 120 160 200 240 280
Metres

Water Street Improvements between Brock Street South and South Blair Street

Natural Heritage Features

Sep, 2024	1:4,500 * when printed 11"x17"	Datum: NAD 1983 UTM Zone 17N Contain Information licensed under the Open Government License Ontario. CLOCA. MNRF
P#: 60591304		**Figure 1**

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2. Legislative and Policy Context

The Project triggers requirements under, and consideration for, legislation at municipal, provincial and federal jurisdictions. The requirements and considerations for each level of government are outlined in **Table 2-1**.

Table 2-1: Relevant Legislation and Policies

Level of Government	Legislation	Governing Authority	Relevant Information
Federal	*Fisheries Act, 1985* (amended 2019)	Fisheries and Oceans Canada (DFO)	■ On August 28, 2019, the new Fish and Fish Habitat Protection Provisions of the Amended Fisheries Act came into force. Changes to the Act include a return to the policies that were enforced prior to the 2012 amendments, focusing on the following key concepts: o Protecting all fish and fish habitat (i.e., the focus is no longer on only protecting Commercial, Recreational and Aboriginal fisheries); o Restoring the previous prohibition against 'harmful alteration, disruption or destruction of fish habitat'; and, o Restoring a prohibition against causing 'the death of a fish by any other means than fishing'. ■ The Fish and Fish Habitat Protection Program ensures compliance with relevant provisions under the Fisheries Act and Species at Risk Act. If Project proponents are unable to reduce the risk of harmful alteration, disruption, or destruction of fish habitat or death of fish through the implementation of DFO Measures to Protect Fish and Fish Habitat (ECCC, 2023a), including the use of applicable Standards and Codes of Practice (ECCC, 2022), or if a Project does not fall under the exclusion criteria presented on the DFO Projects Near Water website (ECCC, 2023b), those Projects may be subject to a Request for Review by DFO. If death of a fish, or harmful alteration, disruption, or destruction is likely to result from a Project, the proponent will be required to obtain Authorization from DFO. An Authorization includes terms and conditions the proponent must follow to avoid, mitigate, offset, and monitor the impacts to fish and fish habitat resulting from the Project.
Federal	*Migratory Birds Convention Act, 1994* (MBCA) *Migratory Bird Regulations, 2022*	Environment and Climate Change Canada (ECCC)	■ The MBCA is intended to protect migratory birds, their eggs, and their active nests. The Act includes protections for more than 700 species of birds. The MBCA prohibits the possession, destruction, and harm of migratory birds and/or their nests while there is a live bird or a viable egg in it for most migratory birds except for 18 species that have site fidelity and reuse their nests from year to year and receive year-round nest protection whether there are eggs or live birds in there or not.
Federal	*Species At Risk Act, 2002* (SARA)	Environment and Climate Change Canada – Canadian Wildlife Services (ECCC – CWS), DFO	■ The SARA and its associated regulations afford protection to terrestrial species listed in Schedule 1 of the Act when they occur on federal land, land subject to federal approvals, or are also regulated under the MBCA. ■ The federal government has the authority to regulate in relation to fisheries, shipping, and navigation, and jurisdiction over these subject areas applies to all parts of the oceans, lakes, rivers, and streams within the Canadian provinces and territories. As such, SARA regulates any activity that affects a SARA-protected aquatic species, such as fish, shellfish, crustaceans, marine animals, or marine plants. ■ The SARA contains several prohibitions to species listed on Schedule 1 as Endangered or Threatened, including prohibitions on harming an individual Species at Risk (SAR), their residence, or the Critical Habitat of the listed aquatic species and MBCA-protected birds.

Level of Government	Legislation	Governing Authority	Relevant Information
Provincial	*Endangered Species Act, 2007* (ESA)	Ontario Ministry of the Environment, Conservation, and Parks (MECP)	■ Under the ESA, species are listed as Extirpated, Endangered, Threatened, and Special Concern. ■ The ESA prohibits the killing, harming, or harassment of Endangered or Threatened species and the damage or destruction of their habitat. ■ MECP may grant a permit or other authorization for activities that would otherwise not be allowable under the ESA. ■ For the purposes of this report, Special Concern species are considered Species of Conservation Concern (SOCC).
Provincial	*Fish and Wildlife Conservation Act, 1997* (FWCA)	Ontario Ministry of Natural Resources and Forestry (MNRF)	■ The FWCA affords protection for some species of birds, amphibians, reptiles, and mammals in Ontario. Some bird species which are not afforded protection under the MBCA are afforded protection under the FWCA, such as raptors. Nests of these bird species can only be removed if a permit is obtained from the MNRF.
Provincial	*Planning Act, 1990 and Provincial Policy Statement, 2020* (PPS)	Ontario Ministry of Municipal Affairs and Housing (MMAH)	■ The PPS identifies seven types of natural heritage features to be protected: o Significant habitat of Endangered or Threatened species; o Significant wetlands; o Coastal wetlands; o Significant woodlands in Ecoregions 6E and 7E; o Significant valley lands in Ecoregions 6E and 7E; o Significant Wildlife Habitat (SWH), including habitat of SOCC; and, o Significant Areas of Natural and Scientific Interest (ANSI). ■ Policies in the PPS are used to guide decision-making in land use planning. Under the PPS, development and site alteration are prohibited in significant wetlands in Ecoregion 6E and 7E. In addition, development and site alteration are not permitted in or within 120 m of the remaining natural heritage features unless it can be shown that there will be no negative impact or permits or approvals are obtained under other regulations and legislations as appropriate.
Provincial	*Ontario Regulation (O. Reg.)42/06: Central Lake Ontario Conservation Authority Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*	Central Lake Ontario Conservation Authority (CLOCA)	■ Ontario Regulation (O. Reg.) 41/24: Prohibited Activities, Exemptions, and Permits came into effect on April 1, 2024 following amendments to the Conservation Authorities Act, 1990. The new O.Reg 41/24 establishes guidelines for the mapping of regulated areas within conservation authorities' jurisdictions where development could be subject to flooding, erosion, or dynamic beaches, or where interference with wetlands and alterations to shorelines and watercourses might have an adverse effect on those environmental features. This regulation identifies the processes to be followed to obtain exemptions and permits to allow for prohibited activities to occur within these regulated areas. The Terrestrial Review Area falls within the CLOCA's regulation limit.
Municipal	Durham Regional Official Plan (2020)	Region of Durham	■ The Region of Durham established the Greenlands System which outlines policies for natural heritage areas within the region. The Greenlands System includes Major Open Space Areas and Waterfront Areas. Prior to the consideration of any development proposals in the Greenlands System, the proponent shall provide evidence that the proposal is, and has been designed in making every effort to preserve the ecological benefits and biodiversity of the Greenlands System, including groundwater resources, air purification, habitats for plants, fish and wildlife, flood and erosion control, and scenic and recreational values. ■ In the planning and development of the Region of Durham, the natural environment, which includes areas designated as Waterfronts, Major Open Space Areas, key natural

Level of Government	Legislation	Governing Authority	Relevant Information
			heritage features and hydrologic features shall be given paramount consideration in light of their ecological functions and scientific, educational and health values. ■ According to Section 2.3.15 of the Durham Regional Official Plan, development or site alteration is not permitted in key natural heritage and/or hydrologic features, including any associated vegetation protection zone, with the exception of: o Forest, fish and wildlife management; o Conservation and flood or erosion control Projects demonstrated to be necessary in the public interest and after all alternatives have been considered; o Infrastructure, subject to the policies this Plan; o Minor recreational uses such as trails, footbridges and picnic facilities, and existing uses; o Agriculture, in accordance with Policies 2.3.18 and 14.5.4; or, o Aggregate extraction.
Municipal	Durham Regional Woodland Conservation and Management By-Law 30-2020	Region of Durham	■ The Region's Tree Protection by-law outlines the permitting requirements for obtaining a Permit if a tree or trees are to be injured or destroyed within Woodlands in the Region of Durham.
Municipal	Town of Whitby Official Plan (2021)	Town of Whitby	■ The Town's Natural Heritage System is comprised key natural heritage and hydrologic features and areas within the Municipality including any associated vegetation protection zones. These key natural heritage features include wetlands; habitat of endangered species and threatened species; significant woodlands; significant valleylands, including the applicable lands within the Urban River Valleys identified in the Greenbelt Plan; significant wildlife habitat; fish habitat; watercourses with associated riparian corridors, life sciences ANSIs, sand barrens, tallgrass prairies, alvars, and savannahs. Key hydrologic features include permanent and intermittent streams, Lake Ontario (and its littoral zone), seepage areas and springs, kettle lakes, aquifers, recharge areas and wetlands. The Natural Heritage System also includes lands which have been identified and targeted for restoration and enhancement to create linkage areas and connections. ■ Development and site alteration shall not be permitted in key hydrologic features and key natural heritage features, including the associated vegetation protection zone, within the Natural Heritage System except for uses such as: o Conservation, flood or erosion control, where need is demonstrated, and no reasonable alternative exists; o Fish, forest, and wildlife management; o Passive recreational uses such as trails and supporting small-scale structures; o Infrastructure, where need is demonstrated and no reasonable alternative exists; and, o Existing agricultural uses.
Municipal	Town of Whitby Tree Protection By-Law 4640-00	Town of Whitby	■ The Town's Tree Protection by-law outlines the permitting requirements for obtaining a Permit if a tree or trees within public property are to be injured or destroyed.

3. Methods

3.1 Background Information Review

A background information review was completed prior to field investigations to obtain information on known natural heritage features and species records, including rare species (i.e., SAR and SOCC) within the Study Area. Background information was obtained from the following sources:

- MNRF's Natural Heritage Information Centre (NHIC): Make-a-Map Tool (2023a) and MNRF's Land Information Ontario (LIO) GeoHub base (2023b) for:
  - Natural Heritage Features (e.g., Areas of Natural and Scientific Interest (ANSIs), wooded areas, Provincially Significant Wetlands (PSWs) / Locally Significant Wetlands (LSWs) / unevaluated wetlands, provincial parks);
  - Aquatic Resource Areas;
  - Dam Inventory,
  - Watershed mapping;
  - Wildlife habitats;
  - Aerial Photography; and,
  - NHIC provincially tracked species.
- Wildlife Atlases and other online databases:
  - Ontario Breeding Bird Atlas (OBBA; Bird Studies Canada [BSC] et al., 2006);
  - Important Bird Areas (BSC, 2023);
  - Ontario Reptile and Amphibian Atlas (ORAA; Ontario Nature, 2019);
  - Ontario Butterfly Atlas (OBA; Toronto Entomologists' Association [TEA], 2023);
  - Bat Conservation International (BCI) Species Profile and Range Maps (2023);
  - Fisheries and Oceans Canada (DFO) SAR map (DFO, 2023);
  - eBird (2023);
  - iNaturalist (2023)
  - Ontario Ministry of Agriculture, Food and Rural Affairs (MAFRA) Ag Maps (MAFRA, 2023);
  - MNRF Fish ON-Line (MNRF, 2023c); and,
  - CLOCA's Open Data – Ecological Land Classification and Land Use (2023).
- Planning Documents and Guidelines:
  - *Natural Heritage Reference Manual* (MNRF, 2010);
  - Species at Risk Public Registry (ECCC, 2023c);
  - Species at Risk in Ontario (SARO) List (MECP, 2018);
  - *Significant Wildlife Habitat Technical Guide* (MNRF, 2000);
  - *Significant Wildlife Habitat Criteria Schedules For Ecoregion 6E* (MNRF, 2015);
  - *Region of Durham Official Plan* (Region of Durham, 2020); and,
  - *Town of Whitby Official Plan (*Town of Whitby, 2021).
- Reports:
  - *Whitby Water Supply Plant EA Addendum: Natural Environment Features* (AECOM, 2017);
  - *Environmental Impact Study Water Supply Plant Expansion* (Beacon Environmental Limited, 2021);
  - *Provincially Significant Whitby Harbour Wetland Complex Ontario Wetland Evaluation System (OWES) Record* (MNRF, 2007);
  - *Wildlife Corridor Protection and Enhancement Plan* (CLOCA, 2022)*;* and,
  - *Lake Ontario Shoreline Management Plan* (Zuzek Inc., 2020).

3.1.1 Agency Consultation

In addition to the desktop review, data requests were sent to relevant agencies to obtain and confirm natural heritage data that was not publicly available from online sources**.** Information requests were submitted to the MNRF, MECP and CLOCA on July 17, 2023.**Table 3-1** below summarizes agency consultation completed for this Project and the information received from each agency to date.

Table 3-1: Summary of Agencies Correspondence

Agency	Agency Response Date	Information Received / Comments
Central Lake Ontario Conservation Authority	July 18, 2022	• Requested an that AECOM complete a Data Request Form. No natural heritage data received to date.
Central Lake Ontario Conservation Authority	September 6, 2023	• CLOCA provided shapefiles for the Regulatory Floodline and their Wildlife Habitat Network.
Ministry of Natural Resources and Forestry	July 28, 2023	• Provided the *Whitby Harbour Provincially Significant Wetland Complex Ontario Wetland Evaluation System (OWES) Record* (MNRF, 2007). • Recommended looking for additional wetlands within Terrestrial Review Area that were not previously mapped.
Ministry of Conservation, Environment and Parks	N/A	• No data received to date

3.2 Field Investigations

Field investigations were conducted to supplement available background information as described in **Section 3.1** above. A representative photographic log is provided in **Appendix A**. The following sections document the detailed methods of these investigations.

3.2.1 Ecological Land Classification

Vegetation Community Classification and Delineation

AECOM conducted Ecological Land Classification (ELC) assessments and a floral inventory of sites within the Study Area on August 1, 2023. Vegetation communities within the Terrestrial Review Area were classified using *the Ecological Land Classification for Southern Ontario: First Approximation and its Application* (1998 ELC Protocol; Lee *et al.*, 1998), which provides a standard for comparing similar vegetation communities across Ontario. This protocol classifies vegetation communities by completing a multilayer (canopy, sub-canopy, ground cover) vegetation inventory. The *Southern Ontario Ecological Land Classification – Vegetation Type List* (Lee, 2008) was also used where there was no suitable code for a specific vegetation community in the 1998 ELC Protocol.

Vegetation communities in the Terrestrial Review Area were previously delineated in support of the Whitby Water Supply Plant Expansion EA (Beacon Environmental, 2021). In 2014 and 2021, ELC communities were delineated by Beacon Environmental (2021) on the north side of Water Street, west of Blair Street. ELC communities were also delineated by CLOCA within the Terrestrial Review Area (CLOCA, 2023). AECOM completed ELC assessments to confirm and refine vegetation communities that were previously delineated in the Terrestrial Review Area. Where vegetation community data were missing and accessibility was limited during field investigations, aerial imagery was used to classify vegetation to the Community Series level in accordance with MNRF's 1998 ELC Protocol.

Community Sensitivity

Vegetation community sensitivity was based on the calculation of the Mean Coefficient of Conservatism (CC), the Floristic Quality Index (FQI), and the Wetness index for all vegetation communities present in the Terrestrial Review Area. These parameters are intended to be used together in order to assign an ecological community's sensitivity ranking based on plant species composition. The ranking is not intended to measure the overall value of a community, but rather reflects the community's sensitivity to disturbance based on the grouping of plants present within the community.

Coefficient of Conservation (CC)

- These values range from 0 (low) to 10 (high) and are based on species' tolerance of disturbance and fidelity to a specific habitat. Vegetation species and community sensitivity were assessed through the application of CC values, assigned to each native species in southern Ontario (Oldham *et al.,* 1995). The occurrence of species with a Coefficient of Conservatism of 9 or 10 can be indicators of undisturbed habitats such as mature forests, fens or bogs. General habitat values associated with the Coefficient of Conservatism values are:

  0-3: species found in a wide variety of communities, including disturbed sites

  4-6: species associated with a specific community, but tolerate moderate disturbance

  7-8: species associated with a community in an advanced successional stage, tolerant of minor disturbances

  9-10: species with a high degree of fidelity to a narrow range of synecological parameters

Floristic Quality Index (FQI)

- The FQI of an area is reflected in the mean value of CC. For example, an old field or grazed woodlot would tend to have a low mean CC; these habitats are dominated by opportunistic species that occur in a wide range of site conditions and are tolerant of disturbance. A bog, prairie or intact forest would have a higher value, reflecting the specific habitat requirements of many of the species and the general absence of disturbance. Generally speaking, a community with an FQI between 1-19 would be considered to be of low vegetative quality; communities with an FQI between 20-35 would be considered to have a high vegetative quality and communities with an FQI above 35 will be considered of "Natural Area" Quality.

Coefficient of Wetness (CW)

- All plants in southern Ontario have been assigned a wetland category, based on the designations developed for use by the United States Fish and Wildlife Service. Each wetland category has been assigned a numerical value to facilitate the quantification of the wetness index. Plants are designated into the following categories:

  Obligate Wetland: occurs almost always in wetlands under natural conditions (estimated >99% probability)

  Facultative Wetland: usually occurs in wetlands, but occasionally found in non-wetlands (estimated 67-99% probability)

  Facultative: equally likely to occur in wetlands or non-wetlands (estimated 34-66% probability)

  Facultative Upland: occasionally occurs in wetlands, but usually occurs in non-wetlands (estimated 1-33% probability)

  Upland: occurs seldom in wetlands under natural conditions (estimated <1% probability).

3.2.2 Tree Species at Risk Search

A search for Butternut (*Juglans cinerea*) and Black Ash (*Fraxinus nigra*) were completed on May 29, 2024 by AECOM International Society of Arboriculture (ISA) certified arborists. The search was conducted within areas that will be impacted by construction (refer to **Section 5**) as well within 30 m of the construction footprint. If any tree SAR were found, AECOM arborists took photos and recorded the Diameter-at-Breast-Height (DBH), coordinates, tree health and tree structure. A complete description of the tree SAR search will be provided in a separate arborist report.

3.2.3 Breeding Bird Surveys

Breeding bird surveys were completed following the protocols from the *Ontario Breeding Bird Atlas Guide for Participants* (OBBA, 2001). In accordance with the protocols, surveys were conducted twice during the breeding season separated by at least 10 days. A total of 11 breeding bird survey stations were established along the Terrestrial Review Area (refer to **Figure 2**). AECOM ecologists conducted two rounds of surveys on June 6 and June 24, 2022. Each survey was conducted on calm mornings with little or no precipitation and minimal winds (1-3 on the Beaufort scale), between sunrise and 10:00 am (OBBA, 2001). The surveys consisted of five-minute point counts where the weather, time, species, breeding evidence and individual bird movement within a 100 m radius were recorded. Species heard outside of the 100 m radius or observed outside of their breeding habitat within the 100 m radius (i.e., flyovers) were recorded separately.

In addition to breeding bird surveys, incidental avian observations were also recorded (with breeding evidence codes during the breeding season).

3.3 Significant Wildlife Habitat Screening

The *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (MNRF, 2015) contain information and criteria for identifying Significant Wildlife Habitat (SWH). SWH are defined as areas that have important ecological features and functions and that support sustainable populations of plants, wildlife and other organisms within this Ecoregion. The MNRF generally categorizes SWH into the following five categories:

- Seasonal Concentration Areas;
- Rare Vegetation Communities;
- Specialized Habitats for Wildlife;
- Habitats of SOCC; and,
- Animal Movement Corridors.

The presence of an SWH was determined by comparing general habitat conditions and characteristics observed to the habitat criteria identified in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (MNRF, 2015).

For the purpose of this report, as defined in the *Natural Heritage Reference Manual* (MNRF, 2010), SOCC are those species that are listed as Special Concern under the *Endangered Species Act, 2007* (ESA), assessed as Threatened or Endangered by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) that are not considered SAR under the ESA, or have a sub-national (S-Rank) of S1 – S3. Although SOCC do not receive legal protection under the ESA, they may be afforded protection under the *Provincial Policy Statement, 2020* (PPS), *Migratory Birds Convention Act, 1994* (MBCA), *Fish and Wildlife Conservation Act, 1997* (FWCA), and other planning documents. A screening for SOCC was completed as outlined in **Section 3.4** below.

3.4 Species at Risk Habitat Screening

Special consideration was given to identifying any SOCC or SAR within the Terrestrial Review Area. SAR includes species that are listed as Extirpated, Endangered or Threatened on the SARO list and receive both individual and habitat protection under the ESA. Desktop SOCC and SAR habitat screenings were conducted using the sources listed in **Section 3.1** within the Terrestrial Review Area. SAR and SOCC with recent occurrence records or with ranges overlapping the Terrestrial Review Area were identified and then screened by comparing their habitat requirements to the habitat conditions present within the Terrestrial Review Area as determined through the background information review (**Section 3.1**) and field investigations (**Section 3.2**). The potential for the species to occur within the Terrestrial Review Area was determined through a probability of occurrence whereby the following rankings were applied:

- **Low Probability**: no suitable habitat for the species and no occurrence of the species incidentally observed through field reconnaissance within the Terrestrial Review Area but there is a known species record in the general area;
- **Medium Probability**: potentially suitable SAR habitat identified within the Terrestrial Review Area, but no occurrence of the species incidentally observed through field reconnaissance although there is a known species record in the general area; and,
- **High Probability**: good quality SAR habitat identified within the Terrestrial Review Area and known species record in the Terrestrial Review Area (either through current field assessment or background information).

4. Existing Conditions

4.1 Natural Heritage Features

Natural features and areas identified for protection in the PPS and other legislation are collectively referred to as “Natural Heritage Features”. Natural Heritage Features include Valleylands, Environmentally Significant Areas, PSWs, ANSIs, fish habitat, Significant Woodlands and SWH. According to Section 1.6.8.6 of the PPS, consideration is to be given to natural heritage features when planning for corridors and rights-of-way for significant transportation and infrastructure facilities. Brief descriptions of the different types of natural heritage features are as follows:

- Valleylands refer to 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 (MNRF, 2010). Significance is determined based on a variety of criteria including, but not limited to, hydrological, geomorphological and ecological function (MNRF, 2010).
- Wetlands are seasonally or permanently flooded by shallow water, or areas where the water table is close to the surface, enabling the development of hydric soil, which supports primarily hydrophytic or water-tolerant plants (MNRF, 2022). MNRF evaluates the significance of wetlands through the Ontario Wetland Evaluation System. Based on the resulting score of an evaluation, an evaluated wetland can fall into one of two classes: PSWs or LSWs (MNRF, 2022). Until an evaluation is completed and confirmed by the MNRF, unevaluated wetlands should be considered as significant for the purpose of assessing impacts.
- ANSIs include land and/or water containing natural landscapes or features that have been scientifically identified by the MNRF as having life science or earth science values related to protection, scientific study or education (MNRF, 2010). ANSIs are designated as earth science (geological) or life science (biological) depending on the features present (MNRF, 2010). “Candidate ANSIs” are those provincial-

level ANSIs that MNRF has identified and recommended for protection but that have not been formally confirmed through a confirmation procedure (MNRF, 2010). For the purpose of the PPS, an ANSI is not considered provincially significant until it has been confirmed.

- Significant Woodlands are woodlots that are identified as significant in a municipal official plan or woodlots that have been investigated and meet the criteria of significance as identified in the Natural Heritage Reference Manual (MNRF, 2010) or municipal official plan.
- SWH are areas that have important ecological features and functions which support sustainable populations of plants, wildlife and other organisms. SWH are further described in **Section 4.7**

According to the sources listed in **Section 3.1**, the Whitby Harbour PSW Complex is located in the north end of the Terrestrial Review Area. This PSW was evaluated by MNRF in 2007 and was comprised of 17 individual wetlands including marsh and swamp communities, totalling an area of 22.18 hectares (MNRF, 2007). Marsh communities were determined to comprise the majority (90%) of total wetlands and dominant vegetation included Hybrid Cattail (*Typha x glauca*), Broad-leaved Cattail (*Typha latifolia*), Spotted Jewelweed (*Impatiens capensis*), Purple Loosestrife (*Lythrum salicaria*), Common Duckweed (*Lemna minor*), Canada Blue-joint (*Calamagrostis canadensis*), Lake Sedge (*Carex lacustris*) and Beaked Sedge (*Carex utriculata*). Swamp communities comprised the remaining (10%) of wetlands and dominant vegetation included Reddish Willow (*Salix laevigata*), Eastern Cottonwood (*Populus deltoides*), Balsam Poplar (*Populus balsamifera*), Red-osier Dogwood (*Cornus stolonifera*), spotted jewelweed, Canada blue-joint, Lake Sedge, Slender Willow (*Salix petiolaris*), Field Horsetail (*Equisetum arvense*) and Broad-leaved Cattail (*Typha latifolia*). Vegetation type within the wetlands consisted of approximately 11% of live trees, shrubs and ground cover. Emergent, submergent and/or floating vegetation comprised approximately 89% of wetland area.

The PSW was situated largely on clay substrates (98%) followed by fine sands (2%) associated with the shoreline along Lake Ontario. The PSW was comprised of mostly of palustrine wetland types which are associated with temporary/intermittent watercourses. The rest of the PSW was comprised of lacustrine wetland types associated with Lake Ontario and riverine wetland types associated with the main tributary of Pringle Creek. Palustrine wetlands and riverine wetlands can provide flood attenuation functions to help manage flood risk (MNRF, 2022); however, the Whitby Harbour PSW Complex is located at the bottom of the watershed and provides little flood attenuation, short term water quality improvement or long-term nutrient traps. The wetland's emergent vegetation, however, plays an important role in controlling shoreline erosion (MNRF, 2007).

The PSW received the highest score in the Special Components portion of the OWES evaluation (MNRF, 2007). The Special Components section evaluates the ecosystem age, geographical rarity of wetlands, the occurrence of rare species, and habitat quality for wildlife, including fish (MNRF, 2022). The PSW contained features that were considered rare across the landscape, such as coastal wetlands. Coastal wetlands have experienced significant historical losses in Ontario. The lakeshore or coastal marshes in Durham Region represent the largest concentration of such wetlands in the western portion of Lake Ontario and provide important nursery and spawning areas for fish. The Whitby Harbour PSW Complex has 13 significant species including eight provincially significant bird species that visit and feed in the wetlands, two regionally rare plant species and three locally rare plant species. The PSW also provides important habitat for wildlife including stopover sites for migrating waterfowl. In the fall, mudflats in the PSW are important feeding areas for migrating shorebirds including the Lesser Yellowleg (*Tringa flavipes*), which is designated as Threatened under the ESA. Portions of the PSW also provide habitat for migrating shorebirds, including potential SWH and SAR habitat.

Natural heritage features within the Terrestrial Review Area also included confirmed SWH for Wildlife Concentration Area - Mixed Wader Nesting Colony which was identified using MNRF's Make-a-Map Tool (MNRF, 2023a) which maps natural heritage data by 1 km squares. The SWH was identified within square ID 17PJ6758. The SWH may be associated with swamp communities within portions of the PSW located outside the area anticipated to be

impacted by the project. According to the OWES report (MNRF, 2007) the portion of the PSW within the Terrestrial Review Area contained only marsh communities.

Correspondence with the MNRF recommended looking for additional wetlands within the Terrestrial Review Area that were not previously mapped (refer to **Section 3.1.1**). Additional swamp and marsh communities were identified within the Study Area during ELC surveys. These additional wetland communities were in close proximity to portions of the PSW and may also provide potential SWH which is discussed further in **Section 4.7**.

There were no Significant Valleylands, ANSIs or Significant Woodlands identified in the Terrestrial Review Area (Region of Durham, 2020; Town of Whitby, 2021). Natural Heritage Features are shown on **Figure 1**.

4.2 Planning Policy Areas

Planning Policy Areas include land use planning designations from provincial plans, upper and lower-tier municipal official plans, and conservation authorities as described in **Section 2.** A summary of Planning Policy Areas related to the protection of the natural environment that are applicable to the Project is provided below:

- Region of Durham's Natural Heritage System;
- Town of Whitby Natural Heritage System; and,
- CLOCA Regulated Area (2023).

Planning Policy Areas are shown on **Figure 1.** The Region of Durham and Town of Whitby typically require permits for removal or injury of trees. The Official Plan Schedules are shown in **Appendix B**.

4.3 Fish Habitat

As mentioned in **Section 1**, no aquatic field investigations were completed as no online watercourses were identified within the Terrestrial Review Area during the desktop review. Online watercourses are those connected to a waterbody that contains fish at any given time of the year.

Background information sources detailed in **Section 3.1** were reviewed to gain an understanding of the aquatic features within the Terrestrial Review Area. The Terrestrial Review Area is situated within the boundaries of the Pringle Creek watershed. There were no watercourses observed within the Terrestrial Review Area; however, the main tributary of Pringle Creek occurs north of the Terrestrial Review Area and Lake Ontario occurs to the south of the Terrestrial Review Area. While there is no fish habitat within the Terrestrial Review Area, Whitby Harbour and Lake Ontario are in proximity to the Terrestrial Review Area (refer to **Figure 1**).

Fish community data collected from sources in **Section 3.1** are presented in **Table 4-1**.

Table 4-1: Fish Presence In Lake Ontario and Whitby Harbour

Common Name	Scientific Name	S-Rank[1]	COSEWIC Status[2]	SARA Status[2]	ESA Status[2]	Source[3]
Bluegill	*Lepomis macrochirus*	S5	-	-	-	LIO, iNat
Bowfin	*Amia calva*	S4	-	-	-	LIO
Brown Bullhead	*Ameiurus nebulosus*	S5	-	-	-	LIO, iNat

Common Name	Scientific Name	S-Rank[1]	COSEWIC Status[2]	SARA Status[2]	ESA Status[2]	Source[3]
Brown Trout	*Salmo trutta*	SNA	-	-	-	LIO
Channel Catfish	*Ictalurus punctatus*	S4	-	-	-	LIO
Chinook Salmon	*Oncorhynchus tshawytscha*	SNA	-	-	-	LIO, iNat
Coho Salmon	*Oncorhynchus kisutch*	SNA	-	-	-	LIO
Common Carp	*Cyprinus carpio*	SNA	-	-	-	LIO
Freshwater Drum	*Aplodinotus grunniens*	S5	-	-	-	LIO
Goldeye	*Hiodon alosoides*	S3	-	-	-	LIO
Lake Trout	*Salvelinus namaycush*	S5	-	-	-	LIO
Largemouth Bass	*Micropterus salmoides*	S5	-	-	-	LIO
Mooneye	*Hiodon tergisus*	S4	-	-	-	LIO
Muskellunge	*Esox masquinongy*	S4	-	-	-	LIO
Northern Pike	*Esox lucius*	S5	-	-	-	LIO, iNat
Pumpkinseed	*Lepomis gibbosus*	S5	-	-	-	LIO, iNat
Rainbow Trout	*Oncorhynchus mykiss*	SNA	-	-	-	LIO, iNat
Rock Bass	*Ambloplites rupestris*	S5	-	-	-	LIO, iNat
Round Goby	*Neogobius melanostomus*	SNA	-	-	-	iNat
Shortnose Cisco	*Coregonus reighardi*	SH	END	END	END	DFO
Smallmouth Bass	*Micropterus dolomieu*	S5	-	-	-	LIO
Threespine Stickleback	*Gasterosteus aculeatus*	S4S5	-	-	-	iNat
Walleye	*Sander vitreus vitreus*	S5	-	-	-	LIO
White Bass	*Morone chrysops*	S4	-	-	-	LIO
White Perch	*Morone americana*	SNA	-	-	-	LIO
White Sucker	*Catostomus commersonii*	S5	-	-	-	LIO
Yellow Perch	*Perca flavescens*	S5	-	-	-	iNat

[1]S1 – Extremely rare in Ontario; usually 5 or fewer occurrences in the province, or very few remaining hectares.
S2 – Very rare in Ontario; usually between 5 and 20 occurrences in the province, or few remaining hectares.
S3 – Vulnerable—Vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 – Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S? – Not Ranked/ under review.

[2] SC: Special Concern
THR: Threatened
END: Endangered
[3]DFO: Fisheries and Oceans Canada
iNat: iNaturalist
LIO: Land Information Ontario

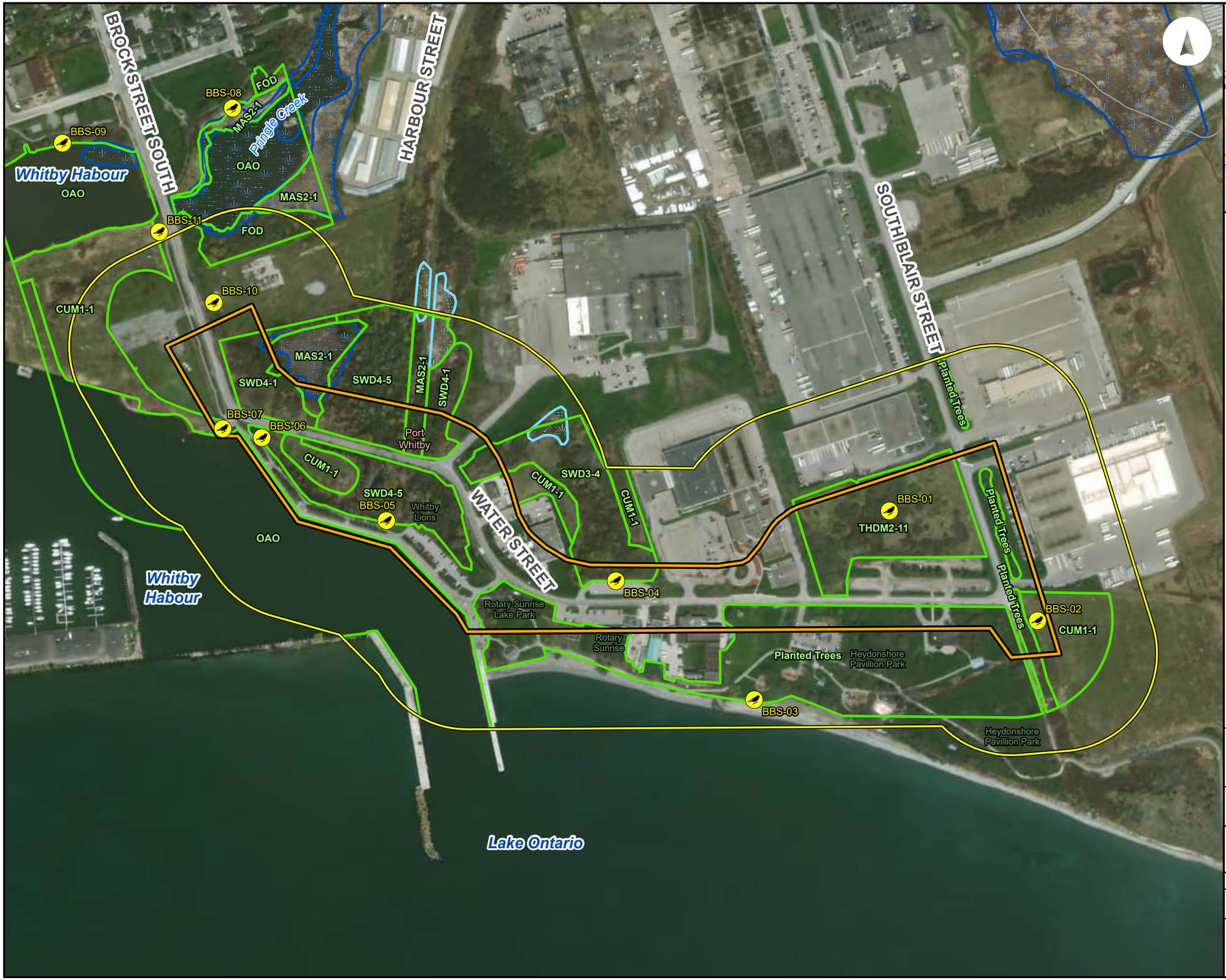
Shortnose Cisco (*Coregonus reighardi*) was the only aquatic SAR identified during the background review. While potential habitat for Shortnose Cisco may be present within the broader Terrestrial Review Area it is not within the area anticipated to be impacted by the Project.

4.4 Vegetation Communities and Plants

AECOM confirmed the ELC classifications and descriptions were generally consistent with the assessment carried out by Beacon Environmental (2021). In 2021, Beacon Environmental had delineated the forested area located north of Water Street and west of Blair Street as three separate communities including: Mineral Cultural Woodland (CUW1), Willow Mineral Deciduous Swamp (SWD4-1) and Willow Mineral Thicket Swamp (SWT2-2). In 2023, AECOM determined the forested area was more representative of a Manitoba Maple Mineral Deciduous Forest (SWD3-4); however, surveys were completed from roadside due to access limitations. Where vegetation communities were not previously assessed, AECOM classified and delineated new ELC polygons within the Terrestrial Review Area. Vegetation communities delineated by AECOM ecologists are shown in **Figure 2** and outlined in **Table 4-2** below**.**

AECOM's field investigations indicated the presence of six ELC vegetation communities in the Terrestrial Review Area with generally low vegetation quality as the FQI values were below 19 and had an overall abundance of non-native species that were established including, but not limited to: Dog Strangling Vine (*Vincetoxicum rossicum*), Common Reed (*Phragmites australis*), Common Buckthorn (*Rhamnus cathartica*), Garlic Mustard (*Alliaria petiolata*) and Purple Loosestrife (*Lythrum salicaria*). Given the urban location of the Terrestrial Review Area, some vegetation communities were fragmented due to the presence of existing roads, buildings, parking lots, manicured lawns and trails. Although the Terrestrial Review Area has been subject to anthropogenic disturbances (i.e., fragmentation, foot traffic), larger tracts of vegetation communities were still generally intact within the Terrestrial Review Area when compared to the larger surrounding area. Additionally, vegetation communities associated with the Whitby Harbour PSW Complex were delineated within the Terrestrial Review Area.

A total of 80 plant species were recorded, of which 41 (51%) were native and 39 (49%) were non-native. Of the non-native species, 22 (28%) were considered invasive. The majority of the plant species recorded had a low to moderate sensitivity to disturbance. All of the identified vegetation communities within the Terrestrial Review Area were generally low vegetation quality as evidenced by the Floristic Quality Index being less than 19. There were no SAR, SOCC or locally rare plants observed. A vascular plant list is provided in **Appendix C**.





Legend

- Terrestrial Review Area (120m)
- Study Area
- ELC
- Breeding Bird Stations
- Wetland Unevaluated as per Ontario Wetland Evaluation System
- Whitby Harbour PSW Complex

ELC Description

CUM1-1: Mineral Cultural Meadow

CUT: Cultural Thicket

FOD: Dry-Fresh Deciduous Forest

MAS2-1: Cattail Shallow Marsh

OAO: Open Aquatics

SWD3-4: Manitoba Maple Mineral Deciduous Swamp

SWD4-1: Mineral Willow Deciduous Swamp

SWD4-5: Poplar Mineral Deciduous Swamp

THDM2-11: Dry - Fresh Deciduous Shrub Thicket

0 50 100 200 300

Metres

Water Street Improvements between Brock Street South and South Blair Street

Ecological Land Classification and Field Investigations

Sep, 2024	1:4,500 * when printed 11"x17"	Datum: NAD 1983 UTM Zone 17N Source: Contain Information licensed under the Open Government License Ontario.
P#: 60591304		**Figure 2**

AECOM

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Table 4-2: Vegetation Communities within Terrestrial Review Area

Ecological Land Classification Code	Ecological Land Classification Name	ELC Description	Floristic Assessments
THDM2-11	Hawthorn Deciduous Shrub Thicket	The hawthorn thicket was densely comprised of Hawthorn species (*Crataegus sp.*), Dogwood (Cornus *x slavinii*) and Manitoba Maple. The ground layer consisted of Canada Goldenrod (*Solidago canadensis*), Wood Avens (*Geum urbanum*) and Garlic Mustard (*Alliaria petiolate*).	■ Average CC: 1.67 ■ Average CW: 2.31 ■ Non-native species (%): 50 ■ FQI: 5.27 ■ No SAR, SOCC or locally rare plants observed.
CUM1-1	Dry-Moist Old Field Meadow	This community was primarily dominated by Red-osier Dogwood (*Cornus sericea*), Canada Goldenrod, Panicled Aster (*Symphyotrichum lanceolatum*) and Wild Parsnip (*Pastinaca sativa*).	■ Average CC: 1.69 ■ Average CW: 2.05 ■ Non-native species (%): 64 ■ FQI: 5.86 ■ No SAR, SOCC or locally rare plants observed.
SWD3-4	Manitoba Maple Mineral Deciduous Swamp	The canopy consisted of Manitoba Maple, Willow species (*Salix sp.*) and Eastern Cottonwood (*Populus deltoides*). The shrub layer consisted of Red-osier Dogwood and *Cornus x slavinii.* The herbaceous layer consisted of Riverbank Grape (*Vitis riparia*), Canada Goldenrod and Smooth Bedstraw (*Galium mollugo*).	■ Average CC: 1.71 ■ Average CW: 1.54 ■ Non-native species (%): 53 ■ FQI: 4.54 ■ No SAR, SOCC or locally rare plants observed.
SWD4-1	Willow Mineral Deciduous Swamp	This community primarily consisted of Crack Willow, Manitoba Maple and Trembling Aspen. Herbaceous species included Canada Goldenrod and Panicle Aster.	■ Average CC: 2 ■ Average CW: 0.35 ■ Non-native species (%): 48 ■ FQI: 6.93 ■ No SAR, SOCC or locally rare plants observed.
SWD4-5	Poplar Mineral Deciduous Swamp	The canopy consisted of Trembling Aspen (*Populus tremuloides*) and Crack Willow (*Salix euxina).* The shrub layer consisted of Manitoba Maple, Red-osier Dogwood, Cottony Willow (*Salix eriocephala*), Riverbank Grape and Willow species. The herbaceous layer consisted of Canada Goldenrod, Sensitive Fern (*Onoclea sensibilis*) and Narrow-leaved Cattail (*Typha angustifolia*).	■ Average CC: 2.81 ■ Average CW: -1.31 ■ Non-native species (%): 29 ■ FQI: 13.47 ■ No SAR, SOCC or locally rare plants observed.

Ecological Land Classification Code	Ecological Land Classification Name	ELC Description	Floristic Assessments
MAS2-1	Cattail Mineral Shallow Marsh	Multiple polygons The canopy contained Crack Willow, *Cornus x slavinii* and Cottony Willow. The herbaceous layer consisted of hybrid Cattail (*Typha x glauca*), Lake Sedge (*Carex lacustris*) and Canada Goldenrod.	■ Average CC: 2.86 ■ Average CW: -1.05 ■ Non-native species (%): 22 ■ FQI: 11.78 ■ No SAR, SOCC or locally rare plants observed.

4.5 Tree Species at Risk Search

No Butternut or Black Ash were recorded by AECOM arborists. A complete description of the tree SAR search will be provided in a separate arborist report.

4.6 Wildlife

As mentioned in **Section 3.1.1**, CLOCA provided mapping data for their Wildlife Habitat Network (WHN). The WHN includes a connected system of important wildlife habitats and corridors within CLOCA's jurisdiction (CLOCA, 2022). The Terrestrial Review Area contained core and regional areas of the WHN. Core habitats were associated with significant features such as the Whitby Harbour PSW Complex. Core habitat was also present along open water and vegetation communities within the harbour. Core habitat in the Terrestrial Review Area likely supports a variety of wildlife including potential SWH and SAR which are discussed further in **Sections 4.7** and **4.8**, respectively. Regional habitat areas were associated with vegetation communities north of Water Street and west of South Blair Street. Regional habitats provide important corridors for wildlife (CLOCA, 2022), allowing a variety of wildlife to move between habitats that are key for specific life stages. Regional habitats may include communities along the Lake Ontario shoreline that support migratory birds and insects, and facilitate movement of terrestrial animals (CLOCA, 2022).

4.6.1 Breeding Bird Surveys

A total of 55 bird species, (listed in **Appendix D**), were observed over two rounds of point count surveys and incidentally during other field investigations within the Terrestrial Review Area. The majority of the species recorded during field investigations are considered common and widespread in Ontario and adaptable to early successional, forest edge or human-altered habitats. All of these species were observed during the breeding bird window. The majority of the species observed receive protection under the MBCA. No nests of Schedule 1 MBCA-protected bird species (i.e., Pileated Woodpecker [*Dryocopus pileatus*])) were observed during field investigations; however, targeted surveys were not completed.

Bank Swallow (*Riparia riparia*) was the only SAR observed within the Terrestrial Review Area. Many Bank Swallows were observed foraging near BBS-02 (refer to Figure 2); however, no nests or suitable nesting habitat was identified. The Bank Swallows were likely nesting outside of the Terrestrial Review Area, in the bluffs along Lake Ontario and near Thickson Woods Point where there were known nesting colonies (eBird, 2023). Additionally, three SOCC birds were recorded in the Terrestrial Review Area. Eastern Wood-pewee (*Contopus virens*) and Barn Swallow (*Hirundo rustica*) are both designated as Special Concern under the ESA. Eastern Wood-pewee was observed singing near BBS-05 during both rounds of breeding bird surveys. The individual was observed singing within the Poplar Mineral Deciduous Swamp (SWD4-5) where it had established its territory. While Barn Swallows were observed foraging within the Terrestrial Review Area, no nests were observed. Caspian Tern (*Hydroprogne caspia*) has a provincial S-Rank of S3 and was observed displaying their feeding courtship behaviour in suitable nesting habitat along the harbour in Lake Ontario. Bird SOCC and SAR are discussed further in **Section 4.7** and **4.8**, respectively.

4.6.2 Incidental Wildlife

The majority of species observations were considered common and tolerant of urban disturbances, and many bird species observed are also protected under the MBCA. SAR and SOCC observed incidentally are discussed in **Section 4.7** and **4.8**. Although the Terrestrial Review Area has been anthropogenically disturbed and fragmented,

the vegetation communities present still provided potential nesting opportunities for migratory birds. Isolated trees, shrubs, vegetation communities and anthropogenic structures (e.g., buildings and bridges) can also provide nesting habitat for migratory birds. Although the Terrestrial Review Area has been subject to anthropogenic disturbances (i.e., fragmentation, foot traffic), larger tracts of vegetation communities were still generally intact within the Terrestrial Review Area. Since Water Street is not subject to heavy traffic, it is not considered a significant barrier for terrestrial wildlife that may move between vegetation communities in the Terrestrial Review Area.

All incidental wildlife observations are outlined in **Table 4-3** below and in **Appendix D**.

Table 4-3. Incidental Wildlife Observations

Taxon	Common Name	Scientific Name	S-Rank	COSEWIC Status	ESA Status	Protected under MBCA (Yes/No)
Bird	American Goldfinch	*Spinus tristis*	S5B	-	-	Yes
Bird	American Robin	*Turdus migratorius*	S5B	-	-	Yes
Bird	Baltimore Oriole	*Icterus galbula*	S4B	-	-	Yes
Bird	Bank Swallow	*Riparia riparia*	S4B	THR	THR	Yes
Bird	Barn Swallow	*Hirundo rustica*	S5B	THR	SC	Yes
Bird	Black-capped Chickadee	*Poecile atricapillus*	S5	-	-	Yes
Bird	Brown-headed Cowbird	*Molothrus ater*	S4B	-	-	No
Bird	Caspian Tern	*Hydroprogne caspia*	S3B	NAR	NAR	Yes
Bird	Chipping Sparrow	*Spizella passerina*	S5B	-	-	Yes
Bird	Common Merganser	*Mergus merganser*	S5B,S5N	-	-	Yes
Bird	Double-crested Cormorant	*Phalacrocorax auritus*	S5B	NAR	NAR	No
Bird	Eastern Phoebe	*Sayornis phoebe*	S5B	-	-	Yes
Bird	European Starling	*Sturnus vulgaris*	SNA	-	-	No
Bird	Gray Catbird	*Dumetella carolinensis*	S4B	-	-	Yes
Bird	Herring Gull	*Larus argentatus*	S5B,S5N	-	-	Yes
Bird	House Sparrow	*Passer domesticus*	SNA	-	-	No
Bird	House Wren	*Troglodytes aedon*	S5B	-	-	Yes
Bird	Mourning Dove	*Zenaida macroura*	S5	-	-	Yes
Bird	Mute Swan	*Cygnus olor*	SNA	-	-	Yes
Bird	Red-eyed Vireo	*Vireo olivaceus*	S5B	-	-	Yes
Bird	Red-winged Blackbird	*Agelaius phoeniceus*	S4	-	-	No
Bird	Ring-billed Gull	*Larus delawarensis*	S5B,S4N	-	-	Yes
Bird	Savannah Sparrow	*Passerculus sandwichensis*	S4B	-	-	Yes
Bird	Song Sparrow	*Melospiza melodia*	S5B	-	-	Yes
Bird	Tree Swallow	*Tachycineta bicolor*	S4B	-	-	Yes
Bird	Trumpeter Swan	*Cygnus buccinator*	S4	NAR	-	Yes
Bird	Turkey Vulture	*Cathartes aura*	S5B	-	-	No
Bird	Warbling Vireo	*Vireo gilvus*	S5B	-	-	Yes
Bird	Yellow Warbler	*Setophaga petechia*	S5B	-	-	Yes

Taxon	Common Name	Scientific Name	S-Rank	COSEWIC Status	ESA Status	Protected under MBCA (Yes/No)
Insect	Monarch	*Danaus plexippus*	S2N,S4B	END	SC	No
Mammal	Eastern Chipmunk	*Tamias striatus*	S5	-	-	No
Mammal	Eastern Cottontail	*Sylvilagus floridanus*	S5	-	-	No
Mammal	Eastern Gray Squirrel	*Sciurus carolinensis*	S5	-	-	No
Mammal	Red Squirrel	*Tamiasciurus hudsonicus*	S5	-	-	No
Reptile	Eastern Gartersnake	*Thamnophis sirtalis sirtalis*	S5	-	-	No

4.7 Significant Wildlife Habitat

The SWH assessment identified several candidate and confirmed SWHs. A number of candidate and confirmed SWHs were identified in the larger Terrestrial Review Area; however, majority were determined to not fall within the Project Limits. The detailed assessment has been provided in **Appendix E.** Criteria for candidate and confirmed habitat are also detailed in **Appendix E**. The following candidate and confirmed SWH were identified to overlap with the Project Limits:

Candidate

- Seasonal concentration areas:
  - Bat Maternity Colonies within the Manitoba Maple Mineral Deciduous Swamp (SWD3-4), Poplar Mineral Deciduous Swamp (SWD4-5) and Willow Mineral Deciduous Swamp (SWD4-1);
  - Turtle Wintering Areas within the Cattail Mineral Shallow Marsh (MAS2-1) and Lake Ontario; and,
  - Colonially – Nesting Bird Breeding Habitat (Tree/Shrubs) was confirmed by the MNRF (2023a) outside of the Study Area; however, swamp communities identified during ELC surveys may provide potential SWH. While no nests of colonially tree/shrub nesting birds were identified, entirety of swamp communities were not searched for nests.
- Specialized Habitats of Wildlife:
  - Waterfowl Nesting Area where upland communities were adjacent to wetland communities;
  - Amphibian Breeding Habitat (Woodland) within Deciduous Swamp (SWD) and MAS2-1 communities;
  - Marsh Breeding Bird Habitat within MAS2-1 community;
  - Habitats for the following SOCC were identified (refer to **Appendix F** for a detailed SOCC Habitat Screening):
    - Habitat for Barn Swallow (*Hirundo rustica*) on buildings and park structures with suitable ledges and overhangs;
    - Habitat for Common Nighthawk (*Chordeiles minor*) on flat-topped buildings;
    - Habitat for Northern Map Turtle (*Graptemys geographica*) in Lake Ontario; and,
    - Habitat for Snapping Turtle (*Chelydra serpentina*) in Lake Ontario and the Cattail Mineral Shallow Marsh (MAS2-1).
- Animal Movement Corridors

- Amphibian Movement Corridor may occur in the swamp, marsh and upland communities that occur along either side of Water Street to provide opportunities for amphibian movement between breeding and summer habitat within the Terrestrial Review Area and the surrounding area.

Confirmed

- Habitats for the following SOCC were identified within the Study Area (refer to **Appendix F** for a detailed SOCC Habitat Screening and **Figure 3** for mapping of the confirmed habitat):
  - Confirmed habitat for Eastern Wood-pewee (*Contopus virens*) within the Poplar Mineral Deciduous Swamp (SWD4-5); and,
  - Confirmed habitat for Monarch (*Danaus plexippus*) within cultural meadow communities.

4.8 Species at Risk Habitat Screening

The SAR habitat assessment is presented in **Appendix F**. Several candidate habitats for SAR were identified within the Terrestrial Review Area. Of the 26 SAR records identified through the background review, five SAR designated as Endangered under the ESA were determined to have a medium potential to occur in the Terrestrial Review Area. The remaining SAR outlined in **Appendix F** were determined to have a low potential to occur within the Terrestrial Review Area due to a lack of suitable habitat. As mentioned in **Section 4.6.1**, Bank Swallows were observed foraging in the Terrestrial Review Area; however, nesting potential within the Terrestrial Review Area was low as no nests or suitable nesting habitat was identified. The Bank Swallows observed foraging were likely nesting outside of the Terrestrial Review Area, where there were suitable bluffs for nesting along Lake Ontario.

The following SAR were determined to have a medium potential to occur within the vegetation communities found in the Terrestrial Review Area and are also mapped on **Figure 3**:

- **Red-headed Woodpecker (*Melanerpes erythrocephalus*)**
  The edge of swamp communities or isolated trees within the park areas along the lakeshore may contain suitable cavity trees for nesting.
- **Bat SAR including Eastern Small-footed Myotis (*Myotis leibii*), Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*) and Tri-coloured Bat (*Perimyotis subflavus*)**
  All of the Deciduous Swamp (SWD) communities may contain suitable cavity trees for bat roosting.

5. Assessment of Potential Impacts

Following an evaluation of Road Alignment Concepts and proposed Cross-Sections the final Recommended Plan consists of the following:

- **Preferred Road Alignment:** Road Refined Alignment #1 (Roundabout and Curve Correction (Increased Curve Radius)) was identified as the Preferred Road Alignment and will utilize the existing road alignment but implement a curve correction of 130 metres and include a roundabout on Water Street just east of Brock Street South and a second roundabout at the intersection of Water Street and South Blair Street.
- **Preferred Cross-Section:** Cross-section 1 - Cycle Track and Multi-Use Paths - provides for two 3.0 Multi-Use Paths and a two-way cycle track on the south side and along with the provision of boulevard and median streetscaping opportunities via two 3.0 metre rows of street trees and one 4.0 metre row of trees in the median.

The preliminary Recommended Plan is shown on **Figure 3** and includes the proposed road, sidewalk/multi use paths and associated grading limits. The Recommended Plan is shown on **Figure 3** and includes the outermost limit anticipated to be affected by construction activities for the Preferred Alternative based on preliminary design. The following sections describe the potential natural environmental impacts associated with the Recommended Plan.





Legend

- Study Area
- Recommended Plan

Preliminary Design

- Proposed Property Line
- Grading Limit
- Proposed Cycling Track/Multi Use Path
- Proposed Road
- ELC

Confirmed Significant Wildlife Habitat

- Eastern Wood-Pewee Habitat
- Monarch Habitat

Candidate Species at Risk Habitat

- Potential Red-headed Woodpecker Habitat
- Potential Habitat for Bat SAR, Red-headed Woodpecker, Tree SAR

Wetland Significance

- Wetland Unevaluated as per Ontario Wetland Evaluation System
- Whitby Harbour PSW Complex

0 50 100 200
Metres

Water Street Improvements between Brock Street South and South Blair Street

Recommended Plan Potential Natural Heritage Impacts

Sep, 2024	1:3,400 * when printed 11"x17"	Datum: NAD 1983 UTM Zone 17N Source: Contain Information licensed under the Open Government License Ontario.
P#: 60591304		**Figure 3**

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5.1 Potential Impacts of the Proposed Works

The potential environmental impacts associated with the Recommended Plan relate primarily to construction activities. Many of the potential impacts are commonly encountered with construction and have associated standard mitigation measures available to reduce or avoid potential impacts. The design will be further refined and impacts confirmed during the future detail design phase to follow. The following sections outline potential environmental impacts based on the Recommended Plan.

5.1.1 Direct Potential Impacts

Potential direct impacts to existing natural heritage features and functions are associated with construction activities (e.g., excavation activities, machinery use) such as vegetation/habitat removal. As noted, the Recommended Plan will utilize the existing road alignment for most of the Project length but will implement a curve correction for a segment of the corridor (opposite the Durham Pumping Station property) as well as introduce a roundabout on Water Street just east of Brock Street South and a second roundabout at the intersection of Water Street and South Blair Street. A widening will also be required to accommodate the infrastructure improvements. As such, key impacts will be associated with the expanded footprint and property acquisition required to accommodate the new alignment and improvements proposed.

Loss of Vegetation – Estimated vegetation removals by ELC community based on the Recommended Plan (as illustrated on **Figure 3**), are provided in **Table 5-1** below. Approximately 0.923 ha of vegetation communities will be cleared to accommodate the proposed works based on the current Recommended Plan. Vegetation removal will be completed in areas abutting the right-of-way and is limited to edge habitat that is already disturbed by anthropogenic influences. Connectivity between vegetation communities is not anticipated to be impacted given that the Project involves improvements to existing transportation infrastructure. No direct impacts are anticipated to the Whitby Harbour PSW Complex as it is outside the anticipated area of impact.

Table 5-1: Summary of Impacts to Vegetation Communities within the Study Area

ELC Vegetation Code	ELC Vegetation Code Description	Total Area of ELC Community (ha) within Study Area	Impacted Area (ha)
CUM1-1	Dry-Moist Old Field Mineral Cultural Meadow	2.204	0.104
THDM2-11	Hawthorn Deciduous Shrub Thicket	2.359	0.0679
SWD3-4	Manitoba Maple Mineral Deciduous Swamp	1.770	0.001
SWD4-5	Poplar Mineral Deciduous Swamp	2.920	0.641
SWD4-1	Willow Mineral Deciduous Swamp	1.329	0.109
Total		10.582	0.923

Confirmed SWH including Habitat for Monarch – Confirmed habitat for Monarch was identified within the Dry-Moist Old Field Mineral Cultural Meadow (CUM1-1) where Common Milkweed (*Asclepias syriaca*) was present (refer to **Figure 3**). Impacts to confirmed Monarch habitat is anticipated to be minimal as only 0.104 ha of the Dry-Moist Old Field Mineral Cultural Meadow (CUM1-1) communities will be removed and limited to disturbed edge habitat.

Loss of Confirmed SWH including Habitat for Bird SOCC – Confirmed habitat for Eastern Wood-pewee was identified in the Poplar Mineral Deciduous Swamp (SWD4-5) and is shown on **Figure 3**. Approximately 0.641 ha of

confirmed SWH will be removed. These impacts are considered minimal as 2.279 ha will remain intact to provide nesting and breeding habitat for Eastern Wood-pewee. The impacts to swamp communities that provide suitable habitat for Eastern Wood-pewee will be limited to edge habitat abutting the existing roadway, which is already subject to anthropogenic disturbances. Given confirmed habitat for Eastern Wood-pewee is not limited in the greater landscape, vegetation removal is not anticipated to impair or eliminate the form and function of the remaining Eastern Wood-pewee habitat.

Loss of Candidate SWH including Habitat for Bird SOCC - Candidate habitat for Common Nighthawk and Barn Swallow was identified within the Study Area. Common Nighthawk may nest on flat gravel roof tops and the Barn Swallow may nest on buildings or park structures. No impacts to candidate habitat are anticipated as no building demolitions or structure modifications have been proposed.

Loss of Candidate SWH for Waterfowl Nesting Areas – Potential for SWH may occur where large upland communities are adjacent to wetlands. Edge habitat in the Dry-Moist Old Field Mineral Cultural Meadow (CUM1-1) communities will be removed; however, impacts are anticipated to be minimal given larger upland communities in the greater landscape. Impacts to CUM1-1 communities and associated Candidate SWH for Waterfowl Nesting Areas are anticipated to be minimal as only 0.104 ha of the CUM1-1 communities will be removed and limited to already disturbed edge habitat.

Disturbance and/or Loss of Candidate Turtle Wintering Areas (including habitat for turtle SOCC) – Potential turtle wintering areas were identified in Lake Ontario and the Cattail Mineral Shallow Marsh (MAS2-1). Impacts to overwintering turtles are not anticipated as no in-water works are proposed and the Project is not expected to impact the MAS2-1 area. Candidate habitat for Snapping Turtle was identified in the swamp communities and MAS2-1. Approximately 0.751 ha of candidate Snapping Turtle habitat will be impacted. Approximately 6.474 ha of swamp and marsh communities will remain intact to provide habitat for Snapping Turtle. Candidate habitat for Northern Map Turtle was identified in Lake Ontario; however, no direct impacts to the lake are anticipated. Additionally, since turtles travel long distances (e.g., in search of mates, nesting sites, etc.) during the active season of typically **April 1 to October 30** there is the potential that they may incidentally wander into the construction work area where they may be susceptible to injury/mortality as result of construction activities.

Loss of Candidate SWH for Amphibian Breeding Habitat (Woodland) and Amphibian Movement Corridors – Candidate SWH for amphibian breeding habitat (Woodland) was identified within the swamp communities. Approximately 0.751 ha of vegetation removal is anticipated within deciduous swamp communities. The swamp and marsh communities as well as the adjacent upland habitat may provide opportunities for amphibian movement between breeding and summer habitat within the Study Area and the surrounding area. No direct impacts are anticipated to marsh communities as they are located outside of the Recommended Plan. Impacts to swamp communities are considered minimal given the greater landscape outside of the Recommended Plan consists of swamp communities along the lakeshore. Impacts to swamp communities located along existing roads will be limited to edge habitat which is already subject to anthropogenic disturbances. Approximately 6.474 ha of swamp and marsh communities will remain intact within the Study Area to provide amphibian breeding habitat and amphibian movement corridors. Given candidate amphibian breeding habitat as well as swamp, marsh and upland habitats are not limited in the greater landscape, vegetation removal is not anticipated to impair or eliminate the form and function of the remaining amphibian breeding habitat and amphibian movement corridors.

Loss of Candidate SWH for Colonially Nesting Bird Breeding Habitat (Tree/Shrubs) – Candidate SWH for colonial nesting bird breeding habitat was identified within the deciduous swamp communities. Approximately 0.751 ha of vegetation removal is anticipated within deciduous swamp communities. These impacts are considered minimal given the greater landscape outside of the Recommended Plan consists of continuous forested communities along the lakeshore. Impacts to swamp communities adjacent the existing roadway will be limited to edge habitat which is already subject to anthropogenic disturbances. Approximately 5.268 ha of swamp communities will remain intact to provide colonial nesting bird breeding habitat. Given candidate colonial nesting

bird breeding habitat are not limited in the greater landscape, vegetation removal is not anticipated to impair or eliminate the form and function of the remaining candidate Colonial Nesting Bird Breeding habitat.

Loss of Candidate Red-headed Woodpecker Habitat
Candidate habitat for Red-headed Woodpecker was identified along edges of swamp communities or isolated trees within park areas. Approximately 0.751 ha of swamp communities will be removed. These impacts are considered minimal given the greater landscape outside of the Recommended Plan consists of forested communities along the lakeshore. Impacts to swamp communities adjacent the existing roadway will be limited to edge habitat which is already subject to anthropogenic disturbances. Approximately 5.268 ha of swamp communities will remain intact to provide Red-headed Woodpecker habitat. Given candidate Red-headed Woodpecker habitat is not limited in the greater landscape, vegetation removal is not anticipated to impair or eliminate the form and function of the remaining candidate Red-headed Woodpecker habitat.

Loss of Potential Bat SAR Habitat and Candidate Bat Maternity Colonies SWH– Candidate bat cavity trees and SWH for bat maternity colonies may be present within the swamp communities which may provide suitable roost habitat. Minimal impacts to candidate bat SAR habitat and SWH are anticipated as a result of vegetation removal within the swamp communities. Approximately 0.751 ha of vegetation removal is anticipated within deciduous swamp communities. These impacts are considered minimal given the greater landscape outside of the Recommended Plan consists of forested communities along the lakeshore. Impacts to swamp communities located along the existing corridor will be limited to edge habitat which is already subject to anthropogenic disturbances. Approximately 5.268 ha of swamp communities will remain intact to provide bat SAR habitat. Given candidate bat SAR habitat and SWH is not limited in the greater landscape, vegetation removal is not anticipated to impair or eliminate the form and function of the remaining bat SAR habitat and SWH.

Loss of Potential Fish Habitat - no direct impacts to fish or fish habitat are anticipated to occur as result of the work proposed. A confirmatory site review is recommended during detail design to identify potential overland flow north of Water Street along the abandoned railway corridor, and potential (unlikely) seasonal connectivity to any nearby waterbody.

5.1.2 Indirect Impacts

Indirect impacts associated with planning and engineering that are not immediately caused by the design (e.g., placement of Project components) can cause an effect on the natural environment through one or more intervening variables provided below. If the mitigation measures outlined in **Table 6-1** are followed, the indirect impacts to the natural features will be minimal.

Damage and Disturbance to Adjacent Natural Features – There is the potential for accidental intrusion from construction into the adjacent natural heritage features which provide candidate and confirmed SWH and SAR habitat . Additionally, machinery use adjacent to natural heritage features can result in soil compaction and trampling of herbaceous vegetation. These impacts can limit a plant's ability to grow and absorb nutrients and water. These impacts can typically be mitigated with the installation of tree protection fencing along the limits of work to exclude machinery and construction personnel.

Migratory Bird Nest and Egg Destruction – vegetation communities provide breeding habitat and movement corridors for a variety of wildlife, including SAR, SOCC and/or migratory birds protected under the MBCA. Furthermore, migratory and/or SAR birds may use manmade structures (e.g., bridges and buildings) for nesting. Vegetation (i.e., trees, shrubs and ground cover) removal or structure demolition/rehabilitation has the potential to destroy migratory bird nests and eggs, which are protected under the MBCA, if conducted during the overall bird nesting period of **April 1 to August 31**. No Schedule 1 MBCA-protected species were observed within the Study Area; however, targeted surveys were not completed and there is potentially suitable habitat for Pileated Woodpecker present. Vegetation removal has the potential to destroy nests belonging to Schedule 1 MBCA-protected species, which receive year-round protection under the MBCA.

Disturbance to Wildlife – Construction activities have the potential to disturb wildlife within adjacent natural features. Urban wildlife, including SOCC may enter the construction work area and become susceptible to accidental injury or mortality associated with construction equipment or machinery if not properly mitigated. Wildlife encounters during construction within the active season may result in collisions with construction equipment or disruption of life cycle processes (e.g., nesting, hibernating, etc.) resulting in injury or mortality. Noise and vibrations from construction activities are anticipated to be temporary, short in duration and are not anticipated to substantially increase from daily existing road use. A certain degree of disturbance can be avoided by restricting construction activities to certain times of the day and outside of breeding periods for any bird species identified within the Study Area. Additionally, mitigation measures outlined in **Table 6-1** are anticipated to sufficiently address potential disturbances to wildlife.

Sediment and Erosion – Vegetation clearing, grubbing and / or grading exposes soils, which can result in sediment run-off discharging into nearby natural heritage features, including Lake Ontario. Work is proposed adjacent to Lake Ontario near Water Street at the northwestern segment of the Study Area. Elevated levels of sediment and related turbidity can reduce the productivity of an aquatic system by clogging the gills of fish, covering fry and eggs within the substrate and reducing prey availability. Sediment deposition within terrestrial natural features can also lead to suffocation of vegetation. Exposed soils can result in dust deposition within adjacent natural heritage features which may interrupt the ability of vegetation to photosynthesize.

I**ntroduction or Spread of Invasive Species** – As mentioned vegetation communities have already been anthropogenically influenced. A total of 22 (28%) were non-native, including, but not limited to: Dog strangling Vine, Common Reed, Manitoba Maple, Common Buckthorn, Garlic Mustard, and Purple Loosestrife. Vegetation clearing,grubbing and / or grading and movement of construction equipment may perpetuate the establishment of invasive species in new areas and further spread in already established areas if control measures are not implemented. Impacts are anticipated to be minimal given that many invasive species are already present.

Effects on Water Quality – Anticipated indirect potential effects associated with the long-term operation of the Project may include the potential for road salt loading in adjacent wetlands and Lake Ontario as a result of increased impervious surfaces, which may indirectly affect fish and aquatic SAR habitat, including turtle habitat.

Change in Hydrology, Drainage and Water Quantity – Increased impervious surfaces as result of installation of the road curve widenings, roundabout and sidewalk/multi use pathways can indirectly affect the hydrology, drainage and water quantity of nearby natural features such as the adjacent wetlands, including parts of the Whitby Harbour PSW Complex, that are particularly sensitive to changes in the hydrological regime.

Wildlife Road Mortality – Anticipated indirect potential effects associated with the long-term operation of the Project may include the potential of increased wildlife road mortality due to the widening of Water Street.

6. Avoidance, Mitigation, and Compensation Recommendations

In order to address the potential net impacts identified for any proposed work associated with the Project, there are three general categories of mitigation measures:

1. **Avoidance** – Avoidance involves the design of a plan that protects natural heritage features and functions by keeping the works outside of natural heritage features wherever possible.
2. **Standard Mitigation** – Mitigation involves the implementation of measures designed to eliminate or reduce impacts by designing facilities or including natural elements that filter or prevent impacts.
3. **Compensation** – Compensation involves the replacement of a feature and/or function that may be lost as a result of the construction and long-term presence of the works.

The following sections detail the recommendations for avoidance, mitigation and compensation.

6.1 Avoidance

The following avoidance measures will assist in minimizing impacts to existing natural heritage features within the Study Area:

- Minimize vegetation removal to the extent possible and clearly delineate the boundaries and the limits of vegetation clearing zones on construction drawings. No in-water works shall occur to avoid impacts to aquatic habitat.

- Remove vegetation (ground cover, shrubs, trees) outside of the active bird nesting season (**April 1 to August 31**) to avoid incidental take and, therefore, contravention of the MBCA. Incidental take includes inadvertent harm, death, disturbance or destruction of migratory birds, nests and/or eggs. Should vegetation removal be required during the active bird nesting season, a nest survey should be conducted by a qualified ecologist or equivalent no more than 48 hours prior to vegetation removal and should only be considered for simple habitats as defined by ECCC (2023d).

- Remove trees within the Manitoba Maple Mineral Deciduous Swamp (SWD3-4), Poplar Mineral Deciduous Swamp (SWD4-5) and the Willow Mineral Deciduous Swamp (SWD4-1) (shown on **Figure 3**) outside the bat active season (**April 1 to September 30**) to avoid impacts on bat SAR and contravention of Section 9 of the ESA.

- Limit construction activities to the daylight hours (i.e., 7am to 7pm) in order to reduce the amount of noise disturbance.

6.2 Mitigation

The following standard measures are proposed to mitigate potential impacts:

Recommendation 1 – Clearly demarcate the limits of construction with the installation of tree protection fencing or sediment erosion fencing to clearly to prevent accidental damage to vegetation or intrusion into adjacent vegetation areas and should be properly installed and maintained throughout the duration of the Project.

Recommendation 2 During Detail Design, a Tree Protection Plan should be developed, and tree protection measures identified to document which trees may require removal, injury or protection as a result of the proposed works and identify required tree protection and mitigation measures following best management practices and municipal by-laws as appropriate.

Recommendation 3 – Install temporary wildlife exclusion fencing in accordance with the *Best Management Practices for Mitigating the Effects of Roads on Amphibian and Reptile Species at Risk in Ontario* (MNRF, 2016) along the limits of construction adjacent to wetlands in order to prevent herpetofauna from entering the construction work area. Wildlife exclusion fencing should be placed if work is to be done during the turtle and snake active season extending from **April 1 to October 30**. Wildlife exclusion fencing should be installed before April 1 of any year. Fencing depth and height of exclusion measures should consider the variety of wildlife using the area and be installed such that any species potentially impacted are screened for and relocated.

Recommendation 4 – Develop a detailed Erosion and Sediment Control (ESC) Plan prior to construction that includes the installation of sediment and erosion control measures such as silt fencing and straw-bale check dams prior to construction activities. Exposed soils and disturbed areas should be re-stabilized following construction, with non-biodegradable erosion and sediment control measures removed from site once these areas have been stabilized.

Recommendation 5 – Monitor all fencing (silt, tree, and wildlife exclusion) during construction on a weekly basis and 24 hours after significant rain or wind events to ensure that all fencing is intact and functioning properly.

Recommendation 6 – Use water as a dust control measure to reduce or eliminate generation of dust from heavy equipment construction and earth moving activities, areas of exposed soils and areas of concrete drilling/cutting to mitigate dust deposition into adjacent natural areas.

Recommendation 7 – Develop a Spill Response Plan prior to construction to avoid/minimize contaminant release to the adjacent natural areas.

Recommendation 8 – All machinery, construction equipment and vehicles arriving on site should be in clean condition (e.g., free of fluid leaks, or attached soil potentially containing seeds of plant material from invasive species) and be inspected and washed in accordance with the *Clean Equipment Protocol for Industry* (Halloran, Anderson, & Tassie, 2013) prior to arriving and leaving the construction area. Refuelling, maintenance, or repair of equipment should not occur within 30 m of a wetland or Lake Ontario. Emergency spill-kits and drop trays should be kept on site and deployed as necessary for equipment working near or over water.

Recommendation 9 – Reduce the slope of stockpiled substrates (gravel, sand, soil) and maintain it at 70 degrees or less during the breeding bird season (**April 1 to August 31**) to prevent burrowing MBCA protected and SAR birds from nesting in the stockpiled material.

Recommendation 10 – An Invasive Species Control Plan including the *Clean Equipment Protocol for Industry* (Halloran et al., 2013) is recommended to be developed prior to construction activities in regard to invasive species control.

Recommendation 11 – Develop a SAR and Wildlife Observation and Handling Protocol prior to construction. Construction staff will receive SAR Awareness Training and be made aware of the possible wildlife, including SAR and SOCC, that may occur within the construction area. The Plan will include SAR identification and the proper protocols to implement if wildlife or SAR/SOCC are encountered in the construction area to reduce harm/injury to the animal. The handling protocol should follow the MNRF's *Ontario Species at Risk Handling Manual: For Endangered Species Act Authorization Holders* (MNRF, no date).

Recommendation 12 – If work is to be done at night during the bat active season of **April 1 to September 30**, construction lighting should be directed downwards and shielded.

Recommendation 13 – The use of alternative de-icing products / application methods should be considered to reduce the input of road salt into the adjacent swamps and marshes. A Road Salt and Snow Management Plan should be developed prior to construction activities.

Recommendation 14 –Existing drainage patterns between wetland units should be maintained through proper design and implementation of Low Impact Design (LID) measures. A hydrological assessment may be required to determine changes to drainage conditions based on the proposed works.

The anticipated net impacts of the Preferred Alternative after implementation of the recommended mitigation measures are detailed in **Table 6-1.**

6.3 Compensation, Restoration and Enhancement

While being the least desirable measure, compensation for loss of vegetation or habitat, or the restoration of degraded areas can offer a means of providing a benefit to the natural features and functions that contribute to an overall natural heritage system. The following recommendations are provided with respect to the proposed works: **Recommendation 15 –** Vegetation clearing and associated edge effects to natural heritage features can be mitigated by planting native vegetation in any areas temporarily disturbed by construction activities. Where vegetation removals

are required and machinery use has resulted in degradation of edge habitat, compensation plantings should be considered and should include native trees, shrubs and herbaceous species.

Recommendation 16 – If tree removals are required, appropriate compensation measures should be discussed with the Town of Whitby.

6.4 Net Effects Assessment

The "*net effects*" of potential impacts were assessed based on the degree to which the recommended mitigation measures can prevent or reduce the potential environmental effects. In other words, net effects are those that remain after mitigation, avoidance and/or compensation measures have been implemented.

The following criteria were applied during the assignment of net effects from the design, construction, and existing land use related to the Project. The potential impacts caused by the proposed work for the Project were considered relative to the significance and sensitivity of the ecological features or their functions.

NO Net Effect..... indicates that no impact to the identified ecological features or functions is anticipated.

LOW Net Effect..... indicates loss of habitat possessing limited potential habitat value, or loss of a portion of habitat, which will not result in long-term impact to the remaining habitat, or reduction in associated key ecological functions.

MEDIUM Net Effect..... indicates loss of habitat possessing moderate potential habitat value, or loss of a portion of habitat that may result in long term impact to the remaining habitat, or loss of associated key ecological functions.

HIGH Net Effect..... Indicates loss of habitat possessing significant potential habitat value, or loss of a portion of habitat that may result in long-term and potentially critical impacts to the remaining habitat, or significant loss of associated key ecological functions.

The anticipated net effects of the Preferred Alternative Design (Road Refined Alignment 1) and the recommended mitigation measures (**Section 6.2**) are shown in **Table 6-1**.

Table 6-1: Net Effects Assessment

Phase of Project	Duration of Potential Effect	Source of Potential Effect	Potential Areas Affected/Potential Effects	Mitigation/ Compensation	Anticipated Net Effects/ Rationale
Construction	**Direct Potential Impact**	**Removal of Vegetation**	■ Removal of 0.104 ha of Dry-Moist Old Field Meadow (CUM1-1) ■ Removal of 0.0679 ha of Hawthorn Deciduous Shrub Thicket (THDM2-11) ■ Removal of 0.001 ha of Manitoba Maple Mineral Deciduous Swamp (SWD3-4) ■ Removal of 0.641 ha of Poplar Mineral Deciduous Swamp (SWD4-5) ■ Removal of 0.109 ha of Willow Mineral Deciduous Swamp (SWD4-1).	■ Limit vegetation removal to the extent possible. Clearly delineate vegetation clearing zones (i.e., using silt or tree protection fencing) on both construction drawings and in the field prior to clearing and grading (Recommendation 17). ■ Areas temporarily disturbed should be revegetated once construction is complete by planting native trees, shrubs and native grasses and sedges (Recommendation 15). ■ Implement appropriate setbacks and erosion and sediment control fencing to define the construction footprint area and prevent accidental removal (Recommendation 1 and Recommendation 4). ■ Compensation for tree removals should be confirmed with the Town of Whitby, as appropriate (Recommendation 16).	NO NET EFFECT ■ Anticipated vegetation removal is minimal and within already disturbed, low quality vegetation communities compared to the remaining natural areas. No long-term effects are anticipated on the remaining vegetation communities.
Construction	**Direct Potential Impact**	**Removal of Whitby Harbour PSW**	■ No impacts anticipated to the Whitby Harbour PSW as it does not fall within the current Recommended Plan.	■ None	NO NET EFFECT ■ No effects anticipated.
Construction	**Direct Potential Impact**	**Removal of confirmed SWH (Monarch Habitat)**	■ Removal of 0.104 ha of Dry-Moist Old Field Meadow (CUM1-1)	■ Same mitigation as above.	NO NET EFFECT ■ Anticipated vegetation removal is minimal and within already disturbed, low quality vegetation communities compared to the remaining natural areas. No long-term effects are anticipated on the remaining vegetation communities that would impede or degrade ecological function for the candidate significant wildlife habitats.
Construction	**Direct Potential Impact**	**Removal of confirmed/candidate SWH (Bird SOCC)**	■ Removal of 0.641 ha of Poplar Mineral Deciduous Swamp (SWD4-5) which is confirmed Eastern Wood-pewee habitat. ■ No impacts anticipated for Common Nighthawk and Barn Swallow.	■ Same mitigation as above. ■ Avoid vegetation removal during the active bird nesting **August 1 to August 31**.	NO NET EFFECT ■ Anticipated tree removal is minimal and within already disturbed, low quality vegetation communities compared to the remaining natural areas. The form and function of the remaining forest will be maintained for continued habitat for Eastern Wood-pewee. Avoiding tree removal during the active breeding bird season will avoid impacts (injury or mortality) to individual Eastern Wood-pewee. Compensation for tree removal will be confirmed with the Town of Whitby.
Construction	**Direct Potential Impact**	**Removal of SWH – Candidate Waterfowl Nesting Areas**	■ Removal of 0.104 ha of Dry-Moist Old Field Meadow (CUM1-1)	■ Same mitigation as above.	NO NET EFFECT ■ Anticipated vegetation removal is minimal and within already disturbed, low quality vegetation communities compared to the remaining natural areas. No long-term effects are anticipated on the remaining vegetation communities that would impede or degrade ecological function for the candidate significant wildlife habitats.
Construction	**Direct Potential Impact**	**Removal of SWH - Candidate Turtle Wintering Areas (including habitat for turtle SOCC)**	■ Approximately 0.751 ha of candidate Snapping Turtle habitat (swamp and marsh communities). ■ Disturbance to turtle species resulting in potential injury or mortality.	■ Same mitigation as above. ■ Installation of wildlife exclusion fencing in accordance with the *Best Management Practices for Mitigation the Effects of Roads on Amphibian and Reptile Species at Risk in Ontario* (MNRF, 2016) to prevent turtles, snakes and other wildlife from entering the construction (Recommendation 3). ■ Develop a Spills Response Plan prior to construction to avoid/minimize impacts to the swamp and marsh communities (Recommendation 7).	NO NET EFFECT ■ Fencing installed using the *Best practices for Reptile and Exclusion Fencing* (MNRF, 2016) should prevent turtle species from entering the Recommended Plan.

Phase of Project	Duration of Potential Effect	Source of Potential Effect	Potential Areas Affected/Potential Effects	Mitigation/ Compensation	Anticipated Net Effects/ Rationale
			■ Impacts to overwintering turtles are not anticipated as no in-water works are proposed and the MAS2-1 does not overlap with the Recommended Plan. ■ Northern Map turtle habitat was identified within Lake Ontario which will not be impacted by the Project.	■ Refuelling, maintenance, or repair of equipment should not occur within 30 m of a watercourse or drainage feature. Emergency spill-kits and drop trays should be kept on site and deployed as necessary for equipment working near or over water. No machinery/equipment should enter the swamps or marshes at any time (Recommendation 8). ■ Development and implementation of a SAR and Wildlife Observation and Handling Protocol (Recommendation 11).	
Construction	**Direct Potential Impact**	**Removal of SWH – Candidate Amphibian Breeding Habitat (Woodland) and Amphibian Movement Corridors**	■ Approximately 0.751 ha of swamp communities will be removed.	■ Same mitigation as above.	NO NET EFFECT ■ Anticipated vegetation removal is minimal and within already disturbed, low quality vegetation communities compared to the remaining natural areas. No long-term effects are anticipated on the remaining vegetation communities that would impede or degrade ecological function for the candidate significant wildlife habitats.
Construction	**Direct Potential Impact**	**Removal of SWH – Candidate Colonial Nesting Bird Breeding Habitat (Tree/Shrubs)**	■ Approximately 0.751 ha of swamp communities will be removed.	■ Same mitigation as above. ■ Avoid vegetation removal and work on potential nesting structures during the active bird nesting season (**August 1 to August 31).**	NO NET EFFECT Anticipated tree removal is minimal and within already disturbed, low quality vegetation communities compared to the remaining natural areas. The form and function of the remaining forest will be maintained for continued colonial nesting bird habitat. Avoiding tree removal during the active breeding bird season will avoid impacts (injury or mortality) to individual birds. Compensation for tree removal will be confirmed with the Town of Whitby.
Construction	**Direct Potential Impact**	**Removal of Candidate Red-headed Woodpecker Habitat**	■ Removal of 0.751 ha of potential Red-headed Woodpecker habitat	■ Same mitigation as above. ■ Avoid tree removal within the of Manitoba Maple Mineral Deciduous Swamp (SWD3-4), Poplar Mineral Deciduous Swamp (SWD4-5) and the Willow Mineral Deciduous Swamp (SWD4-1) during the breeding bird season (**April 1 to August 31**).	NO NET EFFECT Anticipated tree removal is minimal and within already disturbed, low quality vegetation communities compared to the remaining natural areas. The form and function of the remaining forests will be maintained for continued Red-headed Woodpecker habitat. Avoiding tree removal during the breeding bird season will avoid impacts (injury or mortality) to individual Red-headed Woodpeckers. Compensation for tree removal will be confirmed with the Town of Whitby.
Construction	**Direct Potential Impact**	**Removal of Candidate bat SAR habitat**	■ Removal of 0.751 ha of potential bat SAR habitat	■ Same mitigation as above. ■ Avoid tree removal within the of Manitoba Maple Mineral Deciduous Swamp (SWD3-4), Poplar Mineral Deciduous Swamp (SWD4-5) and the Willow Mineral Deciduous Swamp (SWD4-1) during bat active season. ■ Construction lighting should be directed downwards and shielded if work is to be done at night during the bat active season of **April 1 to September 30** (Recommendation 12).	NO NET EFFECT ■ Anticipated tree removal is minimal and within already disturbed, low quality vegetation communities compared to the remaining natural areas. The form and function of the remaining forests will be maintained for continued bat SAR maternity roosting. Avoiding tree removal during the bat active season will avoid impacts (injury or mortality) to individual bats. Compensation for tree removal will be confirmed with the Town of Whitby.
Operational	**Direct Potential Impact**	**No anticipated direct potential effects during operational phase.**	■ None	■ None	NO NET EFFECT ■ No effects anticipated.
Construction	**Indirect Potential Impact**	**Incidental Damage and Disturbance to Adjacent Natural Features**	■ Potential areas affected include natural heritage features present within the Study Area including the wetland and cultural communities.	■ Demarcation of the Recommended Plan with appropriate tree protection or sediment erosion fencing (Recommendation 1). ■ Installation of tree protection fencing in accordance with the Tree Protection Plan and regular monitoring during vegetation removal to ensure no damage occurs to protect trees or adjacent vegetation communities (Recommendation 2).	NO NET EFFECT ■ Proper installation of tree protection or sediment erosion fencing and regular monitoring during vegetation removal can prevent incidental damage or intrusion into adjacent vegetation communities.
Construction	**Indirect Potential Impact**	**Disturbance to Wildlife including:**	■ Disturbance to breeding birds, fish and other wildlife	■ Avoid vegetation removal and work on potential nesting structures during the active bird nesting season (**April 1 to August 31**).	NO NET EFFECT ■ With the implementation of restrictions on the timing of construction, installation of wildlife exclusion fencing,

Phase of Project	Duration of Potential Effect	Source of Potential Effect	Potential Areas Affected/Potential Effects	Mitigation/ Compensation	Anticipated Net Effects/ Rationale
		■ **Migratory Bird Nest and Egg Destruction** ■ **Incidental Wildlife Injury or Mortality**		■ Avoid tree removal within the of Manitoba Maple Mineral Deciduous Swamp (SWD3-4), Poplar Mineral Deciduous Swamp (SWD4-5) and the Willow Mineral Deciduous Swamp (SWD4-1) during bat active season (**April 1 to September 30**). ■ Limit construction activities to the daylight hours (i.e., 7am to 7pm) in order to reduce the amount of noise disturbance. ■ Installation of wildlife exclusion fencing in accordance with the *Best Management Practices for Mitigation the Effects of Roads on Amphibian and Reptile Species at Risk in Ontario* (MNRF, 2016) to prevent turtles, snakes and other wildlife from entering the construction (Recommendation 3). ■ Reduce the slope of stockpiled substrates to prevent burrowing MBCA protected or SAR birds from nesting in stockpiled material (Recommendation 9). ■ Development and implementation of a SAR and Wildlife Observation and Handling Protocol (Recommendation 11).	proper management of stockpiled material and implementation of a SAR and Wildlife Observation and Handling Protocol, temporary disturbance to birds and wildlife can be avoided.
Construction	**Indirect Potential Impact**	**Sediment and Erosion including Soil and Water Contamination**	■ Throughout Study Area	■ Develop a detail ESC Plan prior to construction (Recommendation 4). ■ Use water as a dust control measure to reduce the generation of dust from equipment (Recommendation 6). ■ Develop a Spills Response Plan prior to construction to avoid/minimize contaminant release into adjacent natural areas (Recommendation 7).	NO NET EFFECT ■ Proper equipment maintenance and refuelling practices can greatly reduce the risk of leaks and spills. Paired with appropriate emergency spill planning there is no expected impact to Natural Heritage Features.
Construction	**Indirect Potential Impact**	**Introduction or spread of invasive species**	■ Throughout Study Area	■ All machinery, construction equipment and vehicles arriving on site should be inspected for soil potentially containing seeds of plant material from invasive species (Recommendation 8). ■ An Invasive Species Control Plan should be developed prior to construction (Recommendation 10).	NO NET EFFECT The Study Area already contains a high number of invasive species. Control measures for invasive species is anticipated to enhance vegetation communities.
Operational	**Indirect Potential Impact**	**Effects on Water Quality**	■ Throughout Study Area	■ Utilize chemical de-icers and salt only as needed (Recommendation 13). ■ Develop and implement a Road Salt and Snow Management Plan (Recommendation 13).	NO NET EFFECT ■ With the significant usage already occurring within the Town of Whitby the additional road improvements are not enough to significantly decrease the water quality within the Natural Heritage Features.
Operational	**Indirect Potential Impact**	**Change in Hydrology, Drainage and Water Quantity through increased impervious area**	■ Disturbance to adjacent wetlands including portions of the Whitby Harbour PSW and candidate SWH	■ Existing drainage patterns between wetland units should be maintained through proper design and implementation of LID measures. A hydrological assessment may be required to determine changes to drainage conditions based on the proposed works. (Recommendation 18).	NO NET EFFECT ■ Hydrology, drainage and water quantity changes are not anticipated to occur as long as proper design and implementation of LID measures are adhered to.
Operational	**Indirect Potential Impact**	**No Additional Impacts to Wildlife Road Mortality Anticipated**	■ None	■ None	NO NET EFFECT ■ Although the road improvements are planned, it will mostly be limited within the existing road right-of-way and is not anticipated to increase road mortality from baseline conditions as there are limited opportunities for movement within the urbanized landscape.

6.5 Additional Surveys

The following additional recommendations are provided based on the preliminary design for the Preferred Alternative:

- Update SAR habitat screening as protection statuses of species under the ESA may change over time.

- Additional surveys may be required during detailed design and should be confirmed with MECP, MNRF and/or CLOCA during the early phases of detailed design; the following surveys are subject to change based on the updated SAR habitat screening, agency consultation and design-related impacts:
    - Leaf-off cavity tree searches and acoustic surveys for bat SAR will likely be required based on the anticipated bat SAR habitat loss.
    - Nest searches and call playback surveys for Red-headed Woodpecker and Pileated Woodpecker may be required to confirm presence/absence.
    - Anuran nocturnal calling surveys following the *Marsh Monitoring Program Participant's Handbook for Surveying Amphibians* (BSC *et al*., 2009).
    - A confirmatory fish and fish habitat survey should be completed to identify potential overland flow north of Water Street along the abandoned railway corridor, and potential (unlikely) seasonal connectivity to any nearby waterbody.
    - A tree inventory to document required removals based on the detail design and for use in consideration of replacement plantings. The results of the tree inventory should be documented in a separate arborist report.
    - Wetland evaluation to confirm boundaries of the Whitby Harbor PSW Complex in accordance with the Ontario Wetland Evaluation System Southern Manual (MNRF, 2022).

7. Anticipated Permitting & Legislative Requirements

Section 2 outlines the legislative and policy context for the Project. Based on the field investigations and assessment of potential impacts, the anticipated permits and conformance with legislation for the Project have been identified. **Table 7-1** below provides a summary of the anticipated permits and approvals for the proposed work. Applicable permits and approvals shall be completed and submitted to the appropriate regulatory agencies prior to construction.

Table 7-1: Anticipated Permits and Approvals

Level of Government	Legislation	Governing Authority	Applicability to the Project
Federal	*Species at Risk Act, 2002 (SARA)*	Fisheries and Oceans Canada (DFO)	■ Not required as there are no watercourses or federally listed SAR present within the Study Area.
Federal	*Migratory Birds Convention Act, 1994 (MBCA)*	Environment and Climate Change Canada (ECCC)	■ Contravention of the MBCA is not anticipated provided that vegetation removal occurs outside of the breeding bird season (**April 1 to August 31**) and that the slope of stockpiled substrates be maintained at 70 degrees or less during the breeding bird season (**April 1 to August 31**). ■ Although unlikely, nests of species listed under Schedule 1 of the MBCA (i.e., Pileated Woodpecker) may appear from year to year

Level of Government	Legislation	Governing Authority	Applicability to the Project
			within the Recommended Plan and could require removal. Unoccupied nests of these migratory birds, whose nests are commonly re-used from one year to the next, cannot be removed without a permit unless reported though the Abandoned Nest Registry and nest remains unoccupied for the corresponding period of time (i.e., 36 months for Pileated Woodpecker).
Federal	*Fisheries Act, 1985*	Fisheries and Oceans Canada (DFO)	■ Not Required – a DFO Request for Review to the does not need to be submitted since work is not occurring within any watercourses.
Provincial	*Endangered Species Act, 2007* (ESA)	Ontario Ministry of the Environment, Conservation and Parks (MECP)	■ MECP should be consulted during the early phases of Detailed Design to determine the need for additional surveys and permits. Contravention of the ESA is not anticipated provided the following recommendations are implemented.: ■ : - Vegetation removal occurs outside of the breeding bird and bat active season (i.e., combined **April 1 to September 30**); - Slopes of stockpiled substrates are maintained at 70 degrees or less during the breeding bird season (**April 1 to August 31**); and - - A SAR and Wildlife Observation and Handling Protocol is implemented. .
Municipal	*Durham Regional Woodland Conservation and Management By-Law 30-2020* *Town of Whitby Tree Protection By-Law 4640-00*	Town of Whitby	■ A permit to injure or kill trees may be required. Permitting requirements to kill or injure trees should be documented in a separate arborist report during later stages of the Project.
Local	*Ontario Regulation (O. Reg.)42/06: Central Lake Ontario Conservation Authority Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*	Central Lake Ontario Conservation Authority (CLOCA)	■ Required as the Study Area falls within CLOCA's Regulated Areas.

8. Summary

This report conforms with relevant Municipal, Provincial and Federal environmental legislation, policies and guidelines as documented in this report.

The existing natural heritage features identified within the Study Area and Terrestrial Review Area through the natural heritage background review and field program include the following:

- The Whitby Harbour PSW Complex occurs north of Water Street.
- Policy Areas
    - Region of Durham's Natural Heritage System;
    - Town of Whitby Natural Heritage System; and,
    - CLOCA Regulated Area.
- The Region of Durham and Town of Whitby typically require permits for removal or injury of trees. Tree removals should be assessed under a separate report arborist report that will be completed during future stages of the Project.
- There was no potential fish habitat identified within the Study Area. A confirmatory site review will be conducted during detail design to identify potential overland flow north of Water Street along the abandoned railway corridor, and potential (unlikely) seasonal connectivity to any nearby waterbody.
- The following confirmed SWH were identified within the Study Area:
    - Habitats for SOCC:
        - Eastern Wood-pewee within the Poplar Mineral Deciduous Swamp (SWD4-5); and,
        - Monarch within cultural meadow communities.
- Several candidate SWH were identified and represented by woodlands, wetlands and Lake Ontario within the Study Area.
- The treed swamp communities within the Study Area provide potentially suitable habitat for five SAR: Red-headed Woodpecker, Little Brown Myotis, Northern Myotis, Tri-colored Bat and Eastern Small-footed Myotis.
- Red-headed Woodpecker may also use mature trees within Heydonshore Pavilion Park and Rotary Sunrise Lake Park.

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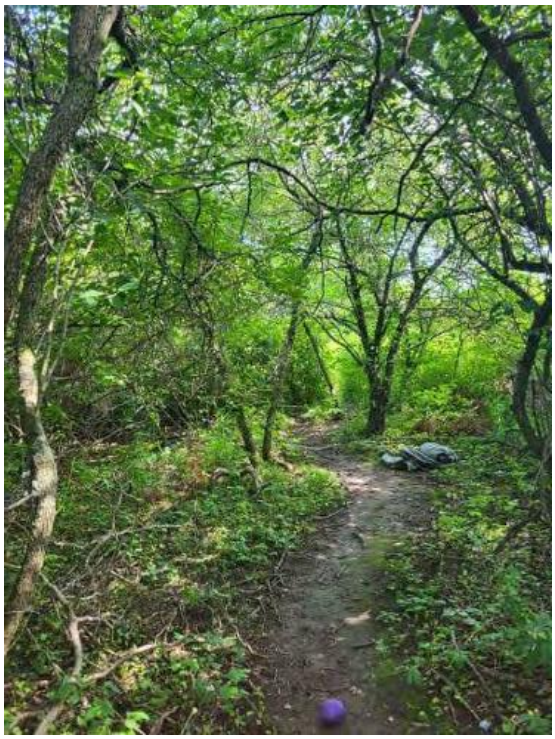
Appendix A

Terrestrial Photolog

AECOM

Photographic Log

Client Name:	Report Name	Project No.
Town of Whitby	Water Street Improvements between Brock Street South and South Blair Street “Schedule C” Municipal Class Environmental Assessment	60591304



Photograph 1. ↑
Hawthorn Deciduous Shrub Thicket Community (THDM2-11)



Photograph 2. ↑
Hawthorn Deciduous Shrub Thicket Community (THDM2-11)



Photograph 3. ↑
Hedgerow located at the southeast end of the Study Area near Heydonshore Pavilion Park



Photograph 4. ↑
Hedgerow located at the southeast end of the Study Area near Heydonshore Pavilion Park



Photograph 5. ↑
Manitoba Maple Mineral Deciduous Swamp Community (SWD3-4)



Photograph 6. ↑
Manitoba Maple Mineral Deciduous Swamp Community (SWD3-4)



Photograph 7. ↑
Poplar Mineral Deciduous Swamp (SWD4-5)



Photograph 8. ↑
Poplar Mineral Deciduous Swamp (SWD4-5)



Photograph 9. ↑
Cattail Mineral Shallow Marsh (MAS2-1)



Photograph 10. ↑
Cattail Mineral Shallow Marsh (MAS2-1)



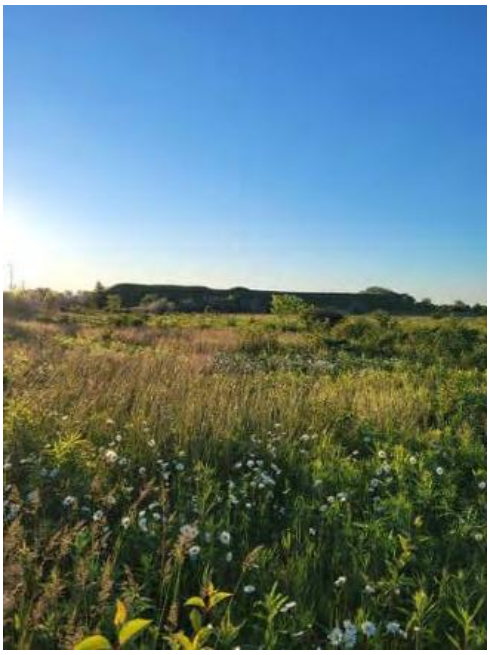
Photograph 11. ↑
Dry-Moist Old Field Meadow (CUM1-1)



Photograph 12. ↑
Willow Mineral Deciduous Swamp (SWD4-1)



Photograph 13. ↑
Breeding Bird Survey Station 01



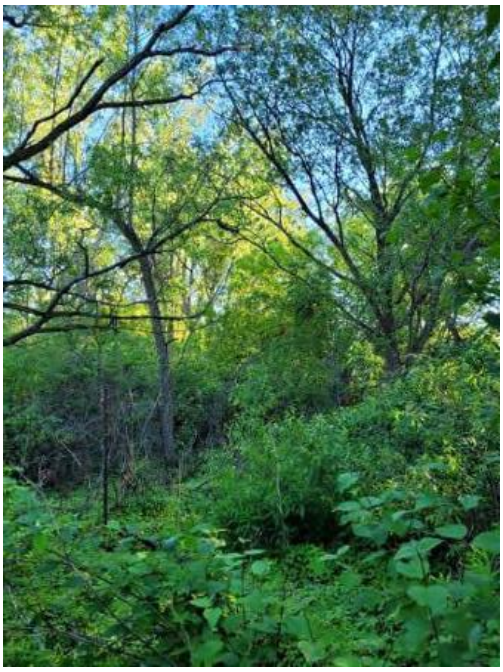
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Breeding Bird Survey Station 02



Photograph 15. ↑
Breeding Bird Survey Station 03



Photograph 16. ↑
Breeding Bird Survey Station 04



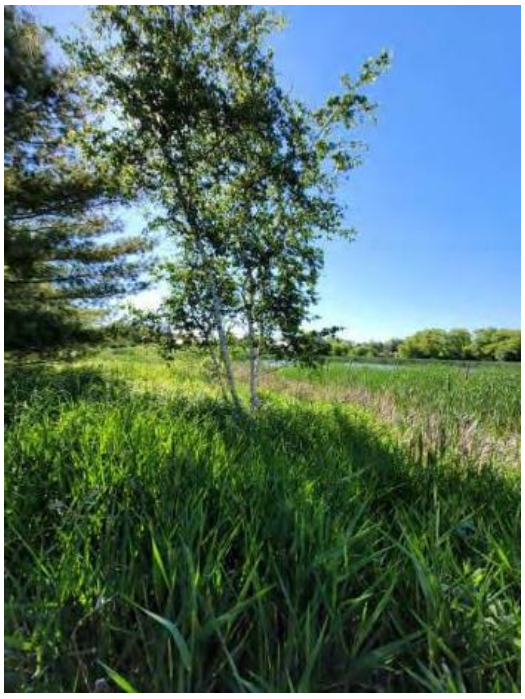
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Breeding Bird Survey Station 05



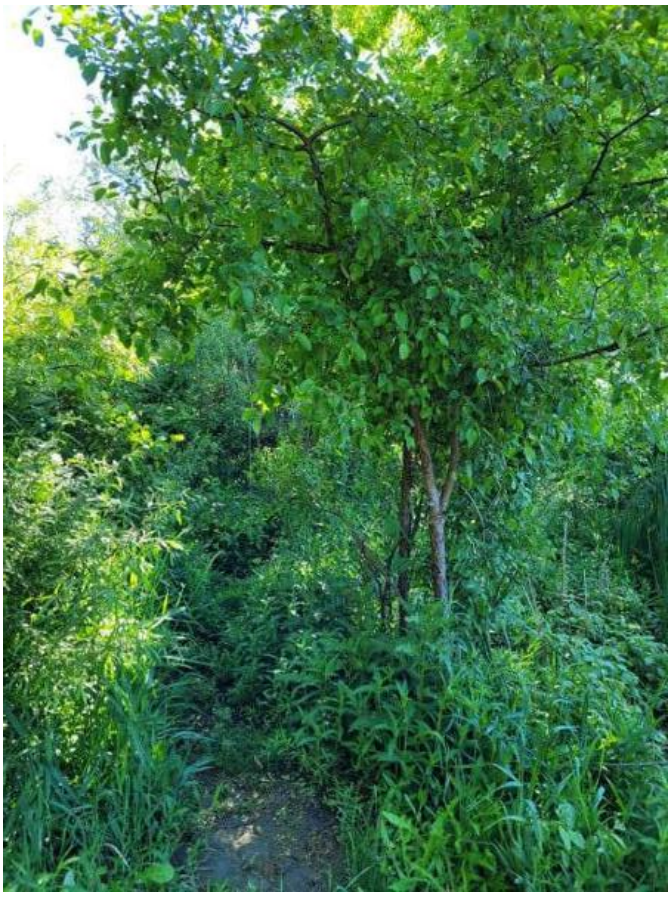
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Breeding Bird Survey Station 06



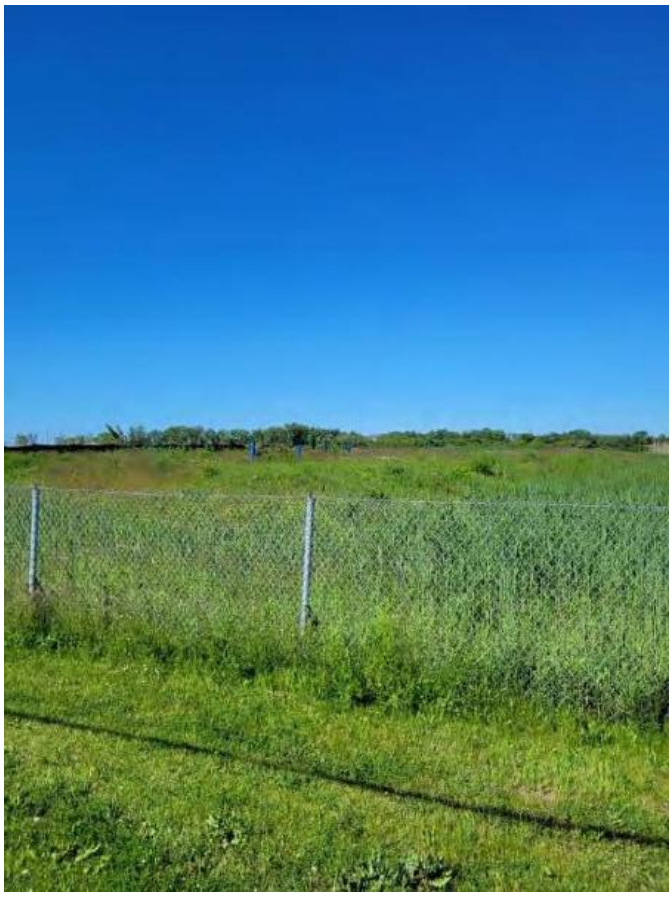
Photograph 19. ↑
Breeding Bird Survey Station 07



Photograph 20. ↑
Breeding Bird Survey Station 08



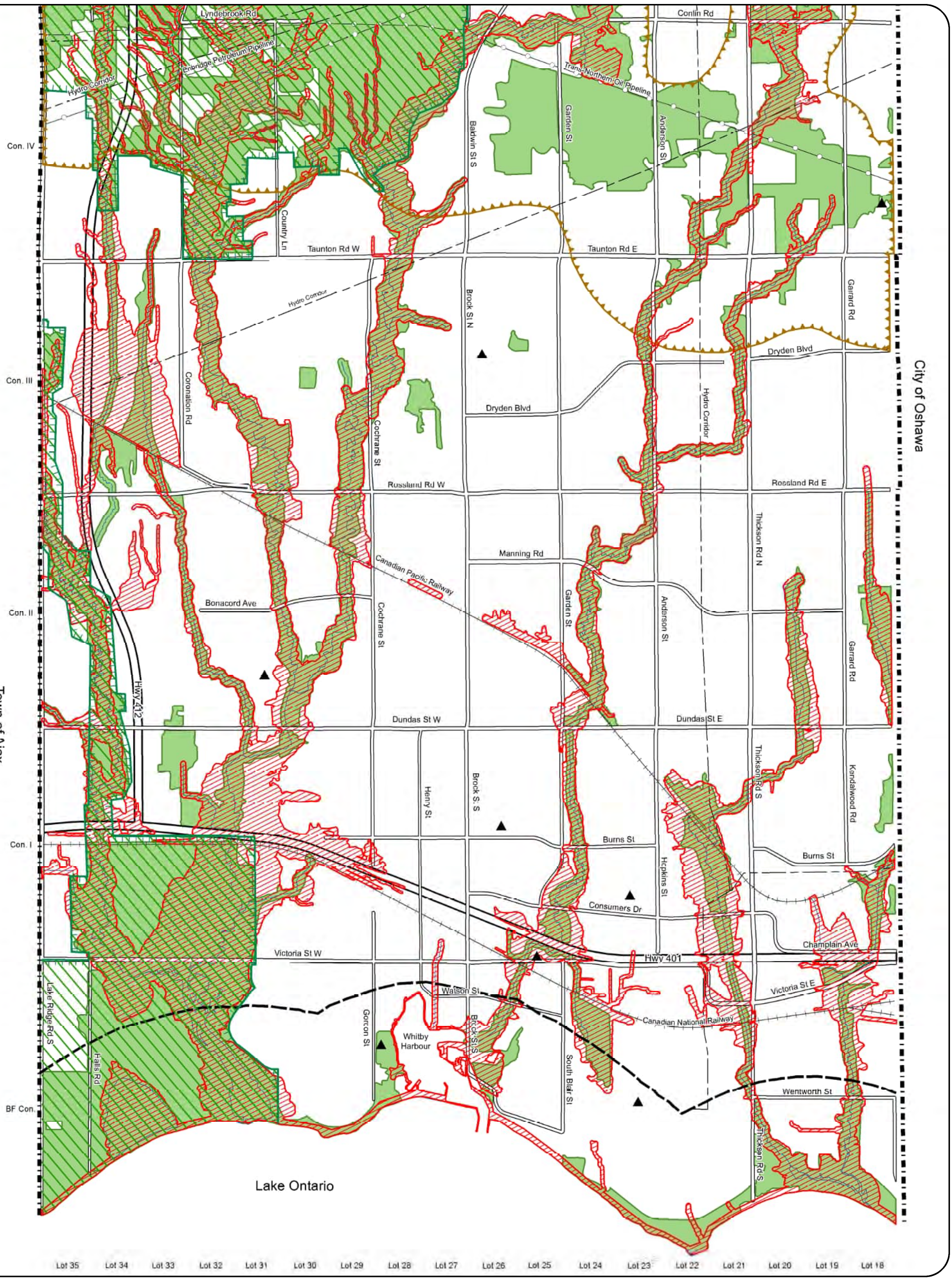
Photograph 21. ↑
Breeding Bird Survey Station 09



Photograph 22. ↑
Breeding Bird Survey Station 11

Appendix B

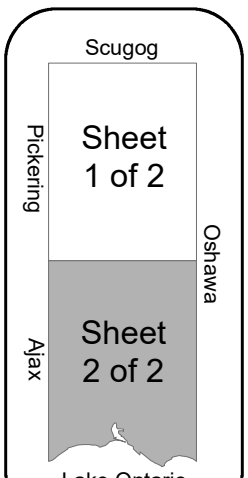
Official Plan Schedules



Legend

- Natural Heritage System
- Natural Hazards
- Greenbelt Natural Heritage System
- Former Lake Iroquois Beach
- Former Waste Disposal Site
- D12 (Deferred by Region of Durham)
- 1 km Lake Ontario Shoreline Limit
- Southern Boundary of Oak Ridges Moraine
- Greenbelt Protected Countryside Boundary
- Municipal Boundary

Note: Some legend items may not appear on the displayed figure extent.



Official Plan - Town of Whitby

Environmental Management

Schedule **C**

N

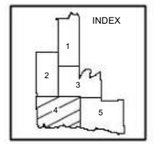
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Metres

Consolidation Date: June 2021

This schedule forms part of the Official Plan of the Town of Whitby and must be read in conjunction with the written text. For all intents and purposes, the elements within this schedule are to be considered conceptual.

OFFICIAL PLAN OF THE REGIONAL MUNICIPALITY OF DURHAM



SCHEDULE 'B' - MAP 'B1d' GREENBELT NATURAL HERITAGE SYSTEM & KEY NATURAL HERITAGE AND HYDROLOGIC FEATURES

A

LAKE ONTARIO

LEGEND

- KEY NATURAL HERITAGE AND HYDROLOGIC FEATURES
- GREENBELT NATURAL HERITAGE SYSTEM
- OAK RIDGES MORAINE CONSERVATION PLAN AREA BOUNDARY
- URBAN AREA
- LANDS APPEALED TO OMB, REFER TO POLICY 14.13.7.
- A — SPECIFIC POLICY AREA

NOTES:
1) THIS MAP FORMS PART OF THE OFFICIAL PLAN OF THE REGIONAL MUNICIPALITY OF DURHAM AND MUST BE READ IN CONJUNCTION WITH THE TEXT.

2) ROADS ARE FOR REFERENCE PURPOSES ONLY.

3) OFFICE CONSOLIDATION - MAY 26, 2020.

SOURCES:
1) OAK RIDGES MORAINE: BOUNDARY, MINISTRY OF MUNICIPAL AFFAIRS & HOUSING, 2002, 1:100,000.

2) NATURAL HERITAGE FEATURES: MINISTRY OF NATURAL RESOURCES, 1:10,000.

3) CONSERVATION AUTHORITIES.

4) GREENBELT PLAN: © QUEEN'S PRINTER FOR ONTARIO, 2005. REPRODUCED WITH PERMISSION.

Appendix C

Plant List

Appendix C: Vascular Plant List

AECOM

Botanical Name		Plant Species Information												Plant Form		Climate Change Vulnerability Index (CCVI)		ELC ID#:	1	2	3	4	5	6
Common Name	Scientific Name	Family	CC (2023)	CW (2(	Native Status	Invasive (Y/N)	Tall-grass Species (Y/N)	SRANK	NRANK	GRank	COSEWIC	SARO	WC	Type	Flowering Season	CCVI	CCVI Confidence	ELC Code:	THDM2-11	CUM1-1	SWD3-4	SWD4-5	MAS2-1	SWD4-1
Manitoba Maple	Acer negundo	Aceraceae	0	0	N	Y		S5	N5	G5				TR					X	X	X	X		X
Garlic Mustard	Alliaria petiolata	Brassicaceae		0	I	Y		SE5	NNA	GNR				FO	Spr-Aut				X					
peanut	Amphicarpaea bracteata	Fabaceae	4	0	N	N	Y	S5	N5	G5			R-A	VI	Aut								X	
Canada Anemone	Anemonastrum canadense	Ranunculaceae	3	-3	N	N	Y	S5	N5	G5				FO	Sum							X	X	
Common Burdock	Arctium minus	Asteraceae		3	I	N		SE5	NNA	GNR				FO					X					
Swamp Milkweed	Asclepias incarnata	Apocynaceae	6	-5	N	N	Y	S5	N5	G5				FO	Sum							X		
Common Milkweed	Asclepias syriaca	Apocynaceae	0	5	N	N		S5	N5	G5				FO	Sum					X	X			
Creeping Bellflower	Campanula rapunculoides	Campanulaceae		5	I	N		SE5	NNA	GNR				FO	Sum				X					
Lake Sedge	Carex lacustris	Cyperaceae	5	-5	N	N		S5	N5	G5				SE									X	
Wild Chicory	Cichorium intybus	Asteraceae		5	I	N		SE5	NNA	GNR				FO	Sum				X	X				
Enchanter's Nightshade	Circaea canadensis	Onagraceae	2	3	N	N		S5	N5	G5				FO	Sum				X					
Canada Thistle	Cirsium arvense	Asteraceae		3	I	Y		SE5	NNA	G5				FO	Sum				X	X				
Field Bindweed	Convolvulus arvensis	Convolvulaceae		5	I	N		SE5	NNA	GNR				VI	Sum							X		
Dogwood	Cornus sericea	Cornaceae	2	-3	N	N		S5	N5	G5				SH	Spr				X	X	X	X	X	X
(Cornus rugosa X Cornus stolonifera)	Cornus x slavinii	Cornaceae			N	N		SNA	NNA	GNA				SH					X		X	X	X	
Wild Carrot	Daucus carota	Apiaceae		5	I	N		SE5	NNA	GNR				FO	Sum-Aut				X	X				
Common Teasel	Dipsacus fullonum	Dipsacaceae		3	I	Y		SE5	NNA	GNR				FO	Sum					X				
Wild Cucumber	Echinocystis lobata	Cucurbitaceae	3	-3	N	N		S5	N5	G5				VI	Sum							X		
Bugloss	Echium vulgare	Boraginaceae		5	I	N		SE5	NNA	GNR				FO	Sum					X				X
Russian Olive	Elaeagnus angustifolia	Elaeagnaceae		3	I	Y		SE3	NNA	GNR				SH						X				
Field Horsetail	Equisetum arvense	Equisetaceae	0	0	N	N		S5	N5	G5				FE	Spr								X	
Annual Fleabane	Erigeron annuus	Asteraceae	0	3	N	N		S5	N5	G5				FO						X				
Fleabane	Erigeron philadelphicus	Asteraceae	1	-3	N	N		S5	N5	G5				FO	Spr					X				
Weed	Eutrochium maculatum	Asteraceae	3	-5	N	N		S5	N5	G5				FO								X	X	
Wild Strawberry	Fragaria virginiana	Rosaceae	2	3	N	N	Y	S5	N5	G5				FO	Spr								X	
White Ash	Fraxinus americana	Oleaceae	4	3	N	N		S4	N5	G5				TR						X				
Smooth Bedstraw	Galium mollugo	Rubiaceae		5	I	Y		SE5	NNA	GNR				FO						X	X			X
Wood Avens	Geum urbanum	Rosaceae		5	I	Y		SE3	NNA	G5				FO	Sum				X					
Orange Daylily	Hemerocallis fulva	Liliaceae		5	I	Y		SE5	NNA	GNA				FO										X
wort	Hypericum perforatum	Clusiaceae		5	I	Y	Y	SE5	NNA	GNR				FO					X	X				X
Spotted Jewelweed	Impatiens capensis	Balsaminaceae	4	-3	N	N		S5	N5	G5				FO	Sum							X	X	
Honeysuckle	Lonicera tatarica	Caprifoliaceae		3	I	Y		SE5	NNA	GNR				SH						X	X		X	X
Trefoil	Lotus corniculatus	Fabaceae		3	I	Y		SE5	NNA	GNR				FO	Sum					X				X
horehound	Lycopus americanus	Lamiaceae	4	-5	N	N		S5	N5	G5				FO	Sum							X		
Loosestrife	Lysimachia terrestris	Primulaceae	6	-5	N	N		S5	N5	G5				FO	Sum								X	
Purple Loosestrife	Lythrum salicaria	Lythraceae		-5	I	Y		SE5	NNA	G5				FO	Sum					X		X	X	X
Solomon's Seal	Maianthemum racemosum	Liliaceae	4	3	N	N		S5	N5	G5				FO	Spr-Sum								X	
Common Apple	Malus pumila	Rosaceae		5	I	N		SE4	NNA	G5				SH					X					
Catnip	Nepeta cataria	Lamiaceae		3	I	N		SE5	NNA	GNR				FO	Sum							X		
primrose	Oenothera biennis	Onagraceae	0	3	N	N		S5	N5	G5				FO	Sum							X		
Sensitive Fern	Onoclea sensibilis	Dryopteridaceae	4	-3	N	N		S5	N5	G5				FE								X		
Wild Parsnip	Pastinaca sativa	Apiaceae		5	I	Y		SE5	NNA	GNR				FO	Spr					X				
thumb	Persicaria maculosa	Polygonaceae		-3	I	N		SE5	NNA	G3G5				FO								X		
Reed Canarygrass	Phalaris arundinacea	Poaceae	0	-3	N	Y		S5	N5	G5				GR								X		X
Common Reed	Phragmites australis	Poaceae	0	-3	I	Y		S4?	N5	G5				GR	Sum					X	X			
English Plantain	Plantago lanceolata	Plantaginaceae		3	I	N		SE5	NNA	G5				FO						X				
Common Plantain	Plantago major	Plantaginaceae		3	I	N		SE5	NNA	G5				FO						X				
White Poplar	Populus alba	Salicaceae		5	I	Y		SE5	NNA	G5				TR										X
Cottonwood	Populus deltoides	Salicaceae	4	0	N	N		S5	N5	G5				TR						X	X	X		
Aspen	Populus grandidentata	Salicaceae	5	5	N	N		S5	N5	G5				TR						X	X			
Trembling Aspen	Populus tremuloides	Salicaceae	2	0	N	N		S5	N5	G5				TR								X		X
Silverweed	Potentilla anserina	Rosaceae	5	-3	N	N		S5	NNR	G5				FO	Sum				X			X		
Sulphur Cinquefoil	Potentilla recta	Rosaceae		5	I	N		SE5	NNA	GNR				FO							X			
Buckthorn	Rhamnus cathartica	Rhamnaceae		0	I	Y		SE5	NNA	GNR				SH	Sum					X			X	X
Staghorn Sumac	Rhus typhina	Anacardiaceae	1	3	N	N		S5	N5	G5				SH					X					
Red Raspberry	Rubus idaeus	Rosaceae	2	3	N	N		S5	N5	G5				SH					X				X	
Curled Dock	Rumex crispus	Polygonaceae		0	I	N		SE5	NNA	GNR				FO						X			X	
White Willow	Salix alba	Salicaceae		-3	I	N		SE4	NNA	G5				TR								X		
Cottony Willow	Salix eriocephala	Salicaceae	4	-3	N	N		S5	N5	G5				SH								X	X	X
Crack Willow	Salix euxina	Salicaceae		0	I	N		SE	NNA	GNR				TR							X	X	X	X
Sandbar Willow	Salix interior	Salicaceae	1	-3	N	N		S5	N5	G5				SH								X		X
(Salix babylonica X Salix euxina)	Salix x pendulina	Salicaceae			I	N		SNA	NNA	GNA				TR							X			
parsnip	Sium suave	Apiaceae	4	-5	N	N		S5	N5	G5				FO	Sum							X		
Canada Goldenrod	Solidago canadensis	Asteraceae	1	3	N	N		S5	N5	G5				FO	Sum-Aut				X	X	X	X	X	X
Field Sow-thistle	Sonchus arvensis	Asteraceae		3	I	N		SE5	NNA	GNR				FO						X				
Panicled Aster	Symphyotrichum lanceolatur	Asteraceae	3	-3	N	N		S5	N5	G5				FO	Sum-Aut					X				X

Appendix C: Vascular Plant List

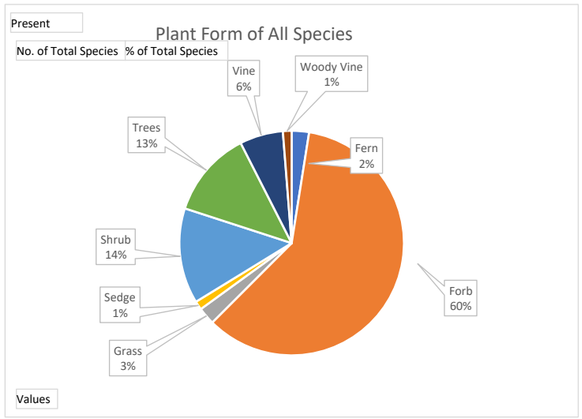
Common Name	Scientific Name	Family	CC (2023)	CW (20	Native Status	Invasive (Y/N)	Tall-grass Species (Y/N)	SRANK	NRANK	GRank	COSEWIC	SARO	WC	Type	Flowering Season	CCVI	CCVI Confidence	ELC Code:	THDM2-11	CUM1-1	SWD3-4	SWD4-5	MAS2-1	SWD4-1
New England Aster	Symphyotrichum novae-angl	Asteraceae	2	-3	N	N	Y	S5	N5	G5				FO	Sum-Aut				X	X				
Dandelion	Taraxacum officinale	Asteraceae		3	I	N		SE5	N5	G5				FO	Spr-Aut					X				
Cedar	Thuja occidentalis	Cupressaceae	4	-3	N	N		S5	N5	G5				TR										X
Red Clover	Trifolium pratense	Fabaceae		3	I	N		SE5	NNA	GNR				FO						X				
Coltsfoot	Tussilago farfara	Asteraceae		3	I	Y		SE5	NNA	GNR				FO	Spr					X		X		
Cattail	Typha angustifolia	Typhaceae		-5	I	Y		SE5	N5	G5				FO	Sum						X	X		
(Typha angustifolia X Typha latifolia)	Typha x glauca	Typhaceae		-5	N	Y		SNA	NNA	GNA				FO									X	X
Stinging Nettle	Urtica dioica	Urticaceae		0	N	N		S5	N5	G5				FO	Sum							X	X	
Common Mullein	Verbascum thapsus	Scrophulariaceae		5	I	N		SE5	NNA	GNR				FO	Sum							X		
Blue Vervain	Verbena hastata	Verbenaceae	4	-3	N	N	Y	S5	N5	G5				FO	Sum							X		
Viburnum	Viburnum opulus	Caprifoliaceae	5	-3	N	N		S5	N5	G5				SH								X		X
Tufted Vetch	Vicia cracca	Fabaceae		5	I	Y		SE5	NNA	GNR				VI					X	X				X
Swallowwort	Vincetoxicum rossicum	Apocynaceae		5	I	Y		SE5	NNA	GNR				VI	Sum					X	X	X		
Riverbank Grape	Vitis riparia	Vitaceae	0	0	N	N		S5	N5	G5				VW					X	X		X	X	X
	Ribes Sp.	Grossulariaceae																	X				X	
	Crataegus Sp.	Rosaceae																	X			X		
Willow Species	Salix Sp.																			X				

Appendix C: Vascular Plant List

Floristic Summary and Analysis for Entire Study Area		
Summary		
Total Species:	80	N/A
Native Species:	41	51%
Species:	39	49%
Invasive Species:	22	28%
ESA Status		
END	0	0%
THR	0	0%
SC	0	0%
COSEWIC Status		
END	0	0%
THR	0	0%
SC	0	0%
Provincially Rare (S-rank of S1-S3)		
S1	0	0%
S1?	0	0%
S1S2	0	0%
S1S3	0	0%
S2	0	0%
S2?	0	0%
S2S3	0	0%
S2S4	0	0%
S3	0	0%
S3?	0	0%
S3S4	0	0%
Total S1-S3:	**0**	**0%**
Local Rank		

Conservatism and Floral Quality			
Co-efficient of Conservatism (CC) (average):	**2.67**		
CC 0 to 3	lowest sensitivity	22	54%
CC 4 to 6	moderate sensitivity	17	41%
CC 7 to 8	high sensitivity	0	0%
CC 9 to 10	highest sensitivity	0	0%
Index (FQI)			
FQI:	**17.07**		
Presence of Wetland Species			
Wetness Value (CW) (average):	**0.730769231**		
upland	5	18	23%
facultative upland	2 to 4	22	28%
facultative	1 to -1	11	14%
facultative wetland	-2 to -4	18	23%
obligate wetland	-5	9	11%

Physiognomy		
Plant Form	**No. of Total Species**	**% of Total Species**
Fern	2	3%
Forb	48	60%
Grass	2	3%
Sedge	1	1%
Shrub	11	14%
Trees	10	13%
Vine	5	6%
Woody Vine	1	1%
(blank)		0%
Grand Total	**80**	**100%**



Floristic Summary and Analysis Per ELC						
Summary						
Total Species:	22	36	15	34	23	23
Native Species:	10	12	7	23	17	12
Introduced Species:	10	23	8	10	5	11
Invasive Species:	6	15	6	6	4	12
ESA Status						
END	0	0	0	0	0	0
THR	0	0	0	0	0	0
SC	0	0	0	0	0	0
COSEWIC Status						
END	0	0	0	0	0	0
THR	0	0	0	0	0	0
SC	0	0	0	0	0	0
Provincially Rare (S-rank of S1-S3)						
S1	0	0	0	0	0	0
S1?	0	0	0	0	0	0
S1S2	0	0	0	0	0	0
S1S3	0	0	0	0	0	0
S2	0	0	0	0	0	0
S2?	0	0	0	0	0	0
S2S3	0	0	0	0	0	0
S2S4	0	0	0	0	0	0
S3	0	0	0	0	0	0
S3?	0	0	0	0	0	0
S3S4	0	0	0	0	0	0
Total S1-S3:	**0**	**0**	**0**	**0**	**0**	**0**
Local Rank						

Co-efficient of Conservatism and Floral Quality Index						
Co-efficient of Conservatism (CC) (average):	1.666666667	1.69230769	1.714285714	2.80952381	2.857142857	2
CC 0 to 3	8	10	5	11	8	8
CC 4 to 6	1	3	2	10	6	3
CC 7 to 8	0	0	0	0	0	0
CC 9 to 10	0	0	0	0	0	0
Floral Quality Index (FQI)						
FQI:	**5.27**	**5.86**	**4.54**	**13.47**	**11.78**	**6.93**
Presence of Wetland Species						
Wetness Value (CW) (average):	2.315789474	2.05714286	1.538461538	-1.3125	-1.04761905	0.34782609
upland	7	10	5	3	0	6
facultative upland	6	14	2	4	5	3
facultative	3	5	3	6	7	5
facultative wetland	3	5	2	13	4	7
obligate wetland	0	1	1	6	5	2

Appendix D

Bird List

Appendix D - Bird List

Common Name	Scientific Name	G-Rank[1]	S-Rank[2]	SARA Status[3]	COSEWIC Status[4]	ESA Status[5]	COSSARO Status[6]	Area-sensitive Species[8]	OBBA 17TPJ65	AECOM Round 1 Breeding Bird Surveys (June 6, 2022)	AECOM Round 2 Breeding Bird Surveys (June 24, 2022)	AECOM Incidentals
Cormorants (PHALACROCORACIDAE)												
Double-crested Cormorant	*Phalacrocorax auritus*	G5	S5B				NAR		NY	x	x	
Bitterns, Herons & Allies (ARDEIDAE)												
Great Blue Heron	*Ardea herodias*	G5	S4						H	x	x	
Ducks, Geese, & Swans (ANATIDAE)												
Mute Swan	*Cygnus olor*	G5	SNA							x	x	
Trumpeter Swan	*Cygnus buccinator*	G4	S4				NAR			x	x	
Canada Goose	*Branta canadensis*	G5	S5							x	x	
Mallard	*Anas platyrhynchos*	G5	S5							x	x	x
Vultures (CATHARTIDAE)												
Turkey Vulture	*Cathartes aura*	G5	S5B							x	x	x
Eagles & Hawks (ACCIPITRIDAE)												
Cooper's Hawk	*Accipiter cooperi*	G5	S4				NAR	A		x		x
Red-tailed Hawk	*Buteo jamaicensis*	G5	S5	SC Sch 3			NAR	A		x		x
Plovers and Lapwings (CHARADRIIDAE)												
Killdeer	*Charadrius vociferus*	G5	S5B,S5N							x	x	
Sandpipers, Phalaropes, and Allies (SCOLOPACIDAE)												
Spotted Sandpiper	*Actitis macularia*	G5	S5								x	
Gulls & Terns (LARIDAE)												
Ring-billed Gull	*Larus delawarensis*	G5	S5B,S4N							x	x	x
Herring Gull	*Larus argentatus*	G5	S5B,S5N							x	x	
Caspian Tern	*Sterna caspia*	G5	S3B				NAR				x	

Appendix D - Bird List

Common Name	Scientific Name	G-Rank[1]	S-Rank[2]	SARA Status[3]	COSEWIC Status[4]	ESA Status[5]	COSSARO Status[6]	Area-sensitive Species[8]	OBBA 17TPJ65	AECOM Round 1 Breeding Bird Surveys (June 6, 2022)	AECOM Round 2 Breeding Bird Surveys (June 24, 2022)	AECOM Incidentals
Common Tern	*Sterna hirundo*	G5	S4B				NAR				x	
Pigeons & Doves (COLUMBIDAE)												
Mourning Dove	*Zenaida macroura*	G5	S5							x	x	
Kingfishers (ALCEDINIDAE)												
Belted Kingfisher	*Ceryle alcyon*	G5	S4B							x		
Woodpeckers & Allies (PICIDAE)												
Yellow-bellied Sapsucker	*Sphyrapicus varius*	G5	S5B					A		x		
Downy Woodpecker	*Picoides pubescens*	G5	S5							x	x	
Northern Flicker	*Colaptes auratus*	G5	S4B							x		
Flycatchers (TYRANNIDAE)												
Eastern Wood-Pewee	*Contopus virens*	G5	S4B		SC	SC	SC			x		
Willow Flycatcher	*Empidonax traillii*	G5	S5B							x	x	
Eastern Phoebe	*Sayornis phoebe*	G5	S5B							x		x
Great Crested Flycatcher	*Myiarchus crinitus*	G5	S4B							x		x
Eastern Kingbird	*Tyrannus tyrannus*	G5	S4B							x	x	x
Swallows (HIRUNDINIDAE)												
Tree Swallow	*Tachycineta bicolor*	G5	S4B							x	x	x
Bank Swallow	*Riparia riparia*	G5	S4B			THR					x	x
Barn Swallow	*Hirundo rustica*	G5	S4B		THR	SC	THR			x	x	
Jays & Crows (CORVIDAE)												
Blue Jay	*Cyanocitta cristata*	G5	S5							x	x	
American Crow	*Corvus brachyrhynchos*	G5	S5B								x	x

Appendix D - Bird List

Common Name	Scientific Name	G-Rank[1]	S-Rank[2]	SARA Status[3]	COSEWIC Status[4]	ESA Status[5]	COSSARO Status[6]	Area-sensitive Species[8]	OBBA 17TPJ65	AECOM Round 1 Breeding Bird Surveys (June 6, 2022)	AECOM Round 2 Breeding Bird Surveys (June 24, 2022)	AECOM Incidentals
Chickadees & Titmice (PARIDAE)												
Black-capped Chickadee	*Poecile atricapillus*	G5	S5							x	x	
Nuthatches (SITTIDAE)												
Red-breasted Nuthatch	*Sitta canadensis*	G5	S5					A			x	
Wrens (TROGLODYTIDAE)												
House Wren	*Troglodytes aedon*	G5	S5B							x	x	x
Marsh Wren	*Cistothorus palustris*	G5	S4B								x	
Gnatcatchers (POLIOPTILIDAE)												
Blue-gray Gnatcatcher	*Polioptila caerulea*	G5	S4B					A			x	
Thrushes (TURDIDAE)												
American Robin	*Turdus migratorius*	G5	S5B							x	x	
Mockingbirds, Thrashers & Allies (MIMIDAE)												
Gray Catbird	*Dumetella carolinensis*	G5	S4B							x	x	
Waxwings (BOMBYCILLIDAE)												
Cedar Waxwing	*Bombycilla cedrorum*	G5	S5B							x	x	
Starlings (STURNIDAE)												
European Starling	*Sturnus vulgaris*	G5	SNA							x	x	
Vireos (VIREONIDAE)												
Warbling Vireo	*Vireo gilvus*	G5	S5B							x	x	
Red-eyed Vireo	*Vireo olivaceus*	G5	S5B							x	x	
Wood-Warblers (PARULIDAE)												
Yellow Warbler	*Dendroica petechia*	G5	S5B							x	x	

Appendix D - Bird List

Common Name	Scientific Name	G-Rank[1]	S-Rank[2]	SARA Status[3]	COSEWIC Status[4]	ESA Status[5]	COSSARO Status[6]	Area-sensitive Species[8]	OBBA 17TPJ65	AECOM Round 1 Breeding Bird Surveys (June 6, 2022)	AECOM Round 2 Breeding Bird Surveys (June 24, 2022)	AECOM Incidentals
American Redstart	*Setophaga ruticilla*	G5	S5B							x	x	
Common Yellowthroat	*Geothlyphis trichas*	G5	S5B							x	x	
Cardinals, Grosbeaks & Allies (CARDINALIDAE)												
Northern Cardinal	*Cardinalis cardinalis*	G5	S5							x	x	
New World Sparrows & Allies (EMBERIZIDAE)												
Chipping Sparrow	*Spizella passerina*	G5	S5B							x	x	
Savannah Sparrow	*Passerculus sandwichensis*	G5	S4B					A		x	x	
Song Sparrow	*Melospiza melodia*	G5	S5B							x	x	
Blackbirds & Allies (ICTERIDAE)												
Red-winged Blackbird	*Agelaius phoeniceus*	G5	S4							x	x	
Common Grackle	*Quiscalus quiscula*	G5	S5B							x	x	
Brown-headed Cowbird	*Molothrus ater*	G5	S4B							x	x	
Baltimore Oriole	*Icterus galbula*	G5	S4B							x	x	
Finches & Allies (FRINGILLIDAE)												
House Finch	*Carpodacus mexicanus*	G5	SNA								x	
American Goldfinch	*Cardeulis tristis*	G5	S5B							x	x	
Old World Sparrows (PASSERIDAE)												
House Sparrow	*Passer domesticus*	G5	SNA							x	x	

Appendix D- Bird List

Glossary

1 Global Rank (GRank)

G1 - Critically Imperiled—At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.

G2 - Imperiled—At high risk of extinction or elimination due to very restricted range, very few populations, steep declines, or other factors.

G3 - Vulnerable—At moderate risk of extinction or elimination due to a restricted range, relatively few populations, recent and widespread declines, or other factors.

G4 - Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 - Secure—Common; widespread and abundant.

2 Sub-national Rank (Provincial) (SRank)

S1 - Critically Imperiled, often < 5 occurrences

S2 - Imperiled, often <20 occurences

S3 - Vulnerable, often 80 or fewer

S3S4 - Uncertain between S3 and S4

S4 - Aparently Secure, uncommon

S5 - Secure, common

SNA - Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

3 SARA - Species at Risk Act (Federal)

EXP - Extripated - a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.

END - Endangered - wildlife species that is facing imminent extirpation or extinction..

THR - Threatened - wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

SC - Special Concern a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

Schedule 1 - The official list of species that are classified as extirpated, endangered, threatened, and of special concern.

Schedule 2 - Species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

Schedule 3 - Species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

4 COSEWIC - Committee on the Stauts of Endangerd Wildlife in Canada (same as above)

5 ESA - Endangered Species Act (Provincial)

EXP - Extripated - a species that no longer exists in the wild in Ontario but still occurs elsewhere.

END - Endangered - a species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act.

THR - Threatened - a species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

SC - Special Concern (formerly Vulnerable) - a species with characteristics that make it sensitive to human activities or natural events.

DD - Data Deficient

6 COSSARO - Committee on the Status of Species at Risk in Ontario (same as above)

References

1 & 2 - Ontario Ministry of Natural Resources. 2009. Natural Heritage Information Centre.

3 - Government of Canada. 2015. Species at Risk Public Registry.

4 - Government of Canada. 2015. Committee on the Stauts of Endangerd Wildlife in Canada.

5 - Government of Ontario. 2015. Species at Risk in Ontario.

6 - Government of Ontario. 2015. Species at Risk in Ontario.

7 - Ontario Partners in Flight. 2008. Ontario Landbird Conservation Plan: Lower Great Lakes/St.Lawrence Plain, North American Bird Conservation Region 13. Ontario Ministry of NaturalResources, Bird Studies Canada, Environment Canada.

8 - Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix C). Pg 161-165

9 - Toronto Region Conservation Authority (TRCA). 2008. TRCA Fauna Ranks and Scores.

10 - Couturier, A. 2000. Conservation rankings for birds in the Grand River basin: a tool forconservation and management. Unpublished Bird Studies Canada Report, 20 pp

11 - Environment Canada. 2014. Bird Conservation Strategy for Bird Conservation Region 13in Ontario Region: Lower Great Lakes/St. Lawrence Plain. Pg 16-20

12 - Environment Canada. 2014. Bird Conservation Strategy for Bird Conservation Region 12 in Ontario and Manitoba: Boreal Hardwood Transition. Pg 12-16

Appendix E

Significant Wildlife Habitat Screening

SWH Ecoregion 6E Criterion Schedule – January 2015

Table 1.1 Seasonal Concentration Areas of Animals.

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

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Found Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
	Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck		Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	completed studies or determined from past surveys with species numbers and dates recorded). • SWHMiSTcxlix Index #7 provides development effects and mitigation measures.		
Shorebird Migratory Stopover Area **<u>Rationale:</u>** High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	• Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. • Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. • Sewage treatment ponds and storm water ponds do not qualify as a SWH. <u>Information Sources</u> • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000Ⓔ shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100Ⓔ Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area cxlviii • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"ccxi • SWHMiSTcxlix Index #8 provides development effects and mitigation measures.	**Yes;** Shoreline habitat present within the Study Area.	**Candidate;** Suitable shoreline habitat was present in the greater Study Area. No candidate shoreline habitat was present within the Project Limits.
Raptor Wintering Area **<u>Rationale:</u>** Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl **<u>Special Concern:</u>** Short-eared Owl Bald Eagle	<u>Hawks/Owls:</u> Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC. Upland: CUM; CUT; CUS; CUW. <u>Bald Eagle:</u> Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large	• The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. • Raptor wintering sites (hawk/owl) need to be > 20 ha cxlviii, cxlix with a combination of forest and upland. xvi, xvii, xviii, xix, xx, xxi. • Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands • Field area of the habitat is to be wind swept with limited snow depth or accumulation. • Eagle sites have open water, large trees and snags available for roosting cxlix <u>Information Sources:</u> • OMNRF Ecologist or Biologist • Field Naturalist Clubs • Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Results of Christmas Bird Counts	Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species Ⓔ. • To be significant a site must be used regularly (3 in 5 years) cxlix for a minimum of 20 days by the above number of birdsⒺ. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting areaⒺ • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #10 and #11 provides development effects and mitigation measures.	**No;** Forested communities are of insufficient size.	**No;** Candidate habitat was not identified**.**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Found Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
		rivers or adjacent to lakes with open water (hunting area).	• Reports and other information available from Conservation Authorities.			
Bat Hibernacula **<u>Rationale:</u>** Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-coloured Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	• Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. • Active mine sites should not be considered as SWH • The locations of bat hibernacula are relatively poorly known. <u>Information Sources:</u> • OMNRF for possible locations and contact for local experts • Natural Heritage Information Center (NHIC) Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts. • Clubs that explore caves (e.g. Sierra Club) • University Biology Departments with bat experts.	• All sites with confirmed hibernating bats are SWH Ⓔ. • The habitat area includes a 200m radius around the entrance of the hibernaculum, Ⓔ for most development types and 1000m for wind farms. • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”. • SWHMiST Index #1 provides development effects and mitigation measures.	**No;** There were no caves, mine shafts or underground foundations and karsts present within the Study Area.	**No;** There were no caves, mine shafts or underground foundations and karsts present within the Study Area.

Bat Maternity Colonies
 	
<u>Rationale:</u>
Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.
	Big Brown Bat
	Silver-haired Bat
		Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series:
		FOD
		FOM
		SWD
		SWM
			• Maternity colonies can be found in tree cavities, vegetation and often in buildings xxii, xxv, xxvi, xxvii, xxxi (buildings are not considered to be SWH).
			• Maternity roosts are not found in caves and mines in Ontario.
			• Maternity colonies located in Mature deciduous or mixed forest stands, ,with >10/ha large diameter (>25cm dbh) wildlife trees
			• Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2.
			• Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred,
			
			<u>Information Sources:</u>
			• OMNRF for possible locations and contact for local experts
			• University Biology Departments with bat experts.
				• Maternity Colonies with confirmed use by;
				  • >10 Big Brown Bats Ⓔ
				  • >5 Adult Female Silver-haired Bats Ⓔ
				• The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies Ⓔ.
				• Evaluation methods for maternity colonies should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”.
				• SWHMiSTIndex #12 provides development effects and mitigation measures.
					Yes;
					
					Forested communities may be present within the Study Area.
						Candidate;
						
						Deciduous Swamp m(SWD) communities with suitable roost habitat are present within the Study Area.

Turtle Wintering Areas **<u>Rationale:</u>**	Midland Painted Turtle **<u>Special Concern:</u>** Northern Map Turtle	Midland Painted Turtles; ELC Community Classes; SW, MA,	• For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates.	• Presence of 5 over-wintering Midland Painted Turtles is significant Ⓔ. • One or more Northern Map Turtle or	**Yes;** Open water and wetland communities maybe present within the Study Area.	**Candidate;** Suitable habitat for may be present in the marsh

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Found Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Snapping Turtle	OA and SA, ELC Community Series; FEO and BOO Northern Map Turtle; Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	• Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen cix, cx, cxi, cxii • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. <u>Information Sources:</u> • EIS studies carried out by Conservation Authorities. • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • OMNRF Ecologist or Biologist • Field Naturalist clubs • Natural Heritage Information Center (NHIC)	Snapping Turtle over-wintering within a wetland is significantⒺ. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – May) cvii. • Congregation of turtles is more common where wintering areas are limited and therefore significant cix, cx, cxi, cxii. • SWHMiSTcxlix Index #28 provides development effects and mitigation measures for turtle wintering habitat.		community and Lake Ontario.
Reptile Hibernaculum **<u>Rationale;</u>** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	**<u>Snakes:</u>** Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake **<u>Special Concern:</u>** Milksnake Eastern Ribbonsnake **<u>Lizard:</u>** **<u>Special Concern</u>** (Southern Shield population)**:** Five-lined Skink	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3	• For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. • Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line xliv, l, li, lii, cxii. • Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. • Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures . <u>Information Sources:</u> • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). • Reports and other information available from Conservation Authorities. • Field Naturalists clubs • University herpetologists	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (e.g. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct)Ⓔ • <u>Note:</u> If there are Special Concern Species present, then site is SWH • <u>Note:</u> Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30 m radius area is the SWHⒺ • SWHMiSTcxlix Index #13 provides development effects and mitigation measures for snake hibernacula. • Presence of any active hibernaculum	**Yes;** Hibernacula may be present in any vegetation community.	**No;** Suitable hibernacula were not observed in the Project Limits.

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Found Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
			• Natural Heritage Information Center (NHIC) • OMNRF ecologist or biologist may be aware of locations of wintering skinks	for skink is significant. • SWHMiSTcxlix Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.		
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff) **<u>Rationale:</u>** Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles. Cliff faces, bridge abutments, silos, barns. Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. <u>Information Sources</u> • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas • Bird Studies Canada; *NatureCounts* http://www.birdscanada.org/birdmon/ • Field Naturalist Clubs.	Studies confirming: • Presence of 1 or more nesting sites with 8or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests • Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiSTIndex #4 provides development effects and mitigation measures	**Yes;** Bluffs along Lake Ontario may provide suitable habitat.	**No;** Bank Swallows were observed foraging in the Study Area; however, no exposed or eroding banks were observed within the Project Limits.
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs) **<u>Rationale:</u>** Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15 m from ground, near the top of the tree. <u>Information Sources</u> • Ontario Breeding Bird Atlas, colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). • Natural Heritage Information Center (NHIC) Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries. • Reports and other information available from CAs. • MNRF District Offices. • Local naturalist clubs.	Studies confirming: • Presence of 5Ⓔ or more active nests of Great Blue Heron or other listed species. • The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH cc, ccvii • Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWHMiSTcxlix Index #5 provides development effects and mitigation measures.	**Yes;** Swamp wetland communities are present within the Study Area and MNRF had mapped SWH.	**Candidate;** The MNRF NHIC Mark-a-Map tool confirmed SWH outside of the Project Limits. However, swamp communities within the Study Area may provide potential SWH. While no nests of colonially tree/shrub nesting birds were identified, entirety of swamp communities were not searched for nests.
Colonially - Nesting Bird Breeding Habitat (Ground) **<u>Rationale;</u>** Colonies are important to local	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer’s Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map).	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in low bushes in close proximity to streams and irrigation ditches within farmlands.	Studies confirming: • Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian TernⒺ. • Presence of 5 or more pairs for Brewer’s BlackbirdⒺ.	**Yes;** Small rocky islands were present along Whitby Harbour.	**Confirmed;** Common Terns and Caspian Terns were observed displaying nesting behaviour within the Study Area. However, suitable SWH occurred outside of the Project

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bird population, typically sites are only known colony in area and are used annually.		Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6; MAS1 – 3; CUM CUT CUS	<u>Information Sources</u> • Ontario Breeding Bird Atlas, rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from CAs. • Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices. • Field Naturalist clubs.	• Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significantⒺ. • The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH , • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"ccxi • SWHMiSTcxlix Index #6 provides development effects and mitigation measures.		Limits.
Migratory Butterfly Stopover Areas **<u>Rationale:</u>** Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral <u>Special Concern</u> Monarch	Combination of ELC Community Series; need to have present one Community Series from each land class: <u>Field:</u> CUM CUT CUS <u>Forest:</u> FOC FOD FOM CUP Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario cxlix. • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south xxxii, xxxiii, xxxiv, xxxv, xxxvi. • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat cxlviii, cxlix. • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes xxxvii, xxxviii, xxxix, xl, xli. <u>Information Sources</u> • OMNRF (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day, significant variation can occur between years and multiple years of sampling should occur xl, xlii. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. • MUD of >5000 **or** >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant.Ⓔ • SWHMiST Index #16 provides development effects and mitigation measures.	**Yes;** Cultural meadow community within 5 km of Lake Ontario may be present.	**Candidate;** The cultural meadow in the east end of the Study Area is greater than 10 ha and may provide candidate SWH. This cultural meadow was located outside of the Project Limits.
Landbird Migratory Stopover Areas **<u>Rationale:</u>** Sites with a high diversity of species as well as high numbers are most significant.	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1 All migrant raptors species:	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	Woodlots need to be >10 haⒺ in size and within 5 km iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv of Lake Ontario. • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Ontario are more significant • Sites have a variety of habitats; forest, grassland and wetland complexes. • The largest sites are more significant	Studies confirm: • Use of the habitat by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey datesⒺ. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during	**No;** The Study Area is within 5 km of Lake Ontario but woodlots did not meet size criteria	**No;** Candidate habitat was not identified.

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	Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)		• Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5km of Lake Ontario are Candidate SWH. <u>Information Sources</u> • Bird Studies Canada • Ontario Nature • Local birders and naturalist club • Ontario Important Bird Areas (IBA) Program	spring (Apr/May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" • SWHMiST Index #9 provides development effects and mitigation measures.		
Deer Yarding Areas **<u>Rationale:</u>** Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions. Deer yards typically have a long history of annual use by deer; yards typically represent 10-15% of an areas summer range.	White-tailed Deer	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include; FOM, FOC, SWM and SWC. Or these ELC Ecosites; CUP2 CUP3 FOD3 CUT	• Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. • The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%cxciv. • OMNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual" cxcv • Woodlots with high densities of deer due to artificial feeding are not significantⒺ.	No Studies Required: • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. lvi, lvii, lviii, lix, lx, Ⓔ • Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). • Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. cxcv • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiSTcxlix Index #2 provides development effects and mitigation measures.	**No;** Deer yarding areas were not mapped within the Study Area.	**No;** Candidate habitat was not identified**.**
Deer Winter Congregation Areas **<u>Rationale:</u>** Deer movement during winter in	White-tailed Deer	All Forested Ecosites with these ELC Community Series; FOC FOM FOD	• Woodlots will typically be >100 ha in sizeⒺ. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. • Use of the woodlot by white-tailed deer will be determined by MNRF, all	**No;** Deer wintering areas were not mapped within the Study Area.	**No;** Candidate habitat was not identified**.**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Found Within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions cxlviii.		SWC SWM SWD Conifer plantations much smaller than 50 ha may also be used.	congregate in large numbers in suitable woodlands. • If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha. • Woodlots with high densities of deer due to artificial feeding are not significantⒺ. <u>Information Sources</u> • MNRF District Offices. • LIO/NRVIS	woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF Ⓔ • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey. • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST Index #2 provides development effects and mitigation measures.		

Table 1.2.1 Rare Vegetation Communities.

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

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria		
	4) *Scutellaria parvula* 5) *Trichostema brachiatum* These indicator species are very specific to Alvars within Ecoregion 6EⒺcxlix	species. Vegetation cover varies from patchy to barren with a less than 60% tree cover lxxviii.				
Old Growth Forest **Rationale:** Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest Ⓔ. <u>Information Sources</u> • OMNRF Forest Resource Inventory mapping • OMNRF Districts. • Field Naturalist clubs • Conservation Authorities • Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the are >140 years old, then the area containing these trees is Significant Wildlife Habitat • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present) • The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest area containing the old growth characteristics lxxviii • SWHMiSTcxlix Index #23 provides development effects and mitigation measures.	**No;** No old growth forest communities were identified within the Study Area.	**No;** No old growth forest communities were identified within the Study Area.
Savannah **<u>Rationale:</u>** Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.lxxix, lxxx, lxxxi, lxxxii, lxxxiii	No minimum size to site Ⓔ Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. <u>Information Sources</u> • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Districts • Feld Naturalist clubs. • Conservation Authorities.	Field studies confirm one or more of the Savannah indicator species listed in cxlix Appendix N should be present Ⓔ. Note: Savannah plant spp. list from Ecoregion 6E should be used cxlviii. • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWHMiSTIndex #18 provides development effects and mitigation measures.	**No;** No savannah communities were identified within the Study Area.	**No;** No savannah communities were identified within the Study Area.
Tallgrass Prairie **<u>Rationale:</u>** Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover. lxxix, lxxx, lxxxi, lxxxii, lxxxiii	No minimum size to site Ⓔ. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. <u>Information Sources</u> • Natural Heritage Information Center	Field studies confirm one or more of the Prairie indicator species listed in cxlix Appendix N should be present Ⓔ. Note: Prairie plant spp. list from Ecoregion 6E should be used cxlviii • Area of the ELC Ecosite is the SWH.	**No;** No tall grass prairie communities were identified within the Study Area.	**No;** No tall grass prairie communities were identified within the Study Area.

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria		
			(NHIC) has location information available on their website • OMNRF Districts • Feld Naturalist clubs. • Conservation Authorities.	• Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). • SWHMiSTcxlix Index #19 provides development effects and mitigation measures.		
Other Rare Vegetation Communities **<u>Rationale:</u>** Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG cxlviii. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M cxlviii The OMNRF/NHIC will have up to date listing for rare vegetation communities. <u>Information Sources</u> • Natural Heritage Information Center (NHIC) has location information available on their website • OMNRF Districts • Feld Naturalist clubs. • Conservation Authorities.	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG cxlviii. • Area of the ELC Vegetation Type polygon is the SWH. • SWHMiST Index #37 provides development effects and mitigation measures.	**No;** No rare vegetation communities were identified within the Study Area.	**No;** No rare vegetation communities were identified within the Study Area.

Table 1.2.2 Specialized Habitats of Wildlife considered SWH.

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
Waterfowl Nesting Area **<u>Rationale:</u>** Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 **Note: includes adjacency to Provincially Significant Wetlands**	A waterfowl nesting area extends 120 m cxlix from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur cxlix. • Upland areas should be at least 120 m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. <u>Information Sources</u> • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from Conservation Authorities.	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards(E), or; • Presence of 10 or more nesting pairs for listed species including Mallards(E). • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m cxlviii from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMiSTcxlix Index #25 provides development effects and mitigation measures.	**Yes;** Wetland communities adjacent to upland habitat were identified within the Study Area.	**Candidate;** Upland habitat near marsh communities may provide suitable habitat.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat **<u>Rationale:</u>** Nest sites are fairly uncommon in Eco-region 6E and are used annually by these species. Many suitable nesting locations may be lost due to increasing	Osprey **Special Concern** Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree’s canopy. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). <u>Information Sources</u> • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. • MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat.	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH , maintaining undisturbed shorelines with large trees within this area is important . • For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat cvi • To be significant a site must be used	**Yes;** Qualifying vegetation communities adjacent to Lake Ontario are present within the Study Area.	**No;** No nests were observed in the Project Limits.

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
shoreline development pressures and scarcity of habitat.			• Nature Counts, Ontario Nest Records Scheme data. • OMNRF Districts. • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented • Reports and other information available from Conservation Authorities. • Field Naturalists clubs	annually. When found inactive, the site must be known to be inactive for > 3 years or suspected of not being used for >5 years before being considered not significant. ccvii • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid-March to mid-August. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"ccxi • SWHMiSTcxlix Index #26 provides development effects and mitigation measures		
Woodland Raptor Nesting Habitat **<u>Rationale:</u>** Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3	All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat lxxxviiii, lxxxix, xc, xci, xciii, xciv, xcv,xcvi, cxxxiii. Interior habitat determined with a 200m buffer cxlviii • Stick nests found in a variety of intermediate-aged to mature coniferous, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. <u>Information Sources</u> • OMNRF Districts. • Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada. • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of 1 or more active nests from species list is considered significant. • Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH. (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) • Barred Owl – A 200m radius around the nest is the SWH ccvii. • Broad-winged Hawk and Coopers Hawk – A 100m radius around the nest is the SWH ccvii. • Sharp-Shinned Hawk – A 50m radius around the nest is the SWH ccvii. • Conduct field investigations from mid-March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWHMiST cxlix Index #27 provides development effects and mitigation measures.	**No;** Forest communities identified within the Study Area do not meet the size requirements.	**No;** Candidate habitat not identified.
Turtle Nesting Areas **<u>Rationale:</u>** These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle <u>Special Concern Species</u> Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) cxlviii or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes,	Studies confirm: • Presence of 5 or more nesting Midland Painted TurtlesⒺ • One or more Northern Map Turtle or Snapping Turtle nesting is a SWHⒺ. • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH cxlviii	**Yes;** Sandy/gravelly areas suitable for nesting may be present.	**Candidate;** Shoreline along Lake Ontario in Study Area may provide suitable habitat. However, there was no candidate SWH identified within the Project Limits.

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
		BOO1	lakes, and rivers are most frequently used. Information Sources • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) • Field Naturalist clubs	• Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. cxlix • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. • SWHMiST cxlix Index #28 provides development effects and mitigation measures for turtle nesting habitat.		
Seeps and Springs **Rationale:** Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system cxvii, cxlix. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species cxix, cxx, cxxi, cxxii, cxiii, cxiv . Information Sources • Topographical Map. • Thermography. • Hydrological surveys conducted by Conservation Authorities and MOE. • Field Naturalists clubs and landowners. • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped.	Field Studies confirm: • Presence of a site with 2 or more Ⓔ seeps/springs should be considered SWH. • The area of an ELC forest ecosite or an Ecoelement within ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat. • SWHMiST Index #30 provides development effects and mitigation measures	**No;** Communities were not present.	**No;** Candidate habitat not identified.
Amphibian Breeding Habitat (Woodland). **Rationale:** These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians	• Presence of a wetland, pond or woodland pool (including vernal pools) >500m2 (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). clxxxii, lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF District. • OMNRF wetland evaluations • Field Naturalist clubs • Canadian Wildlife Service Amphibian Road Call	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3Ⓔ. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the wetland area plus a 230m radius of woodland area lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx, lxxi. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. • SWHMiST Index #14 provides development effects and mitigation	**Yes;** Qualifying vegetation communities were identified within the Study Area.	**Candidate;** Targeted surveys were not completed.

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria		
			Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	measures.		
Amphibian Breeding Habitat (Wetlands) Rationale; Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	• Wetlands>500m2 (about 25m diameter) ccvii), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats clxxxii. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. <u>Information Sources</u> • Ontario Herpetofaunal Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3Ⓔ. **or;** Wetland with confirmed breeding Bullfrogs are significantⒺ. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST Index #15 provides development effects and mitigation measures.	**No;** Qualifying ELC communities were within 120 m of woodland ecosites.	**No;** Candidate habitat not identified.
Woodland Area-Sensitive Bird Breeding Habitat **<u>Rationale:</u>** Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren **Special Concern:** Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs. old) forest stands or woodlots >30 ha. cv, cxxxi, cxxxii, cxxxiii, cxxxiv, cxxxv, cxxxvi, cxxxvii, cxxxviii, cxxxix, cxl, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cl, cli, clii, cliii, cliv, clv, clvi, clvii, clviii, clix, • Interior forest habitat is at least 200 m from forest edge habitat. clxiv <u>Information Sources</u> • Local bird clubs. • Canadian Wildlife Service (CWS) for the location of forest bird monitoring. • Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species • Reports and other information available from Conservation Authorities.	Studies confirm: • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. Ⓔ • Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH.Ⓔ • Conduct field investigations in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiST Index #34 provides development effects and mitigation measures.	**No;** Forested habitat does not meet size requirement.	**No;** Candidate habitat not identified.

Table 1.3. Habitats of Species of Conservation Concern considered SWH.

Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria		
Marsh Breeding Bird Habitat **<u>Rationale:</u>** Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan **Special Concern:** Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	• Nesting occurs in wetlands. • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. <u>Information Sources</u> • OMNRF District and wetland evaluations. • Field Naturalist clubs • Natural Heritage Information Center (NHIC) Records. • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas.	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; **or** breeding by any combination of 5 or more of the listed species Ⓔ. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH Ⓔ. • Area of the ELC ecosite is the SWH. • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiST Index #35 provides development effects and mitigation measures	**Yes;** Qualifying wetland ecosites may be present within the Study Area.	**Candidate;** Marsh community may support SWH.
Open Country Bird Breeding Habitat **<u>Rationale:</u>** This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow **Special Concern** Short-eared Owl	CUM1 CUM2	• Large grassland areas (includes natural and cultural fields and meadows) >30 ha clxiv, clxv, clxvi, clxvii, clxviii, clxix. • Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years) Ⓔ. • Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. • The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. <u>Information Sources</u> • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs. • Ontario Breeding Bird Atlas • Reports and other information available from C0nservation Authorities.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species. Ⓔ • A field with 1 or more breeding Short-eared Owls is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiST Index #32 provides development effects and mitigation measures	**No;** Cultural meadows within Study Area did not meet size requirement.	**No;** Candidate habitat not identified.
Shrub/Early Successional Bird Breeding Habitat **<u>Rationale:</u>** This wildlife habitat is declining throughout Ontario and North	<u>Indicator Spp:</u> Brown Thrasher Clay-coloured Sparrow <u>Common Spp.</u> Field Sparrow Black-billed	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be	Large field areas succeeding to shrub and thicket habitats>10haclxiv in size. • Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years) Ⓔ. • Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. Ⓔ • A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. Ⓔ • The area of the SWH is the contiguous ELC	**Yes;** Suitable ecosites may be present within Study Area.	**No;** Thicket habitat did not meet size criteria.

Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria		
America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records cxcix.	Cuckoo Eastern Towhee Willow Flycatcher **Special Concern:** Yellow-breasted Chat Golden-winged Warbler	complexed into a larger habitat for some bird species	clxxiii. • Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. <u>Information Sources</u> • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs. • Ontario Breeding Bird Atlas • Reports and other information available from Conservation Authorities.	ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” • SWHMiST Index #33 provides development effects and mitigation measures.		
Terrestrial Crayfish **<u>Rationale:</u>** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. ccii	Chimney or Digger Crayfish; (*Fallicambarus fodiens*) Devil Crayfish or Meadow Crayfish; (*Cambarus diogenes*)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh or swamp ecosites can be used by terrestrial crayfish.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can’t be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. <u>Information Sources</u> • Information sources from “Conservation Status of Freshwater Crayfishes” by Dr. Premek Hamr for the WWF and CNF March 1998	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites • Area of ELC ecosite or an Ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. • Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult cci • SWHMiST cxlix Index #36 provides development effects and mitigation measures.	**Yes;** Suitable meadows and marshes were within Study Area.	**No;** None found during field investigations within Project Limits.
Special Concern and Rare Wildlife Species **<u>Rationale:</u>** These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre.	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites lxxviii <u>Information Sources</u> • Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website “Get Information” : http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH; this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. • SWHMiST Index #37 provides development effects and mitigation measures.	**Yes;** There were records of Special Concern and rare species within or in the vicinity of the Study Area	**Confirmed;** Rare species recorded during field investigations including Monarch, Eastern Wood-pewee, Barn Swallow and Caspian Tern. Of these, only Monarch and Eastern Wood-pewee had confirmed habitat in the Project Limits. While suitable structures (park structures with overhangs, culverts) were identified no Barn Swallow nests were identified in the Project Limits. Confirmed breeding habitat for Caspian Tern was located outside of the Project Limits in the Whitby Harbour.

Table 1.4 Animal Movement Corridors

Habitat	SPECIES	CANDIDATE SWH		CONFIRMED SWH	Candidate Habitat Present Within the Study Area	Confirmed Habitat Present within the Study Area
		ELC Eco-sites	Habitat Criteria and Information Sources	Defining Criteria		
Amphibian Movement Corridors **<u>Rationale:</u>** Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1	Movement corridors between breeding habitat and summer habitat clxxiv, clxxv, clxxvi, clxxvii, clxxviii, clxxix, clxxx, clxxxi. Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (**Amphibian Breeding Habitat –Wetland)** of this Schedule Ⓔ. <u>Information Sources</u> • MNRF District Office. • Natural Heritage Information Center (NHIC). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs.	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. • Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant cxlix • Corridors should have at least 15m of vegetation on both sides of waterway cxlix or be up to 200m wide cxlix of woodland habitat and with gaps <20mcxlix . • Shorter corridors are more significant than longer corridors; however amphibians must be able to get to and from their summer and breeding habitat cxlix. • SWHMiST cxlix Index #40 provides development effects and mitigation measures	**Yes;** Qualifying ecosites were present within the Study Area.	**Candidate;** The swamp, marsh communities and adjacent upland habitat may provide opportunities for amphibian movement between breeding and summer habitat within the Study Area and the surrounding area.
Deer Movement Corridors **<u>Rationale:</u>** Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	White-tailed Deer	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when **Deer Wintering Habitat** is confirmed as SWH from Table 1.1 of this schedule. Ⓔ • A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion • Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). <u>Information Sources</u> • MNRF District Office. • Natural Heritage Information Center (NHIC). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs.	• Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. • Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. • Corridors should be at least 200m wide with gaps < 20m and if following riparian area with at least 15m of vegetation on both sides of waterway. • Shorter corridors are more significant than longer corridors, cxlix. • SWHMiST cxlix Index #39 provides development effects and mitigation measures	**No;** Candidate Habitat not present within the study area. .	**No;** Candidate habitat was not identified in the Study Area.

Table 1.5.1 Significant Wildlife Habitat Exceptions for Ecodistricts within EcoRegion 6E

EcoDistrict	Wildlife Habitat and Species	Candidate SWH			Confirmed SWH	Candidate Habitat within the Study Area	Confirmed Habitat within the Study Area	Conclusions/ Recommendations
		Ecosites	Habitat Description	Habitat Criteria and Information	Defining Criteria			
6E-14 **<u>Rationale:</u>** The Bruce Peninsula has an isolated and distinct population of black bears. Maintenance of large woodland tracts with mast-producing tree species is important for bears. clxxxvi, ccxvii	**Mast Producing Areas** Black Bear	All Forested habitat represented by ELC Community Series: FOM FOD	• Black bears require forested habitat that provides cover, winter hibernation sites, and mast-producing tree species. • Forested habitats need to be large enough to provide cover and protection for black bears.	Woodland ecosites >30ha with mast-producing tree species, either soft (cherry) or hard (oak and beech), <u>Information Sources</u> Important forest habitat for black bears may be identified by OMNRF.	All woodlands > 30ha with a 50%composition of these ELC VegetationⒺ Types are considered significant: FOM1-1 FOM2-1 FOM3-1 FOD1-1 FOD1-2 FOD2-1 FOD2-2 FOD2-3 FOD2-4 FOD4-1 FOD5-2 FOD5-3 FOD5-7 FOD6-5 SWHMiST cxlix Index #3 provides development effects and mitigation measures.	**No;** The Study Area is not within Ecodistrict 6E-14	**No;** The Study Area is not within Ecodistrict 6E-14	
6E- 17 **<u>Rationale:</u>** Sharp-tailed grouse only occur on Manitoulin Island in Eco-region 6E, Leks are an important habitat to maintain their population	**Lek** **Sharp-tailed Grouse**	CUM CUS CUT	• The lek or dancing ground consists of bare, grassy or sparse shrubland. There is often a hill or rise in topography. • Leks are typically a grassy field/meadow >15ha with adjacent shrublands and >30ha with adjacent deciduous woodland. Conifer trees within 500m are not tolerated.	Grasslands (field/meadow) are to be >15ha when adjacent to shrubland and >30ha when adjacent to deciduous woodland ccxix. • Grasslands are to be undisturbed with low intensities of agriculture (light grazing or late haying) • Leks will be used annually if not destroyed by cultivation or invasion by woody plants or tree planting <u>Information Sources</u> • OMNRF district office • Bird watching clubs • Local landowners • Ontario Breeding Bird Atlas	Studies confirming lek habitat are to be completed from late March to June. • Any site confirmed with sharp-tailed grouse courtship activities is considered significantⒺ • The field/meadow ELC ecosites plus a 200 m radius area with shrub or deciduous woodland is the lek habitatⒺ • SWHMiST Index #32 provides	**No;** The Study Area is not within Ecodistrict 6E-14	**No;** The Study Area is not within Ecodistrict 6E-14	

Appendix F

Species at Risk Screening

Appendix F. Species at Risk Screening

Taxonomy	Species	ESA Status	SARA Status	COSEWIC Status	Preferred Habitat[1, 2]	Associated ELC Communities	Known Species Range[1, 2]	Source Identifying Species Record	Suitable Habitat Identified During Background Review	Species/Habitat Observed During Field Investigations
Birds	Barn Swallow *Hirundo rustica*	SC	THR Schedule 1	THR	Barn Swallows often live in close association with humans, building their cup-shaped mud nests almost exclusively on human-made structures such as open barns, under bridges, and in culverts. The species is attracted to open structures that include ledges where they can build their nests, which are often re-used from year to year. They prefer unpainted, rough-cut wood, since the mud does not adhere as well to smooth surfaces. Before European colonization, Barn Swallows nested mostly in caves, holes, crevices, and ledges in cliff faces. Following European settlement, they shifted largely to nesting in and on artificial structures, including barns and other outbuildings, garages, houses, bridges, and road culverts. Barn Swallows prefer various types of open habitats for foraging, including grassy fields, pastures, various kinds of agricultural crops, lake and river shorelines, cleared rights-of-way, cottage areas and farmyards, islands, wetlands, and subarctic tundra.	**TPO, CUM1, MAM, MAS, OAO, SAS1, SAM1, SAF1**; containing or adjacent structures that are suitable for nesting.	The Barn Swallow may be found throughout southern Ontario and can range as far north as Hudson Bay, wherever suitable locations for nests exist. The Barn Swallow has become closely associated with human rural settlements. It breeds across much of North America south of the treeline, south to central Mexico. In Canada, it is known to breed in all provinces and territories.	eBird, OBBA, iNaturalist	Medium Anthropogenic stuructures (buildings, bridges) may provide suitable habitat.	Medium No nests found within Project Limits; however, suitable structures for nesting were noted and may be used in the future. Barn Swallows were observed foraging within the Study Area.
Birds	Common Nighthawk *Chordeiles minor*	SC	THR Schedule 1	SC	Traditional Common Nighthawk habitat consists of open areas with little to no ground vegetation, such as logged or burned-over areas, forest clearings, rock barrens, peat bogs, lakeshores, and mine tailings. Although the species also nests in cultivated fields, orchards, urban parks, mine tailings, and along gravel roads and railways, they tend to occupy natural sites. The Common Nighthawk nests in a wide range of open, vegetation-free habitats, including dunes, beaches, recently harvested forests, rocky outcrops, grasslands, pastures, marshes, and river banks. This species also inhabits mixed and coniferous forests. The Common Nighthawk probably benefited from the newly-opened habitats created by the massive deforestation associated with the arrival of European settlers in eastern Canada and United States. The appearance of gravel roofs contributed to the expansion of the Common Nighthawk's habitat in North America.	**SD, BB, RB, CUM, BO, FOM, FOC** and **FOD** with openings with little vegetation.	The range of the Common Nighthawk spans most of North and Central America. In Canada, the species is found in all provinces and territories except Nunavut. In Ontario, the Common Nighthawk occurs throughout the province except for the coastal regions of James Bay and Hudson Bay.	eBird, OBBA	Medium Buildings with flat-topped gravel roofs were present in the Study Area.	Medium Species was not recorded during field investigations; however, suitable buildings with flat-topped gravel roofs may be used for nesting in the future.
Birds	Eastern Wood-pewee *Contopus virens*	SC	SC Schedule 1	SC	The Eastern Wood-pewee lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It is most abundant in intermediate-age mature forest stands with little understory vegetation. During migration, a variety of habitats are used, including forest edges and early successional clearings.	**FOC, FOM, FOD, SWD, SWM** and **CUW**.	The Eastern Wood-pewee is found across most of southern and central Ontario, and in northern Ontario as far north as Red Lake, Lake Nipigon, and Timmins. The breeding range of the Eastern Wood-pewee covers much of south-central and eastern North America.	eBird, OBBA	Medium Swamp communities may provide nesting habitat.	High Species observed in suitable nesting habitat during breeding bird surveys.
Birds	Red-headed Woodpecker *Melanerpes erythrocephalus*	END	THR Schedule 1	END	The Red-headed Woodpecker lives in open woodland and woodland edges, and is often found in parks, golf courses, and cemeteries. These areas typically have many dead trees, which the bird uses for nesting and perching. A few of these birds will stay the winter in woodlands in southern Ontario if there are adequate supplies of nuts. The Red-headed Woodpecker is found in a variety of habitats, including oak and beech forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, beaver ponds, and burns.	**TPS, TPW, CUW, FOD1, FOD2, FOD4-1, FOD6, FOD7**, and **FOD9** that are open and have an abundance of dead trees.	The Red-headed Woodpecker is found across southern Ontario, where it is widespread but rare. In Canada, its range includes southern Saskatchewan, Manitoba, Ontario, and Quebec.	eBird, OBBA	Medium Forested communities may contain suitable cavity trees for nesting.	Medium Species was not observed during field investigations; however, cavity trees were observed in swamp communities and may provide suitable nesting habitat.

Appendix F. Species at Risk Screening

Taxonomy	Species	ESA Status	SARA Status	COSEWIC Status	Preferred Habitat[1, 2]	Associated ELC Communities	Known Species Range[1, 2]	Source Identifying Species Record	Suitable Habitat Identified During Background Review	Species/Habitat Observed During Field Investigations
Insects	Monarch *Danaus plexippus*	SC	SC Schedule 1	END	Throughout their life cycle, Monarchs use three different types of habitat. Only the caterpillars feed on milkweed plants and are confined to meadows and open areas where milkweed grows. Adult butterflies can be found in more diverse habitats where they feed on nectar from a variety of wildflowers. Milkweeds (numerous species) are the sole food plant for Monarch caterpillars. These plants grow predominantly in open and periodically disturbed habitats such as roadsides, fields, wetlands, prairies, and open forests. Milkweeds are often planted outside their native range, and sometimes wayward Monarchs are observed at these patches. Monarchs require staging areas which are used to rest, feed, and avoid inclement weather during migration. In Canada, they are found along the north shores of the Great Lakes where Monarchs roost in trees before crossing large areas of open water.	**AI, TP,** and **CUM** where milkweed plants are present.	The Monarch's range extends from Central America to southern Canada. In Canada, Monarchs are most abundant in southern Ontario and Quebec where milkweed plants and breeding habitat are widespread. During late summer and fall, Monarchs from Ontario migrate to central Mexico where they spend the winter months. During migration, groups of Monarchs numbering in the thousands can be seen along the north shores of Lake Ontario and Lake Erie. The overall native range of the Monarch occurs from Central America northward through the continental United States to southern Canada, and from the Atlantic Coast westward to the Pacific Coast. The Canadian range of occurrence includes portions of all ten provinces and the Northwest Territories. Monarchs are loosely divided into eastern and western subgroups based on their migratory routes and overwintering sites. Eastern Monarchs breed from Alberta east to Nova Scotia and migrate south to overwinter in the mountains of Central Mexico. The breeding range in Canada is south of the 50° latitude in Ontario, Quebec, and the Maritimes. Each fall hundreds of thousands of Monarchs migrate through Long Point in southern Ontario but it's unknown what proportion of the Canadian population these individuals represent.	OBA	Medium Cultural meadow communities are anticipated to contain milkweed species (*Asclepias spp.*) which supports life stages for reproduction / metamorphosis (i.e., egg, larva, pupa). Cultural meadow communities likely contain other forbs to support nectaring of adult monarchs.	High Monarch's were observed during field invetsogations and common milkweed (*Asclepias syriaca*) was identified within the cultural meadow communities.
Mammals	Eastern Small-footed Myotis (Eastern Small-footed Bat) *Myotis leibii*	END	N/A	N/A	In the spring and summer, Eastern Small-footed Bats will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. These bats often change their roosting locations every day. At night, they hunt for insects to eat, including beetles, mosquitos, moths, and flies. In the winter, these bats hibernate, most often in caves and abandoned mines. They seem to choose colder and drier sites than similar bats and will return to the same spot each year.		The Eastern Small-footed Bat has been found from south of Georgian Bay to Lake Erie and east to the Pembroke area. There are also records from the Bruce Peninsula, the Espanola area, and Lake Superior Provincial Park. Most documented sightings are of bats in their winter hibernation sites.	BCI	Medium Swamp communities may provide roost habitat.	Medium Swamp communities may provide roost habitat.
Mammals	Little Brown Myotis (Little Brown Bat) *Myotis lucifugus*	END	END Schedule 1	END	Bats are nocturnal. During the day they roost in trees and buildings. They often select attics, abandoned buildings, and barns for summer colonies where they can raise their young. Bats can squeeze through very tiny spaces (as small as six millimetres across) and this is how they access many roosting areas. Little Brown Bats hibernate from October or November to March or April, most often in caves or abandoned mines that are humid and remain above freezing. Their specific physiological requirements limit the number of suitable sites for overwintering. In the east, large numbers (i.e., >3000 bats) of several species typically overwinter in relatively few hibernacula. In the west, there are fewer known hibernacula, and numbers appear lower per site. Females establish summer maternity colonies, often in buildings or large-diameter trees. Foraging occurs over water, along waterways, and forest edges. Large open fields or clearcuts generally are avoided. In autumn, bats return to hibernacula, which may be hundreds of kilometres from their summering areas, swarm near the entrance, mate, and then enter that hibernaculum, or travel to different hibernacula to overwinter.		The Little Brown Bat is widespread in southern Ontario and found as far north as Moose Factory and Favourable Lake. In Canada, *Myotis lucifugus* occurs from Newfoundland to British Columbia, and northward to near the treeline in Labrador, Northwest Territories and Yukon.	BCI	Medium Swamp communities may provide roost habitat.	Medium Swamp communities may provide roost habitat.
Mammals	Northern Myotis (Northern Long-eared Bat) *Myotis septentrionalis*	END	END Schedule 1	END	Northern Long-eared Bats are associated with boreal forests, choosing to roost under loose bark and in the cavities of trees. These bats hibernate from October or November to March or April. The Northern Long-eared Bat overwinters in cold and humid hibernacula (caves/mines). Their specific physiological requirements limit the number of suitable sites for overwintering. In the east, large numbers (i.e., >3000 bats) of several species typically overwinter in relatively few hibernacula. In the west, there are fewer known hibernacula, and numbers appear lower per site. Females establish summer maternity colonies in buildings or large-diameter trees. Foraging occurs along waterways, forest edges, and in gaps in the forest. Large open fields or clearcuts generally are avoided. In autumn, bats return to hibernacula, which may be hundreds of kilometres from their summering areas, swarm near the entrance, mate, and then enter that hibernaculum, or travel to different hibernacula to overwinter.	**FOC, FOM, FOD, SWC, SWM,** and **SWD** where suitable roosting (i.e. cavity trees and trees with loose bark) habitat is available.	The Northern Long-eared Bat is found throughout forested areas in southern Ontario, to the north shore of Lake Superior and occasionally as far north as Moosonee, and west to Lake Nipigon. In Canada, *Myotis septentrionalis* occurs from Newfoundland to British Columbia, and northward to near the treeline in Labrador, Northwest Territories, and Yukon.	BCI	Medium Swamp communities may provide roost habitat.	Medium Swamp communities may provide roost habitat.

Appendix F. Species at Risk Screening

Taxonomy	Species	ESA Status	SARA Status	COSEWIC Status	Preferred Habitat[1, 2]	Associated ELC Communities	Known Species Range[1, 2]	Source Identifying Species Record	Suitable Habitat Identified During Background Review	Species/Habitat Observed During Field Investigations
Mammals	Tri-colored Bat *Perimyotis subflavus*	END	END Schedule 1	END	During the summer, the Tri-colored Bat is found in a variety of forested habitats. It forms day roosts and maternity colonies in older forest and occasionally in barns or other structures. They forage over water and along streams in the forest. Tri-colored Bats eat flying insects and spiders gleaned from webs. At the end of the summer they travel to a location where they swarm; it is generally near the cave or underground location where they will overwinter. They overwinter in caves where they typically roost by themselves rather than part of a group. The Tri-colored Bat overwinters in cold and humid hibernacula (caves/mines). Their specific physiological requirements limit the number of suitable sites for overwintering. In the east, large numbers (i.e., >3000 bats) of several species typically overwinter in relatively few hibernacula. In the west, there are fewer known hibernacula, and numbers appear lower per site. Females establish summer maternity colonies in buildings or large-diameter trees. Foraging occurs over water, along waterways, and forest edges. Large open fields or clearcuts generally are avoided. In autumn, bats return to hibernacula, which may be hundreds of kilometres from their summering areas, swarm near the entrance, mate, and then enter that hibernaculum, or travel to different hibernacula to overwinter.		This bat is found in southern Ontario and as far north as Espanola near Sudbury. Because it is very rare, it has a scattered distribution. It is also found from eastern North America down to Central America. In Canada, *Perimyotis subflavus* occurs in Nova Scotia, New Brunswick, Quebec, and Ontario.	BCI	Medium Swamp communities may provide roost habitat.	Medium Swamp communities may provide roost habitat.
Plants	Black Ash *Fraxinus nigra*	END	N/A	THR	Black Ash is a medium-sized, shade-intolerant hardwood tree species that occurs on moist to wet sites such as swamps, bogs, and riparian areas. Like other Ash (*Fraxinus*) species, Black Ash has wind-dispersed pollen and seeds and regenerates readily from seed and via stump sprouting	SWD, SWM, SWC	Black Ash occurs from western Newfoundland to southeastern Manitoba and North Dakota, ranging southward to Iowa, Illinois, Virginia and Delaware. Black Ash's range extends farther north than any other ash and approximately 51% of the species' global range is within Canada. Black Ash occurs throughout most of Ontario, except the Far North, ranging from southern Ontario east to the Quebec border, west to the Manitoba border and north to approximately 51° latitude.	iNaturalist	Medium Swamp communities may support individuals.	Low None found during targeted surveys.
Plants	Butternut *Juglans cinerea*	END	END Schedule 1	END	In Ontario, Butternut usually grows alone or in small groups in deciduous forests. It prefers moist, well-drained soil and is often found along streams. It is also found on well-drained gravel sites and rarely on dry, rocky soil. This species does not do well in the shade, and often grows in sunny openings and near forest edges. Butternut occurs primarily in neutral to calcareous soils of pH 5.5 to 8, often in regions with underlying limestone, and is generally absent from acidic regions. It tends to reach greatest abundance in rich well-drained mesic loams in floodplains, streambanks, terraces, and ravine slopes, but can occur in a wide range of other situations. In closed-canopy stands, it must be in the overstory to thrive. Seedling establishment, growth, and survival to maturity are most frequent in stand openings, riparian zones, and forest edges.	**FOD** and mature hedgerows; Soil: dry rocky or moist (4, 5, 6) to fresh (2, 3).	Butternut can be found throughout central and eastern North America. In Ontario, this species is found throughout the southwest, north to the Bruce Peninsula, and south of the Canadian Shield. Butternut's native Canadian range is restricted to southern Ontario and Quebec (primarily south of the area bounded by Georgian Bay, the Ottawa Valley, and the Quebec City region), and western and southern portions of New Brunswick.	iNaturalist	Medium Swamp communities may support individuals.	Low None found during targeted surveys.
Reptiles	Northern Map Turtle *Graptemys geographica*	SC	SC Schedule 1	SC	The Northern Map Turtle inhabits rivers and lakeshores where it basks on emergent rocks and fallen trees throughout the spring and summer. In winter, the turtles hibernate on the bottom of deep, slow-moving sections of river. They require high-quality water that supports the female's mollusc prey. Their habitat must contain suitable basking sites, such as rocks and deadheads, with an unobstructed view from which a turtle can drop immediately into the water if startled. The Northern Map Turtle inhabits both lakes and rivers, showing a preference for slow moving currents, muddy bottoms, and abundant aquatic vegetation. These turtles need suitable basking sites (such as rocks and logs) and exposure to the sun for at least part of the day.	**OAO, SA** with emergent rocks and fallen trees suitable habitat for prey.	The Northern Map Turtle's range extends from the Great Lakes region west to Oklahoma and Kansas, south to Louisiana, and east to the Adirondack and Appalachian mountain barrier. In Canada, it is found in southwestern Quebec and southern Ontario. In southern Ontario, it lives primarily on the shores of Georgian Bay, Lake St. Clair, Lake Erie, and Lake Ontario, and along larger rivers including the Thames, Grand, and Ottawa. It reaches its northern limit in southern Ontario and southwestern Quebec, where it is associated with the Great Lakes Basin and the St. Lawrence River.	ORAA	Medium Lake Ontario may provide suitable habitat.	Medium Lake Ontario may provide suitable overwintering, resting, cover and basking habitat.

Appendix F. Species at Risk Screening

Taxonomy	Species	ESA Status	SARA Status	COSEWIC Status	Preferred Habitat[1, 2]	Associated ELC Communities	Known Species Range[1, 2]	Source Identifying Species Record	Suitable Habitat Identified During Background Review	Species/Habitat Observed During Field Investigations
Reptiles	Snapping Turtle *Chelydra serpentina*	SC	SC Schedule 1	SC	Snapping Turtles spend most of their lives in water. They prefer shallow waters so they can hide under the soft mud and leaf litter, with only their noses exposed to the surface to breathe. During the nesting season, from early to mid summer, females travel overland in search of a suitable nesting site, usually gravelly or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams, and aggregate pits. Although Snapping Turtles have been observed in shallow water in almost every kind of freshwater habitat, the preferred habitat of the species is characterized by slow-moving water with a soft mud bottom and dense aquatic vegetation. Established populations are most often located in ponds, sloughs, shallow bays or river edges, and slow streams, or areas combining several of these wetland habitats. Individual turtles will persist in urbanized water bodies, such as golf course ponds and irrigation canals, but it is unlikely that a population could become established in such habitats. The Snapping Turtle can occur in highly polluted waterways, but environmental contamination is known to reduce the already low reproductive output of this species. Basking on offshore logs and protruding rocks can be common in Snapping Turtles, depending on environmental temperature. Females generally nest on sand or gravel banks along waterways. Upon emergence from the nest in early fall, hatchling Snapping Turtles usually move to water, after which they bury themselves under leaf litter or debris. Snapping Turtles overwinter underwater, buried beneath logs, sticks or overhanging banks in small streams that flow continuously throughout the winter. They can also hibernate buried in deep mud in marshy areas or beneath floating mats of vegetation. Snapping Turtle habitat is diminishing in both quantity and quality in Canada, with losses primarily due to conversion of wetlands to agriculture and urban development.	**OAO, SA** near gravelly or sandy areas.	The Snapping Turtle's range extends from Ecuador to Canada. The Snapping Turtle's range is contracting. In Canada, the species is widespread from Nova Scotia to southeastern Saskatchewan, though it is absent from northwestern Ontario, where summers are likely too cool for Snapping Turtle embryos to complete development successfully. The Snapping Turtle is therefore present in mainland Nova Scotia, southern New Brunswick, southern and central Quebec, southern and central Ontario, southern Manitoba, and southeastern Saskatchewan, primarily in the Qu'Appelle watershed.	ORAA	Medium Lake Ontario and marsh communities may provide suitable habitat.	Medium Lake Ontario and marsh communities may provide suitable overwintering, resting, cover and basking habitat.

Appendix F- Species at Risk Screening

Glossary	
EXP	ESA - Extripated - a species that no longer exists in the wild in Ontario but still occurs elsewhere. SARA - Extripated - a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.
END	ESA - Endangered - a species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act. SARA - Endangered - a wildlife species that is facing imminent extirpation or extinction.
THR	ESA - Threatened - a species that is at risk of becoming endangered in Ontario if limiting factors are not reversed. SARA - Threatened - a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SC	ESA - Special Concern (formerly Vulnerable) - a species with characteristics that make it sensitive to human activities or natural events. SARA - Special Concern - a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
OMNR	Ontario Ministry of Natural Resources
ESA	Endangered Species Act
SARA	Species at Risk Act (Federal)
Schedule 1	The official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2	Species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3	Species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
COSEWIC	Committee on the Stauts of Endangerd Wildlife in Canada - a committee of experts that assesses and designates which wild species are in some danger of disappearing from Canada.

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Appendix C

Arborist Report and Tree Preservation Plan

This document is not an accessible document. Please contact Engineering@whitby.ca for assistance with any accessibility issues.

Final

Arborist Report and Tree Preservation Plan

Water Street Improvements between Brock Street South and South Blair Street
Municipal Class Environmental Assessment Schedule 'C'

Town of Whitby

Project Number: 60591304

April 2025

Delivering a better world

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The attached Report (the "Report") has been prepared by AECOM Canada ULC ("AECOM") for the benefit of the Client ("Client") in accordance with the agreement between AECOM and Client, including the scope of work detailed therein (the "Agreement").

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- represents AECOM's professional judgement considering the Limitations and industry standards for the preparation of similar reports.
- may be based on information provided to AECOM which has not been independently verified.
- has not been updated since the date of issuance of the Report and its accuracy is limited to the period and circumstances in which it was collected, processed, made or issued.
- must be read as a whole and sections thereof should not be read out of such context.
- was prepared for the specific purposes described in the Report and the Agreement; and
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00	Aug. 19, 2024	Keegan McKitterick	Original draft completed.
01	March. 31,2025	Brian Magee	Update for client comments
02	April 24, 2025	Brian Magee	Update for client comments
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Executive Summary

This arborist report pertains to the Water Street Road Realignment project located along Water Steet, south of Brock Steet within the Town of Whitby.

As shown in **Table 1** and **Table 2**, approximately 720 trees are located within the tree inventory area or project limits. Of these, an estimated 78% are in Good to Fair condition, while the remaining 22% are classified as Poor to Dead. Based on the current design and the Tree Protection Zones (TPZs), approximately 529 trees within the project limits are expected to be impacted by more than 30%. As a result, these trees may require removal. However, given that 22% of the existing trees are already in Poor to Dead condition, the number of trees likely to be adversely affected by the proposed roadwork and potentially requiring removal is estimated to be around 400.

It is important to note that **Appendix A** represents the worst-case scenario, as it assumes that all trees within the project limits will be removed. This estimate does not consider the potential to retain trees in areas with minimal grade changes or the feasibility of transplanting trees. Additionally, the proposed removals will be offset by the planting of approximately 330 new trees along the 1.1 km Water Street boulevards and median, with trees spaced approximately 10 metres apart. This estimate also does not include any additional plantings that could occur in adjacent public or park areas.

All trees larger than 5 cm are regulated by Town of Whitby by-laws. All work undertaken by the Town is exempt from the Town and the Regions By-laws (**Section 2.1**) and, therefore, no permits are required.

During the construction phase, certified arborists will evaluate each affected tree to determine the actual extent of impact before confirming removal. Tree preservation will remain a key priority, and removals will only proceed when absolutely necessary. Where feasible, transplanting will also be explored. Furthermore, opportunities for design modifications and alternative construction methods will be actively pursued to minimize both the number of impacted trees and the extent of any potential damage. Additional details on tree protection, preservation, and maintenance strategies are provided in **Section 5.** There were no regulated species at risk trees, heritage trees, memorial trees, or any other trees with special status identified during the tree inventory. There are trees which are anticipated to require removal within the Central Lake Ontario Conservation Authority's regulated area (**Section 2.3**); therefore, it is recommended that the relevant conservation authority reviews this arborist report along with the proposed work to assess if additional remediation measures are required. Overall, this arborist report can be used to inform future design phases and guide selection of construction equipment and methodology that will reduce associated tree impacts. A complete summary of the Tree Assessment Results is available in **Appendix B.**

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1. Introduction

1.1 Background

AECOM Canada Limited (AECOM) has been retained by the Town of Whitby (the Town) to complete an Arborist Report and Tree Protection Plan in support of the Schedule 'C' Municipal Class Environmental Assessment (MCEA) being undertaken by the Town to provide improvements to Water Street between Brock Street South and South Blair Street (the Project). The Study will identify opportunities to enhance the corridor experience along the Whitby Waterfront, accommodate active transportation and travel needs within the area, and address road alignment and drainage deficiencies.

The Study Area includes Water Street between Brock Street South and South Blair Street in the Town of Whitby within the Regional Municipality of Durham as illustrated in **Figure 1**.

1.2 Assignment and Purpose

The purpose of this assignment was to complete a tree inventory to assess the health and structure of the on-site trees, and to quantify any impacts to trees associated with the Project. Trees were inventoried within the anticipated Impact Area, as per the latest drawings, as well as trees within 6 m of the Impact Area.

The Town requires that an Arborist Report and Tree Protection Plan be prepared for all construction related applications where trees are in proximity of proposed work. As per the Towns' Tree Protection By-laws, the following report has been prepared based on the Towns' Arborist Report Requirements (reviewed 2024) and Tree Protection Requirements for New Development (2020) guidelines.

1.3 Limitations of the Assignment

1. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, AECOM can neither guarantee nor be responsible for the accuracy of the information provided by others.

2. Unless expressed otherwise:

    a) the information contained in this report covers only those items at the time of inspection; and

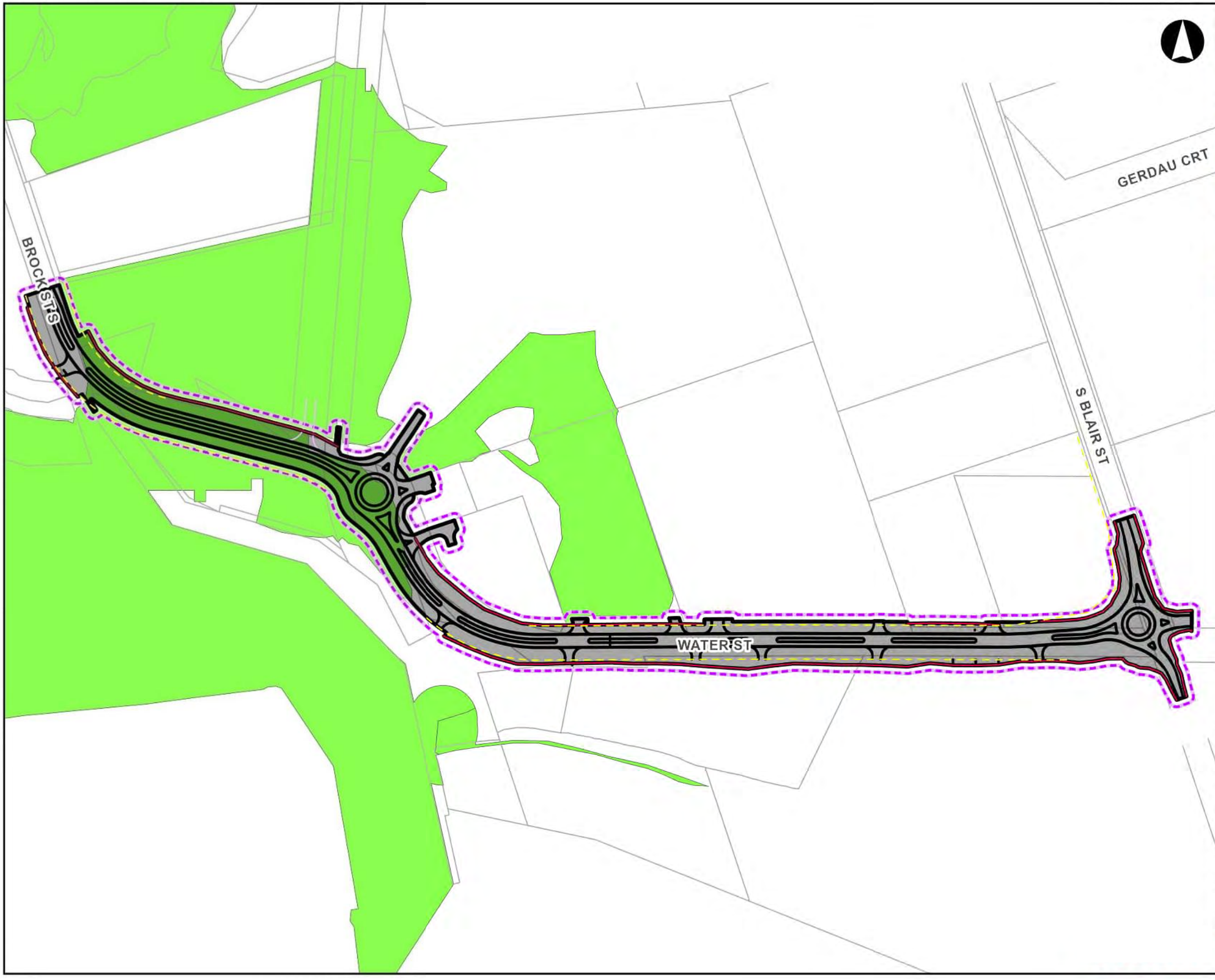
    b) the inspection is limited to visual examination of the accessible items without dissection, excavation, probing or coring. There is no warranty of guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.

3. The assessment of the subject trees, despite its rating, does not constitute a tree risk assessment.

4. The assessment presented in this report is valid at the time of inspection and no guarantee is made to the continued health or structural integrity of the subject tree(s).

5. Tree location, size, and condition were estimated if on adjacent properties where permission to enter was not available.

6. Every effort is made to correctly identify tree ownership, however, as a legal survey of all the trees was unavailable, the tree ownership was estimated using tree geolocation. Tree ownership can only be determined by comparing the legally surveyed location of the tree trunk to the legally surveyed property boundary.





Legend

- Preffered Alternative Route Impact Area
- Study Area (5m)
- CLOCA Regulated Limit

Conceptual Design

- Proposed Property Line
- Grading Limit
- Proposed Road
- Future Developments
- Property Boundary

0 50 100 200
Metres

Water Street Improvements between Brock Street South and South Blair Street MCEA

Overview

Sep, 2024	1:3,200 * when printed 11"x17"	Datum: NAD 1983 UTM Zone 17N Source: Source
P#: 60591304		**Figure 1**

AECOM

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2. Applicable By-laws and Regulations

The Tree Inventory Area (**Figure 1**) for the Project includes a 6 m Buffer Area that extends beyond the area of impact as well as softscape areas immediately adjacent to the Buffer Area that may be inadvertently accessed or impacted during construction. The following sections outline applicable municipal tree protection by-laws and other relevant regulations.

2.1 Town of Whitby's Tree Protection By-Law

The Project is located within the Towns' limits and is therefore subject to the Towns' Tree Protection By-law 4640-00 (the Towns' By-law). The Towns' By-Law prohibits and regulates the injuring or destruction of trees which can or have reached a height of at least 6 m at physiological maturity.

As per Section 3 of the Towns' By-law, sub-section (a) states that "a tree situated on land owned by or controlled by the Central Lake Ontario Conservation Authority or a local municipality including a regional municipality;" will be exempt from obtaining a permit. Additionally, sub-section (i) states that "activities or matters undertaken by the Central Lake Ontario Conservation Authority or a local municipality, including a regional municipality" is also exempt from obtaining a permit. While the provisions of the Towns' By-Law do not apply to activities or matters undertaken by the Town, the Region or by land owned or controlled by Central Lake Ontario Conservation Authority, the Towns' By-law has been used as guidance in completion of the tree inventory and assessment. Permits under this By-law are not required to facilitate the Project as it is being undertaken by the Town and is therefore exempt from it.

2.2 Region of Durham's Regional Woodland By-law

The Region's *Regional Woodland By-law 30-2020* (the Region's By-Law) regulates the destruction or injury of trees in Woodlands in the Region with the goal of conserving and improving woodlands throughout the Region. The Region's By-law defines a woodland as an area of land one hectare in size or greater on one or more properties with a high density of trees, such as 1,000 trees of any size per hectare. However, as any activity undertaken by the Region is exempt from this By-law (the Towns' By-law Section 3 sub-section (i)), a permit under it is not required to facilitate the Project.

2.3 Central Lake Ontario Conservation Authority

In 2024, an arrangement was made between the Town and Central Lake Ontario Conservation Authority (CLOCA) regarding the acquisition and restoration of the 2802 Thickson Road property in Whitby. Under this arrangement, the Town will acquire the property, remove all illegal structures-including decks and retaining walls-and design and implement shoreline protection measures while re-naturalizing the site. Due to the environmental benefits of this project, CLOCA has waived all environmental compensation requirements associated with the Water St EA, the Harbour Street extension, and other local projects. However, at CLOCA's request, the Town must still assess and document all environmental impacts and implement mitigation and protective measures to minimize environmental impacts.

2.4 Endangered Species Act

The *Endangered Species Act, 2007* (ESA) provides protection for provincial Species at Risk (SAR) and their habitats. Species are classified into one of four levels of risk: Extirpated, Endangered, Threatened or Special Concern. These risk levels are determined through science-based assessment via the Committee on the Status of Species at Risk in Ontario (COSSARO); classification is based on best-available science and Indigenous traditional knowledge. Species classified as Threatened or Endangered on the Species at Risk in Ontario

(SARO) list are afforded both individual and habitat protection under the ESA. This includes protection from "killing, harming, harassing, possessing, buying, selling, trading, leasing or transporting" of protected species and/or "damaging or destroying" their habitats.

Where a proposed activity may negatively affect protected species or habitat, changes to timing, location and methods of the proposed activity should be considered, where feasible, to avoid impacts to SAR. Where impacts cannot be avoided or mitigated, an authorization process may be pursued. The Ministry of the Environment, Conservation and Parks (MECP) may grant a permit or other authorization for activities that would otherwise contravene the ESA. Generally, several permit types are available, depending on the nature of the proposed work and may include conditions to provide an overall benefit to the targeted SAR.

With respect to tree SAR, the ESA protects natural occurring or planted species listed as Threatened or Endangered under Section 12 (Commercial cultivation of vascular plants) of *Ontario Regulation 242/08,* which allows for the purchase, sale, possession, and transportation of SAR plants. However, this exemption does not allow for killing or harming cultivated vascular plants and for this reason, MECP generally recommends that an authorization under the ESA is obtained for activities that may impact tree SAR that have been planted.

2.5 Heritage Trees and Special Status

During the tree inventory, additional relevant information about individual trees is collected, where applicable. This includes but is not limited to Heritage Trees, memorial trees, and other factors that may be of importance. Memorial trees or trees with special status are noted and confirmed with the respective municipal authority. Additionally, a background review of the Heritage Trees identified by Trees Ontario and Forest Ontario is conducted to identify Heritage Trees in the Study Area (Forests Ontario, 2023).

2.6 Emerald Ash Borer – Canadian Food Inspection Agency

Emerald Ash Borer is a destructive invasive pest responsible for the death of millions of ash (*Fraxinus* spp.) trees in North America. A large contributor to the ongoing spread of this pest is through the movement of firewood outside of Canadian Food Inspection Agency (CFIA) regulated areas.

Any ash tree removal associated with the Project is subject to the CFIA regulations within regulated areas, as per the CFIA Guidance Document Repository website (Government of Canada, 2021a).

> "*EAB Regulated Articles:*
>
> *Movement of any ash tree article from a regulated area or property with a prohibition of movement without the consent of the CFIA is prohibited. Ash tree articles include:*
>
> *ash trees (whole or parts)*
> *ash nursery stock*
> *ash logs and branches*
> *ash lumber*
> *wood packaging materials with an ash component*
> *ash wood or bark*
> *ash wood chips or bark chips*
> *firewood from all tree species*"
>
> *"Transporting regulated articles:*
>
> *EAB regulated articles moving out of a regulated area must be accompanied by a Movement Certificate issued by the CFIA."*
>
> *"Moving ash firewood out of a regulated area is prohibited, whether for commercial or private purposes (such as taking firewood to the cottage or camping). Non-ash firewood can only be moved out of a regulated area by facilities registered under the Emerald Ash Borer Approved Facility Compliance Program (EABAFCP)."*

2.7 Migratory Birds Act Convention Act

The federal Migratory Bird Convention Act (MBCA) is applied through The Regulations Respecting the Protection of Migratory Birds that states that "[…] no person shall disturb, destroy or take a nest, or egg […] of a migratory bird." This law protects many migratory bird species as outlined in Article 1. Bird nests destroyed because of construction or other site works is referred to as "incidental take" and is illegal except under the authority of a permit obtained through the Canadian Wildlife Services (in limited instances).

Recent modernization of the MBCA in 2022 was intended to provide increased clarity by updating language, incorporating current legal standards, eliminating errors, inconsistencies, and ambiguities. These new regulations provide protection to migratory nests when they are considered to have high conservation value (i.e., when they contain a live bird or viable egg), unless listed under Schedule 1 (these species receive year-round protection).

To avoid incidental take and consequently, contravention of the MBCA, it is recommended that any vegetation removal required for site alterations or development take place outside of the breeding bird season (April 1st to August 31st).

Nest searches during the nesting season are not recommended with naturalized habits, as the ability to detect nests is low and the risk of disturbance to active nests is high. In some instances, where limited vegetation removal is required during the breeding season, a nest search may be completed by a qualified ecologist or equivalent, to identify the presence of active nests. These searches should be limited to 'simple' habitats (Government of Canada, 2023), where there are few likely nesting spots (i.e., urban park, vacant lot, bridges, towers, buildings, etc.).

3. Methods

AECOM's ISA certified arborists conducted a visual tree assessment (VTA) on trees within the Tree Inventory Area on May 24, 2024 and May 29, 2024. Data was collected using the accepted standard arboricultural techniques as outlined in the Council of Tree & Landscape Appraisers' Guide for Plant Appraisal (2020), as well as the Towns' Protection Recommendations for Common Construction Related Impacts Causing Tree Injury (Reviewed 2024).

The Impact Area shown in **Appendix A,** represents the limits of disturbance associated with the Project (the Impact Area), based on the latest designs at the time of the production of the arborist report. An additional 6 m Offset Area around the Impact Area is referenced in **Appendix A** and in this report, represents the area where tree protection, preservation and mitigation recommendations should be considered due to the proximity of the trees to the construction work.

3.1 Tree Inventory

Trees were inventoried or tallied based on the following parameters:

- All trees regardless of size were inventoried within the Tree Inventory Area.
- All tree species at risk (SAR) regardless of DBH were inventoried if encountered within 30 m of the Impact Area.

The locations of all individually inventoried trees were recorded using an online field map on the ESRI ArcGIS Field Maps app on a Samsung tablet or smartphone which was connected to an Emlid Reach Global Positioning System (GPS) unit for georeferencing purposes (accuracy < 1 m in most areas).

3.2 Tree Assessment

The DBH, defined as the diameter of the tree trunk at 1.4 m above grade was measured using a metric diameter tape, Biltmore stick, or tree calipers. The dripline and height of inventoried trees were estimated in metres. A visual tree assessment (VTA) was used to determine the health and structural condition of each tree. The VTA included recording abiotic and biotic disorders and conditions, as well as structural defects, recorded within the Observations/Comments column of **Appendix B**. Abbreviations for terms used in this appendix are detailed in **Appendix C**.

For the purposes of this assignment, a qualitative rating is used for both health and structure as described below:

- Excellent – Nearly perfect or ideal for the species, free of defects.
- Good – Normal vigour, well developed structure, slight asymmetries.
- Fair – Reduced vigour, multiple moderate defects, minor asymmetries.
- Poor – Unhealthy and declining, multiple significant defects, major asymmetries.
- Very Poor – Poor vigour, dying, multiple severe defects, largely asymmetric.
- Dead

It is at the discretion of the Town and the associated property owners whether dead trees or trees with poor structure or health should be inspected further or whether any other mitigation measures should be implemented.

3.2.1 Heritage, Memorial, Special Status Trees

Special status trees were identified as part of the background review and tree inventory, including heritage, memorial and SAR trees. Memorial trees were noted and confirmed with the respective municipal authority where memorial plaques were identified on site. Whereas heritage trees designated under the *Ontario Heritage Act* (1990b) or recognized by the *Heritage Tree Program* (Forests Ontario, 2023) were identified during background review. Refer to **Section 4.7** for a summary of any potential special status trees and the associated tree impact analysis.

3.3 Tree Impact Analysis

Using data collected during the tree inventory and assessment, a tree impact analysis was performed by AECOM's ISA certified arborists. Recommendations for each tree's proposed action (i.e., remove, injure, no anticipated impact) were based on several factors including each tree's current condition, species specific sensitivity to construction, its location, the proposed work impacting the tree, and the extent of encroachment into the tree's TPZ.

The TPZ is an area around each tree, typically established based on the species and size of the tree, intended to provide a buffer protecting the tree from potential impacts including root and soil compaction and mechanical damage. In accordance with Table 3.1 within the City's *Tree Protection Requirements* (2020), the TPZ for a tree found within a City-owned and privately owned property was determined based on the tree's diameter class. For multi-stemmed trees, the DBH of the largest stem was used to determine the TPZ, as per City's regulations.

Additionally, the structural root zone (SRZ) of each tree was calculated and included in **Appendix A**, which is considered the minimum distance away from a tree for any type of encroachment under ideal conditions where encroachment could lead to tree failure due to structural root loss (Coder, 2018). In **Appendix B**, the TPZ is shown for live trees, with the SRZ indicated for dead trees.

The following guidelines were followed in determining the recommended action for each tree:

- Trees, including dead trees, whose SRZ is impacted by the proposed works were recommended for **removal**.
- Trees with equal to or greater than 30% of their TPZ affected by proposed work activities were recommended for **removal** as the impacts are expected to lead to their decline.
- Trees with less than 30% of their TPZ affected by proposed work activities were recommended for **injury and protection** to mitigate further damage to the trees' below- and above-ground parts.
- Where the proposed work is not expected to encroach into their TPZ based on the impact analysis described above, **no impact** is anticipated to the subject trees. Depending on the location of the trees in relation to the proposed work activities, including construction laydown and site access, tree protection may be proposed to prevent encroachment into their TPZ and to protect them from injury.

Tree recommendations were reviewed manually by AECOM's ISA certified arborists, based on the proposed landscape plans and reviewed with AECOM's interdisciplinary teams. Overall results of the tree impact analysis are summarized in **Section 4**.

4. Results

4.1 Tree Assessment

A total of 720 trees were inventoried as part of this arborist report. All individual trees surveyed as part of the updated tree inventory and assessment were found within an urban environment with their DBH measurements up to 94 cm; the average DBH was 21 cm. Several tree species were identified during the tree inventory, with the most abundant being Trembling Aspen (*Populus tremuloides*) at 31.6% and Willow Sp. (*Salix sp.*) at 20.1%.

Disorders and structural defects observed are included in **Appendix B. Table 1** provides a count of the health and structure condition of trees.

Table 1: Summary of Tree Condition

Condition Rating	Overall Health
Excellent	0
Good	90
Fair	472
Poor	42
Very Poor	25
Dead	91
Total	**720**

The majority of the trees inventoried were located on the Municipal land, owned by the Town of Whitby. **Table 2** below provides a summary of the locations of the inventoried trees,

Table 2: Summary of Tree Locations Within the Tree Inventory Area

Ownership	Total
Municipal	**474**
Private	**246**
Total	**720**

4.2 Tree Impact Analysis

As shown in **Table 1** and **Table 2**, approximately 720 trees are located within the tree inventory area or project limits. Of these, an estimated 78% are in Good to Fair condition, while the remaining 22% are classified as Poor to Dead. Based on the current design and the Tree Protection Zones (TPZs), approximately 529 trees within the project limits are expected to be impacted by more than 30%. As a result, these trees may require removal. However, given that 22% of the existing trees are already in Poor to Dead condition, the number of trees likely to be adversely affected by the proposed roadwork and potentially requiring removal is estimated to be around 400.

It is important to note that **Appendix A** represents the worst-case scenario, as it assumes that all trees within the project limits will be removed. This estimate does not consider the potential to retain trees in areas with minimal grade changes or the feasibility of transplanting trees. Additionally, the proposed removals will be offset by the planting of approximately 330 new trees along the 1.1 km Water Street boulevards and median, with trees spaced approximately 10 metres apart. This estimate also does not include any additional plantings that could occur in adjacent public or park areas.

During the construction phase, certified arborists will evaluate each affected tree to determine the actual extent of impact before confirming removal. Tree preservation will remain a key priority, and removals will only proceed when absolutely necessary. Where feasible, transplanting will also be explored. Furthermore, opportunities for design modifications and alternative construction methods will be actively pursued to minimize both the number of impacted trees and the extent of any potential damage. Additional details on tree protection, preservation, and maintenance strategies are provided in **Section 5**.

Appendix B lists the recommended action for each tree.

4.3 Municipal Permits and Compensation

4.3.1 Town of Whitby Permits

All trees larger than 5 cm are regulated by Town of Whitby by-laws. All work undertaken by the Town is exempt from the Town and the Regions By-laws (**Section 2.1**) and, therefore, no permits are required.

4.4 Town of Whitby Compensation

Compensation may be required pending review by the Town and if required, may take place in the form of replacement plantings and/or transplanting.

4.5 Species at Risk

No species at risk trees were documented in the Tree Inventory Area.

4.6 Conservation Authorities Permits and Compensation

In total, 441 trees which are anticipated to require removal are with the CLOCA regulated area (**Section 2.3**). When impacts are confirmed during the detailed design phase, consultation will be required with the conservation authority to determine remediation measures required.

4.7 Heritage and Special Status Trees

At the time of the tree inventory, there were no heritage, memorial, or other trees with special status observed within the Tree Inventory Area.

5. Tree Protection, Preservation, and Maintenance Recommendations

5.1 Tree Preservation

This section provides general recommendations on the latest arboricultural standards for tree protection, preservation, and maintenance. Recommendations in this section are supplementary to any municipal regulations and specification, and any other relevant legislation. The recommendations here also assume that all required permits and authorizations will be obtained prior to the start of construction.

It is recommended that an ISA certified arborist be retained to monitor the Project's construction activities to ensure all trees recommended for protection and retention are being maintained adequately, in relation to standard arboricultural practices and the tree protection protocols. Similarly, encroachment into the TPZ of trees permitted for injury should be conducted under the supervision of an ISA certified arborist. Where a permit to injure or remove was not previously issued, no grading, excavation, construction access, or material storage shall occur within the TPZ of those trees. Tree protection hoarding, as described below, shall be installed as per the local by-laws and regulations to protect all trees proposed for retention throughout the construction process. It is recommended an ISA certified arborist conducts a post-construction assessment to evaluate the health and structure of trees that were retained during construction and identify opportunities for mitigation should any trees display signs of stress (e.g., falling limbs, declining health, etc.). Additional mitigation measures may be prescribed following construction such as monitoring, mulching, vertical mulching, irrigation, fertilization, and pruning.

5.2 Tree Protection Hoarding

Tree protection hoarding is to be installed around trees recommended for retention within the Offset Area as shown in **Appendix B** and in accordance with the Towns' Tree Protection Requirements for New Development (2020). Tree protection hoarding may include vertical fencing or horizontal hoarding and tree protection signage.

Overall, installation of tree protection hoarding will reduce the potential for negative impacts including soil and root compaction, as well as the potential for mechanical damage to trunks or branches. All tree protection hoarding shall be installed prior to any construction activity taking place on site, and it shall remain standing in good repair until construction is complete. Photographs of the hoarding are be sent to the Towns' Landscape Planning department (Forestry Group, Parks Division in the Operations Department) prior to construction commencing; Landscape Planning may conduct an inspection at this time to ensure that hoarding is installed in accordance with their guidelines. Once approved by the Towns' Landscape Planning Department, hoarding shall not be modified or removed during construction without written acknowledgment from the Landscape Planning department. If modification of hoarding is required during construction, the Landscape Planning department should be informed, and an ISA certified arborist should be retained to review the revised scope of work as it relates to tree impacts. The Landscape Planning department may then provide additional authorization to modify the hoarding, and the arborist may provide further recommendations to reduce impact to the existing trees.

Post-construction, the Contractor shall contact the Towns' Landscape Planning department to confirm that all protection fencing/hoardings have remained in place and shall provide pictures to Landscape Planning with trees clearly identified and hoarding intact post construction. Landscape Planning staff may complete a hoarding inspection to confirm this information. Thereafter, Landscape Planning shall provide written confirmation that hoarding may be removed. No tree protection fencing/hoarding shall be removed until this written confirmation has been received from the Landscape Planning department.

5.2.1 Vertical Fencing

Vertical fencing is designed to prevent access into the TPZ of protected trees and shall be installed as per the Towns' *Tree Protection Requirements for New Development (2020)* guide and as illustrated in Detail 700 and 701, included in **Appendix D** of this report. Vertical fencing should encompass as much of the TPZ of protected trees as possible, extending to existing public sidewalks and roads as shown in the Tree Protection Plan in **Appendix B**.

In addition to the vertical fencing, to act as a second layer of defense in case of accidental intrusion into the tree protection hoarding, trunk protection may be introduced for trees adjacent to the proposed work where space is limited due to the densely urbanized environment. Trunk protection typically includes battens strapped together around the trunk of the tree, with padding beneath.

5.2.2 Horizontal Hoarding

Horizontal hoarding is to be installed to supplement vertical fencing to prevent compaction and root damage where encroachment into the minimum TPZ is required and authorized. In conjunction with the vertical fencing shown in **Appendix B,** it is recommended that horizontal hoarding is installed wherever the full TPZ cannot be protected with vertical fencing and where temporary disturbance is anticipated, such as site access and material storage. General horizontal tree protection guidelines accepted by Landscape Planning are as follows:

- Place two (2) 1.22 x 2.44 m (4 ft x 8 ft) plywood boards (minimum 0.75" [3/4"] thick) within the TPZ between the trunk or vertical fencing and the limit of excavation. Field fit may be necessary and board width and length may vary depending on available space.
- Boards are to be placed atop 300 mm (1 ft) of shredded bark mulch, framed with 2"x4"x8' lumber.
- Upon completion of required and authorized work within the TPZ, remove boards and spread mulch in a 2 metre diameter around the trunk to a depth of 75 mm (3"), and reinstate vertical tree protection fencing to protect the full extent of the minimum TPZ.
- Urban Forestry may also accept steel plates as horizontal tree protection hoarding.

Additionally, some locations may require sediment control or erosion fencing, as indicated in the Project's Design Drawings if applicable, typically for hoarding within Town's jurisdiction. If required, sediment control fence should be installed as per Figure 6 of the *Tree Protection Policy and Specifications for Construction Near Trees* (2016) and to the satisfaction of Landscape Planning.

5.2.3 Tree Protection Signage

Tree protection signage shall be installed on the fence by the contractor to clearly delineate TPZs. The sign requirements are included in Detail 703 of the Town of Whitby guidelines for Tree Removal Requirements in New Developments and have been included in **Appendix D** of this report. The sign shall be a minimum of 40 cm x 60 cm, made of white gator board and outline the following:

- That no grade change, storage of materials or equipment is permitted within the TPZ.
- Contact information of the Landscape Planning department.
- The potential fine for contravention of disobeying by-laws in which the TPZ was installed.

5.2.4 Construction and Excavation Near Trees

In general, most of the fibrous and feeder roots of trees are contained in the top 30 cm (12") of soil and provide water and nutrients that sustain the tree's growth and development. Fibrous roots may easily be severed during excavation given their general location, while heavy equipment operation and material storage near trees may lead to compaction and root damage. Structural roots are generally located deeper; impacts to these roots should be avoided to prevent affecting the tree's stability and thus preventing the creation of a hazard tree. If there are any concerns associated with the structural stability of any tree, an Arborist shall be consulted immediately.

Overall, all opportunities to avoid root damage within or near a TPZ shall be taken, including restricting heavy equipment usage, material storage, and excavation within the vicinity of a TPZ. If machinery use or equipment storage is necessary within a TPZ, horizontal hoarding shall be utilized as per recommendations in **Section 5.2**. If excavation is necessary within a TPZ, additional care must be taken to preserve existing trees through a root exploration (**Section 5.2.5**), utilizing tree minded construction methodology (**Section 5**), and root pruning where necessary (**Section 5.2.7**).

5.2.5 Root Exploration

If excavation is required within a TPZ as the project progresses, an exploratory excavation is recommended first to determine the damage to the tree's root system by the proposed work. The exploratory excavation should be performed using hand digging or a low-pressure hydro-vac or pneumonic device, such as an air spade. No roots should be severed during the root exploration, and special care should be taken to avoid root damage during the excavation process. The excavated area should be backfilled with clean native fill as soon as reasonably possible, and the area should then be watered to prevent desiccation and promote root growth.

The root exploration should be conducted under the supervision of an ISA certified arborist and following Landscape Planning's authorization. After consultation with Landscape Planning, the results should be used to inform further action such as a change in the proposed design or construction methodology, excavation and root pruning, or additional remediation.

5.2.6 Excavation

Methods of excavation within the TPZ of trees proposed for preservation shall include those which are less harmful to the tree, such as hand digging or pneumatic or hydraulic excavation. These methods include tools which use pressured air or water to remove the soil around the roots without damaging the larger roots. It is recommended that any excavation within the TPZ of tree using a hydro-vac occurs using a low pressure of less than 100 pound per square inch (PSI) to ensure roots are not unnecessarily damaged. Any roots observed during excavation shall be pruned by or under the supervision of an Arborist using proper arboricultural techniques as per **Section 5.2.4.**

If excavation is to occur, fill within the TPZ shall not be permitted unless mitigated in a way that maintains air and water availability for roots. Additionally, all grade changes within and adjacent to TPZs shall be undertaken in accordance with the previously specified tree protection guidelines.

5.2.7 Root Pruning

Roots encountered during excavation in or outside TPZ should be preserved wherever feasible. However, if it is determined that root pruning must occur to facilitate a grade change or other earthworks, where authorized by

the applicable authorities, root pruning shall be conducted in accordance with acceptable arboricultural standards which may include:

- Maintenance and pruning during hot and dry weather should be avoided.
- To expose the roots, the area should be excavated by hand digging or using a low-pressure hydro-vac or pneumonic device.
- Exposed roots should be neatly cut to the limit of disturbance with a sharp saw to minimize decay and entry points for disease.
- To prevent desiccation, exposed roots should be wrapped with dampened burlap, so that the roots maintain optimum soil moisture during construction and backfilling operations.
- Trees to be pruned should be watered after digging, along with an application of soil and mulch.
- The excavated area should be backfilled with the excavated material and reinstated to the original condition or better.
- Where needed, the use of clean, uncontaminated topsoil from an approved source may be used. It is recommended that the texture of backfill be coarser than existing soils, and that the backfill is applied directly onto existing soils (i.e., remove air pockets, sod, etc.).
- Upon completion, tree protection hoarding should be reinstated to maximize protection of the minimum TPZ.
- All tree maintenance and pruning should be carried out by a qualified tree care specialist that is also an Arborist or under the supervision of an Arborist.

5.3 Branch Pruning

Where branches are likely to be damaged during construction, and pruning is approved by the relevant authorities, branches shall be pruned ahead of the work to avoid branches being broken off, so that bark is not torn, and wounds are not more extensive than necessary. Any branches that overhang the work area and require pruning are to be pruned using clean tools as per the latest arboricultural practices (TCIA, 2008). The Contractor(s) must report immediately to the Contract Administrator any damage to trees such as broken limbs, damage to roots, or wounds to the main trunk or stem systems so that the damage can be assessed immediately.

5.4 Tree Removal and Vegetation Clearing

If tree removals are required to facilitate the project as it progresses, they should be removed following permit issuance where applicable and prior to construction activities commencing on site, as trees proposed for removal may become hazardous once construction and excavation begins on site. It is recommended that an ISA certified arborist be retained during tree removal operations to ensure that standardized arboricultural techniques are employed.

5.5 Post Construction Monitoring and Remedial Care

Post-construction, it is recommended that all on-site trees shall be inspected by an Arborist to assess the health of each tree. Remedial care such as mulching, vertical mulching, fertilization or irrigation may be recommended based on each tree's current condition.

5.6 Invasive Species, Pests and Diseases

Preventing the spread of invasive pests and diseases is vital in maintaining the health of trees and forests. To prevent the spread of invasive species during tree removal operations, if required, trees should be removed from the site in a manner that will prevent the emergence and spread of invasive species and wood should only be moved in accordance with the latest CFIA regulations (Government of Canada, 2024b). Preventing the spread of invasive pests and diseases can also be achieved by closely following best pruning practices, taking into consideration species specific susceptibility to pests and diseases. For example, in the case of oak wilt, pruning oaks is recommended during the dormant season only (Government of Canada, 2024d). During the restoration phase, choosing nursery stock that is free of invasive pests and diseases is also critical in mitigation and reducing spread, which has been shown as a pathway to spread beech leaf disease for instance (Government of Ontario, 2022a).

Removals and pruning of infected trees should be done by a qualified arborist using industry standard best management practices and as per the recommendations outlined in this section. Mitigation and prevention measures should be followed as per the recommendations of the CFIA. The CFIA website provides up-to-date information on all active pest and diseases and should be referred to regularly (Government of Canada, 2024b).

6. Conclusion

Approximately 720 trees are located within the tree inventory area or project limits. Of these, an estimated 78% are in Good to Fair condition, while the remaining 22% are classified as Poor to Dead. Based on the current design and the Tree Protection Zones (TPZs), approximately 529 trees within the project limits are expected to be impacted by more than 30%. As a result, these trees may require removal. However, given that 22% of the existing trees are already in Poor to Dead condition, the number of trees likely to be adversely affected by the proposed roadwork and potentially requiring removal is estimated to be around 400.

It is important to note that **Appendix A** represents the worst-case scenario, as it assumes that all trees within the project limits will be removed. This estimate does not consider the potential to retain trees in areas with minimal grade changes or the feasibility of transplanting trees. Additionally, the proposed removals will be offset by the planting of approximately 330 new trees along the 1.1 km Water Street boulevards and median, with trees spaced approximately 10 metres apart. This estimate also does not include any additional plantings that could occur in adjacent public or park areas.

During the construction phase, certified arborists will evaluate each affected tree to determine the actual extent of impact before confirming removal. Tree preservation will remain a key priority, and removals will only proceed when absolutely necessary. Where feasible, transplanting will also be explored. Furthermore, opportunities for design modifications and alternative construction methods will be actively pursued to minimize both the number of impacted trees and the extent of any potential damage.

All trees larger than 5 cm are regulated by Town of Whitby by-laws. All work undertaken by the Town is exempt from the Town and the Regions By-laws (**Section 2.1**) and, therefore, no permits are required.

The proposed work should be reviewed alongside the results of the tree impact analysis to help ensure proposed impacts to trees are reduced wherever feasible. Should the limits or nature of the proposed work change, an ISA certified arborist must be retained to review the additional impacts and determine if the recommended actions in this report are still applicable.

Tree protection hoarding must be installed prior to initiation of the work. It is recommended any necessary pruning be conducted prior to commencement of construction work by an ISA certified arborist or trained professional with adequate arboricultural experience to ensure trees marked for preservation do not experience unnecessary stress or damage. Regarding trees that are identified for removal prior to construction operations commencing, it is recommended a qualified arborist be retained during tree removal operations to ensure proper arboricultural techniques are employed prior to and during proposed activities and to confirm the need to remove or preserve trees within proximity to the Impact Area. Finally, it is recommended that an ISA certified arborist return at the conclusion of construction to assess the health of preserved trees to report on and mitigate risks associated with projected construction impacts.

7. Certification

I certify that all the statements of fact in this assessment are true, complete, and correct to the best of my knowledge and belief, and that they are made in good faith.

AECOM Canada ULC

Report Certified By:



Brian Magee
ISA Certified Arborist ON-1915A
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Town of Whitby, 2020:
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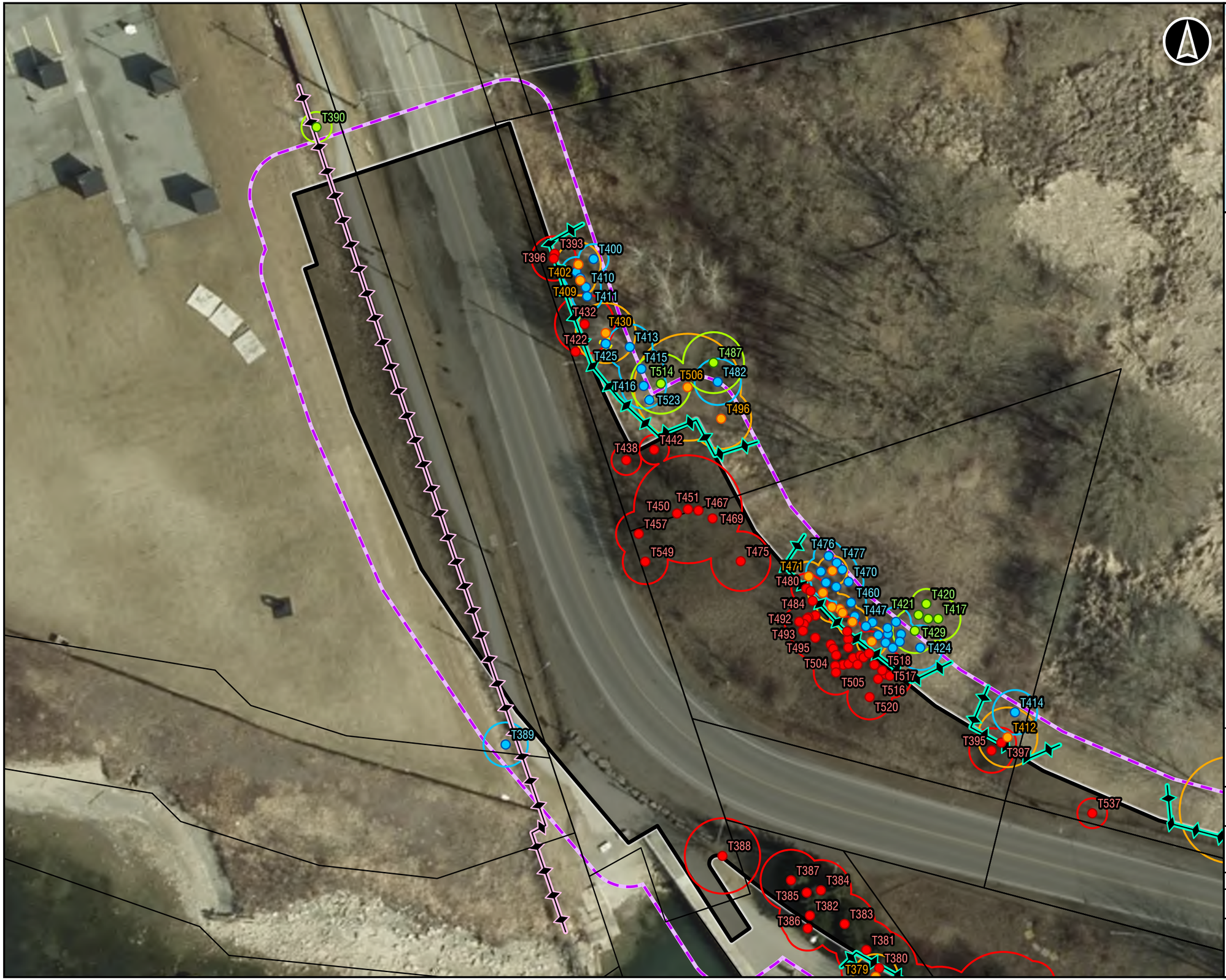
Town of Whitby, Undated:
Arborist Report Requirements; available https://www.whitby.ca/en/work/resources/Tree-Protection-Requirements-for-New-Development/pl-trees_Arborist_Report_Requirements.pdf, Accessed in March 2023.

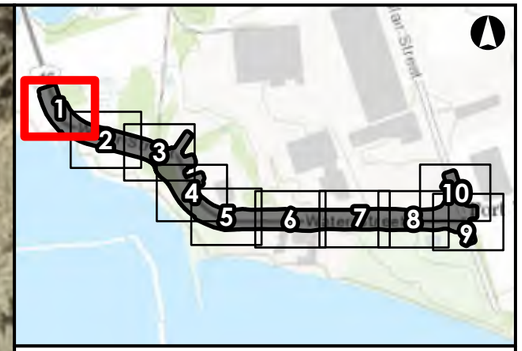
Town of Whitby, Undated:
Tree Protection By-Laws and Tree Removal Permits; available https://www.whitby.ca/en/work/resources/Tree-Protection-Requirements-for-New-Development/pl-trees_Tree_Protection_By-laws_and_Removal_Permits.pdf, Accessed in March 2023.

Tree Care Industry Association, 2008:
American National Standard for Tree Care Operations: Tree, Shrub and Other Woody Plant Maintenance – Standard Practices (Pruning). A300, Part 1. TCIA.

Appendix A

Tree Protection Plan





Legend

- Preffered Alternative Route Impact Area
- Study Area (6m)
- Property Boundary

Tree Location - Recommended Action

- Remove
- No Anticipated Impact - Protect
- Injure
- No Anticipated Impact
- Structural Root Zone

Tree Protection Zone - Recommended Action

- Remove
- Injure
- No Anticipated Impact - Protect
- No Anticipated Impact
- Existing Fence
- Tree Protection Fence

0 5 10 20 30
Metres

Brock St. / Water St. MCEA Schedule C

Tree Protection Plan

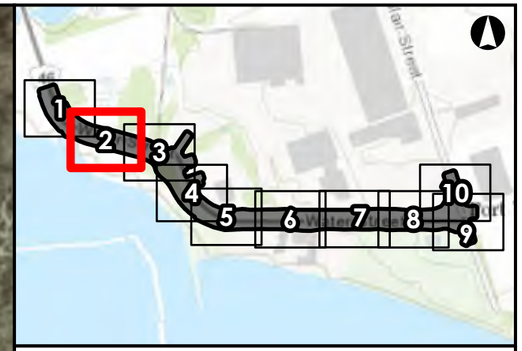
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P#: 60591304		**Appendix A-1**

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Legend

- Preffered Alternative Route Impact Area
- Study Area (6m)
- Property Boundary

Tree Location - Recommended Action

- Remove
- No Anticipated Impact - Protect
- Injure
- No Anticipated Impact
- Structural Root Zone

Tree Protection Zone - Recommended Action

- Remove
- Injure
- No Anticipated Impact - Protect
- No Anticipated Impact
- Tree Protection Fence

0 5 10 20 30
Metres

Brock St. / Water St. MCEA Schedule C

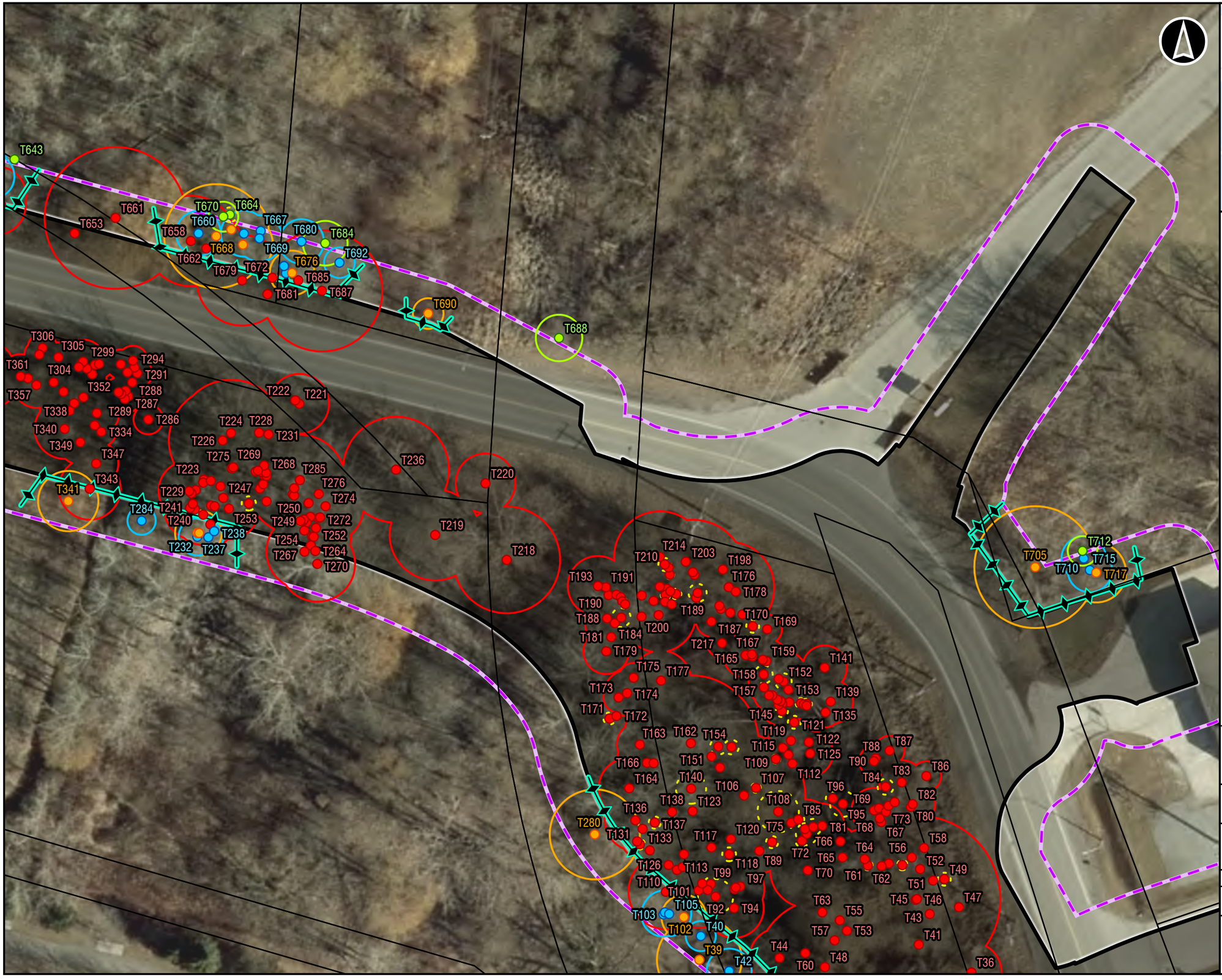
Tree Protection Plan

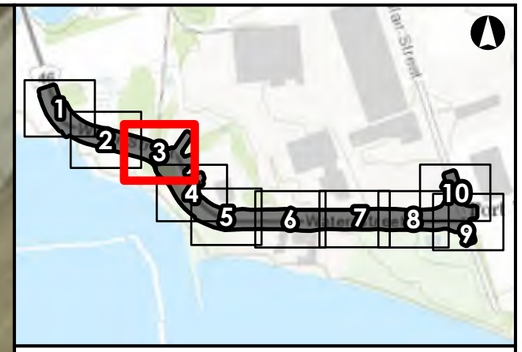
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P#: 60591304		**Appendix A-2**

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Legend

- Preffered Alternative Route Impact Area
- Study Area (6m)
- Property Boundary

Tree Location - Recommended Action

- Remove
- No Anticipated Impact - Protect
- Injure
- No Anticipated Impact
- Structural Root Zone

Tree Protection Zone - Recommended Action

- Remove
- Injure
- No Anticipated Impact - Protect
- No Anticipated Impact
- Tree Protection Fence

0 5 10 20 30
Metres

Brock St. / Water St. MCEA Schedule C

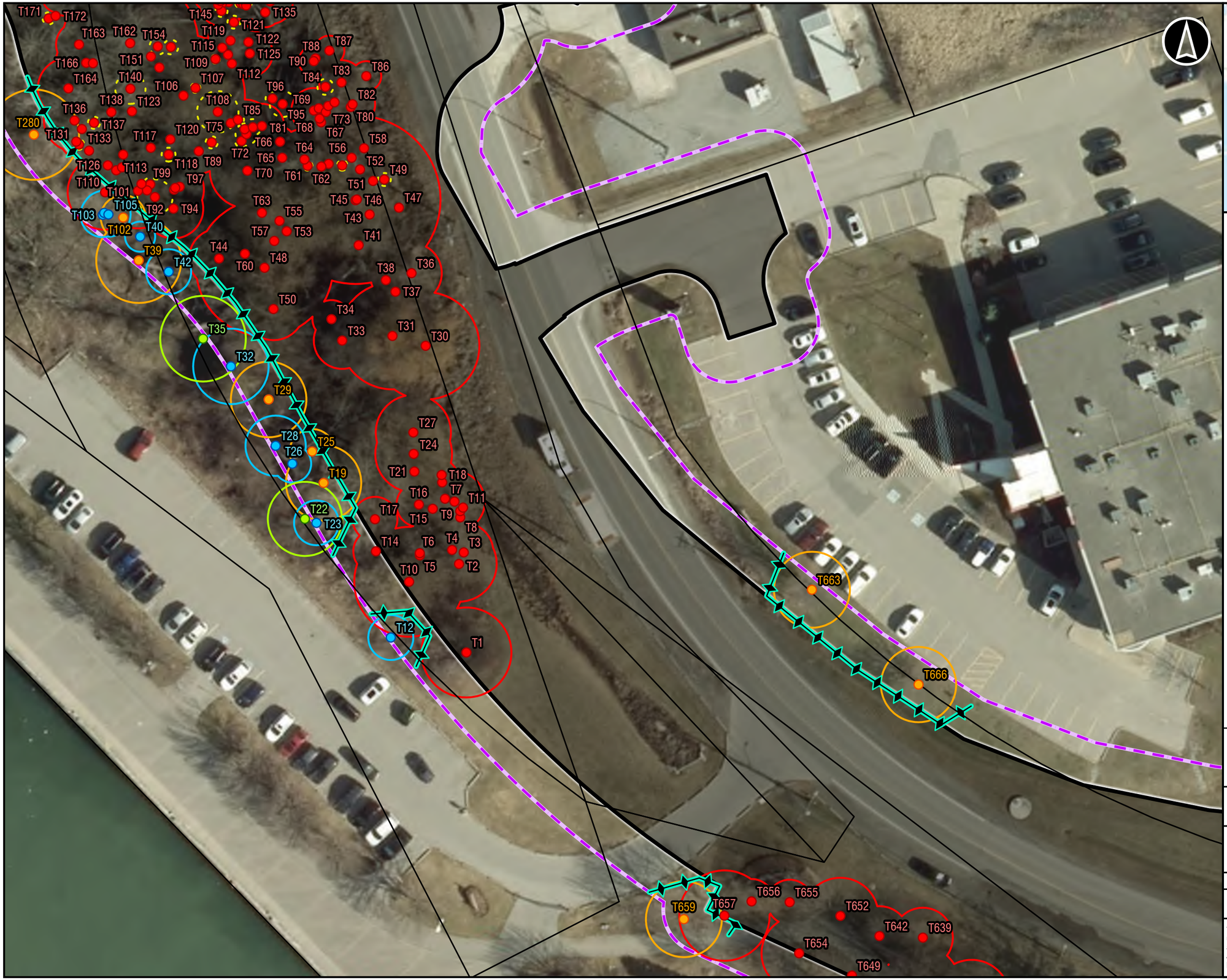
Tree Protection Plan

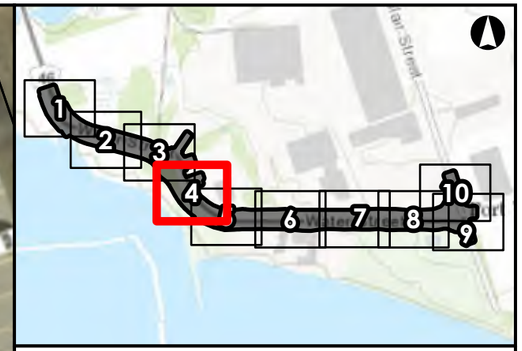
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P#: 60591304		**Appendix A-3**

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Legend

- Preffered Alternative Route Impact Area
- Study Area (6m)
- Property Boundary

Tree Location - Recommended Action

- Remove
- No Anticipated Impact - Protect
- Injure
- No Anticipated Impact
- Structural Root Zone

Tree Protection Zone - Recommended Action

- Remove
- Injure
- No Anticipated Impact - Protect
- No Anticipated Impact
- Tree Protection Fence

0 5 10 20 30
Metres

Brock St. / Water St. MCEA Schedule C

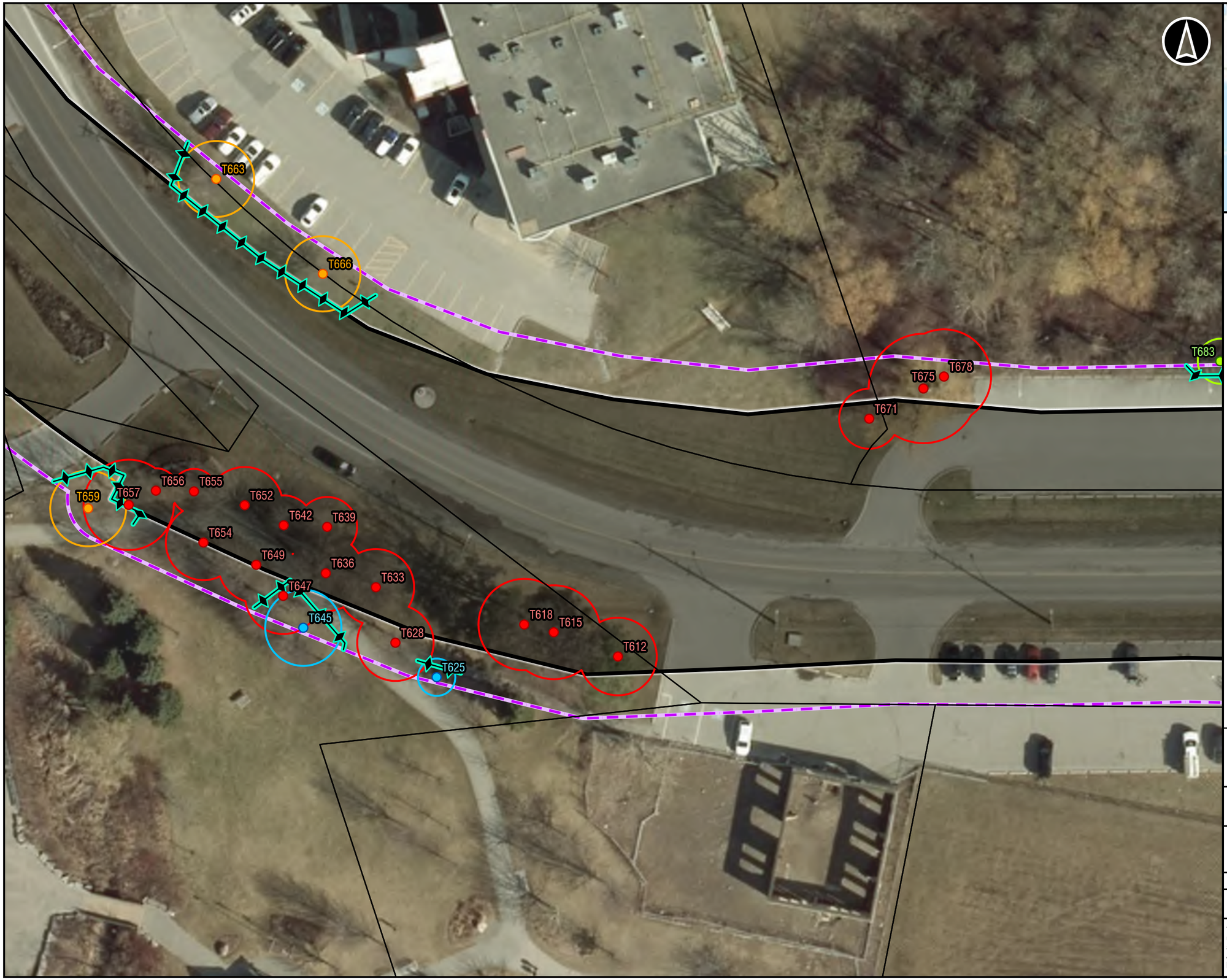
Tree Protection Plan

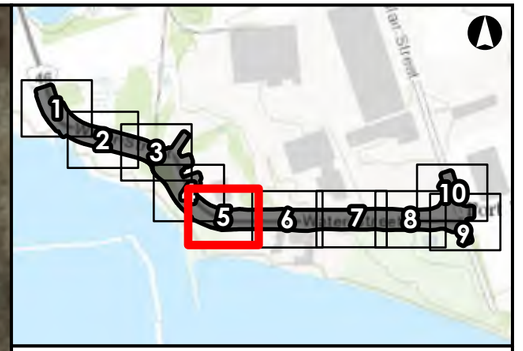
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P#: 60591304		**Appendix A-4**

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Date Saved: 2024-08-08 2:47 PM User Name: MarinoS
C:\Users\marinos\Desktop\Projects_Work\Deliverables\60591304_Attb_WaterStreet\60591304_Attb_WaterSt.aprx





Legend

- Preffered Alternative Route Impact Area
- Study Area (6m)
- Property Boundary

Tree Location - Recommended Action

- Remove
- No Anticipated Impact - Protect
- Injure
- No Anticipated Impact
- Structural Root Zone

Tree Protection Zone - Recommended Action

- Remove
- Injure
- No Anticipated Impact - Protect
- No Anticipated Impact
- Tree Protection Fence

0 5 10 20 30
Metres

Brock St. / Water St. MCEA Schedule C

Tree Protection Plan

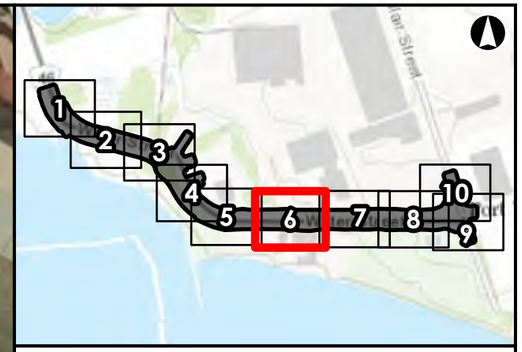
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P#: 60591304		**Appendix A-5**

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Legend

- Preffered Alternative Route Impact Area
- Study Area (6m)
- Property Boundary

Tree Location - Recommended Action

- Remove
- No Anticipated Impact - Protect
- Injure
- No Anticipated Impact
- Structural Root Zone

Tree Protection Zone - Recommended Action

- Remove
- Injure
- No Anticipated Impact - Protect
- No Anticipated Impact
- Tree Protection Fence

0 5 10 20 30
Metres

Brock St. / Water St. MCEA Schedule C

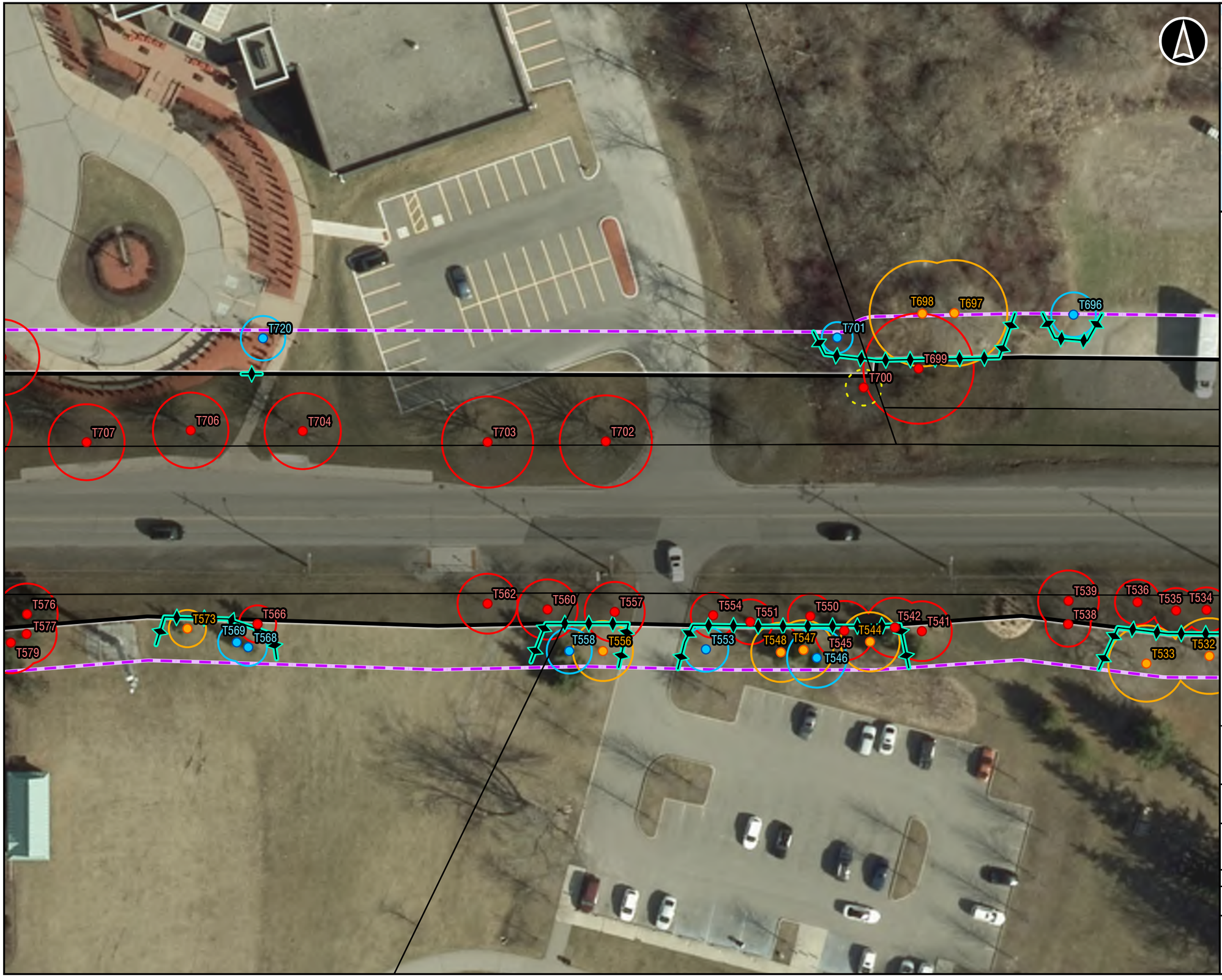
Tree Protection Plan

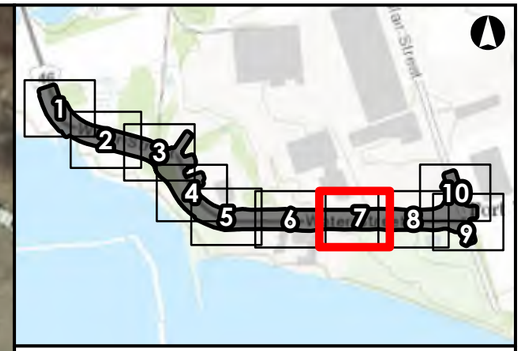
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P#: 60591304		**Appendix A-6**

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Drawing Number: MCEADesign\1_Reports\Arb\60591304_ARB_WaterStr60591304_ARB_WaterSt.aprx
Date Saved: 2024-08-08 2:47 PM User Name: MannS





Legend

- Preffered Alternative Route Impact Area
- Study Area (6m)
- Property Boundary

Tree Location - Recommended Action

- Remove
- No Anticipated Impact - Protect
- Injure
- No Anticipated Impact
- Structural Root Zone

Tree Protection Zone - Recommended Action

- Remove
- Injure
- No Anticipated Impact - Protect
- No Anticipated Impact
- Tree Protection Fence

0 5 10 20 30
Metres

Brock St. / Water St. MCEA Schedule C

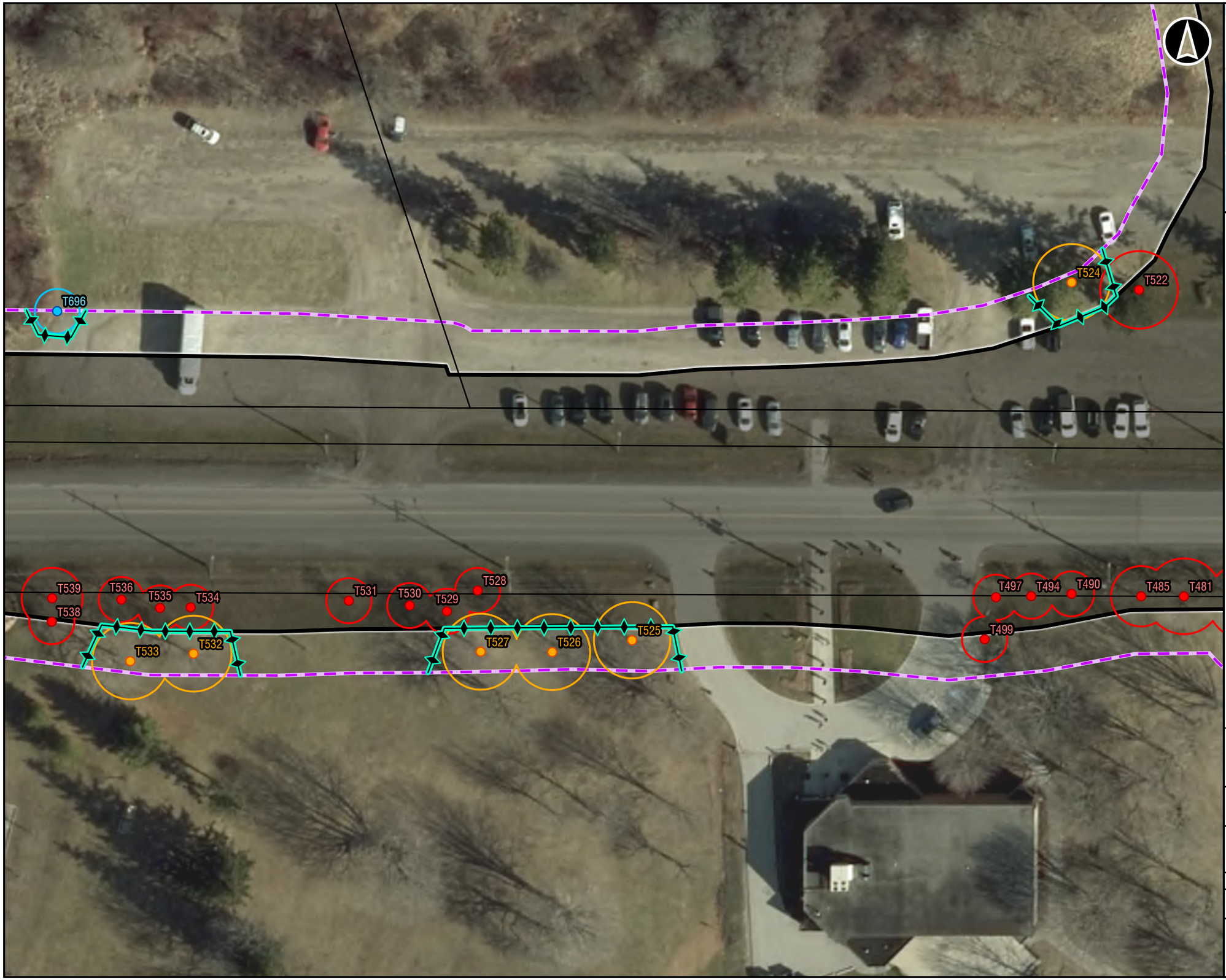
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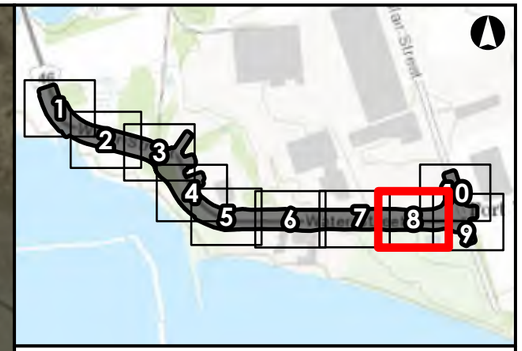
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P#: 60591304		**Appendix A-7**

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Plot Date/Time: 2024-08-08 2:47 PM, User Name: MarinoS
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Legend

- Preffered Alternative Route Impact Area
- Study Area (6m)
- Property Boundary

Tree Location - Recommended Action

- Remove
- No Anticipated Impact - Protect
- Injure
- No Anticipated Impact
- Structural Root Zone

Tree Protection Zone - Recommended Action

- Remove
- Injure
- No Anticipated Impact - Protect
- No Anticipated Impact
- Tree Protection Fence

0 5 10 20 30
Metres

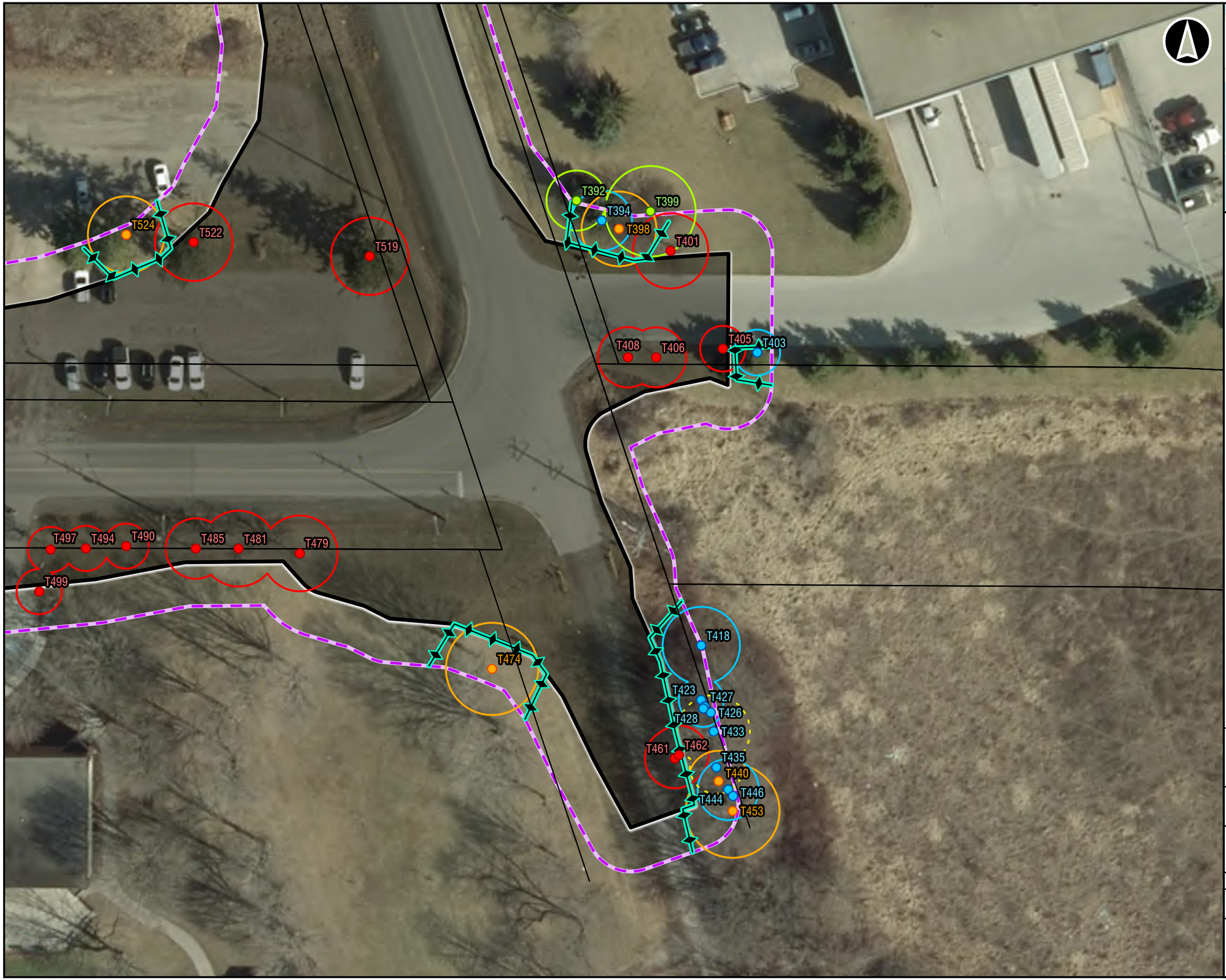
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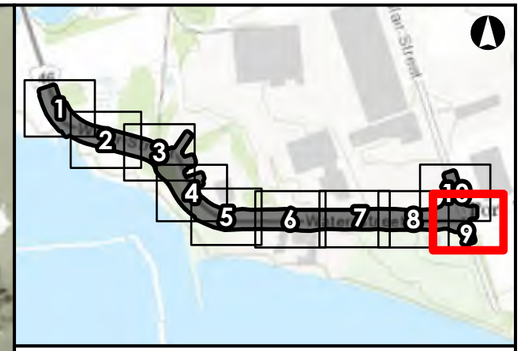
Tree Protection Plan

Aug, 2024	1:500 * when printed 11"x17"	Datum: NAD 1983 UTM Zone 17N Source: Source
P#: 60591304		**Appendix A-8**
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Plotted By: Marie-S. Mercier
Drawing Location: C:\Users\marie-s.mercier\Desktop\MCEA\Design\01_Reports\Arb\60591304_ARB_WaterStr60591304_ARB_WaterSt.aprx
Date Saved: 2024-09-08 12:47 PM User Name: MarieS





Legend

- Preffered Alternative Route Impact Area
- Study Area (6m)
- Property Boundary

Tree Location - Recommended Action

- Remove
- No Anticipated Impact - Protect
- Injure
- No Anticipated Impact
- Structural Root Zone

Tree Protection Zone - Recommended Action

- Remove
- Injure
- No Anticipated Impact - Protect
- No Anticipated Impact
- Tree Protection Fence

0 5 10 20 30
Metres

Brock St. / Water St. MCEA Schedule C

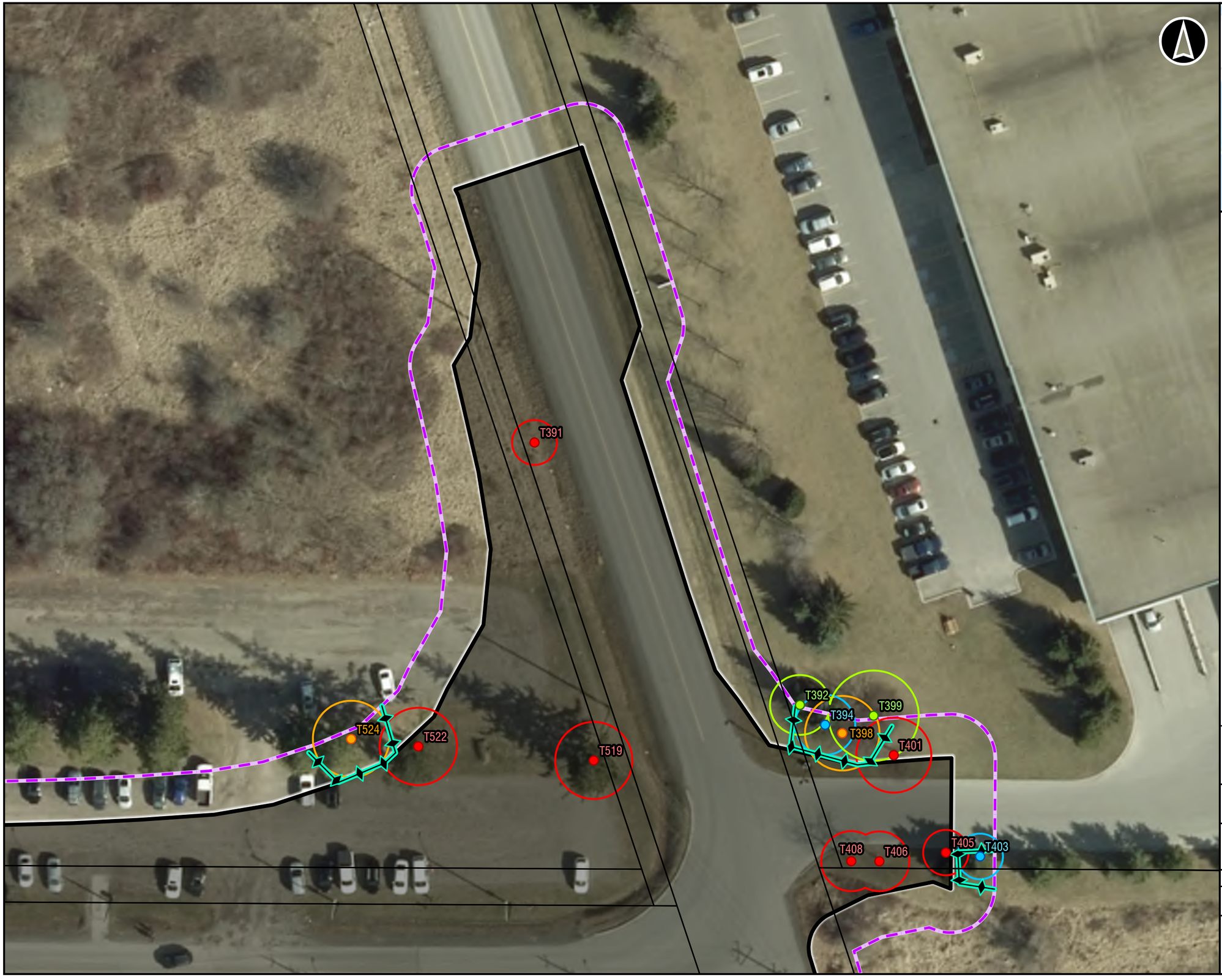
Tree Protection Plan

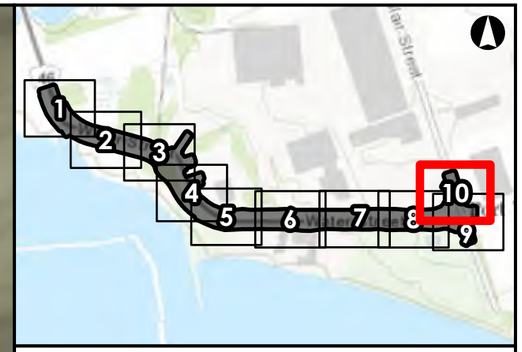
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P#: 60591304		**Appendix A-9**

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Legend

- Preffered Alternative Route Impact Area
- Study Area (6m)
- Property Boundary

Tree Location - Recommended Action

- Remove
- No Anticipated Impact - Protect
- Injure
- No Anticipated Impact
- Structural Root Zone

Tree Protection Zone - Recommended Action

- Remove
- Injure
- No Anticipated Impact - Protect
- No Anticipated Impact
- Tree Protection Fence

0 5 10 20 30
Metres

Brock St. / Water St. MCEA Schedule C

Tree Protection Plan

Aug, 2024	1:500 * when printed 11"x17"	Datum: NAD 1983 UTM Zone 17N Source: Source
P#: 60591304		**Appendix A-10**

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Appendix B

Tree Assessment Results

Tree #	Common Name	Scientfic Name	Species at Risk Tree?	DBH Analysis (cm)	Dripline (m)	Minimum Tree Protection Zone	Structural Root Zone (m)	Structural Root Zone Impacted?	Tree Condition - Health	Tree Condition - Structure	Observations/Comments	Tree Ownership	Tree Location (Impact Area, Buffer Area, Tree Inventory Area)	CLOCA Regulated Limit (Y/N)	Recommended Action
1	Pussy Willow	Salix discolor	No	28.5	5	6	1.5	Yes	Fair	Poor	PF, BW, DE(H), EG(B), EG(C), DW(S), TK6	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
2	Balsam Poplar	Populus balsamifera	No	29.1	4	5	1.6	Yes	Fair	Fair	TK3, EG(C), EG(T), CON(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
3	Balsam Poplar	Populus balsamifera	No	11.0	3	4	0.6	Yes	Fair	Fair	CT, EG(C), EG(T), CON(T)	Municipal- Public	Impact Area	No	Remove
4	Balsam Poplar	Populus balsamifera	No	19.0	3	4	1.0	Yes	Fair	Fair	CT, EG(C), EG(T), CON(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
5	Balsam Poplar	Populus balsamifera	No	17.0	3	4	0.9	Yes	Fair	Very Poor	CT, EG(C), EG(T), CON(T), adjacent tree failed onto it	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
6	Balsam Poplar	Populus balsamifera	No	10.0	2	3	0.5	Yes	Fair	Very Poor	CT, EG(C), EG(T), CON(T), adjacent tree failed onto it	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
7	Trembling Aspen	Populous tremuloides	No	6.0	1	2	0.3	Yes	Fair	Fair	SS, LN(L), CON(T), LS	Municipal- Public	Impact Area	No	Remove
8	Trembling Aspen	Populous tremuloides	No	9.0	1	2	0.5	Yes	Fair	Fair	SS, LN(L), CON(T), LS	Municipal- Public	Impact Area	No	Remove
9	Trembling Aspen	Populous tremuloides	No	8.0	1	2	0.4	Yes	Fair	Fair	SS, LN(L), CON(T), LS	Municipal- Public	Impact Area	No	Remove
10	Willow sp.	Salix sp.	No	99.5	6	7	5.4	Yes	Fair	Fair	DW(L), EG(T), EG(C), VC, CON(T), BR, PB, IN(U)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
11	Trembling Aspen	Populous tremuloides	No	14.0	1	2	0.8	Yes	Fair	Fair	SS, LN(L), CON(T), LS, 1SD, EG(B), EG(T)	Municipal- Public	Impact Area	No	Remove
12	Pussy Willow	Salix discolor	No	14.9	2	3	0.8	No	Fair	Fair	ML, DW(L), PF, EG(T)	Lions Promenade Open Space - Public	Buffer Area	Yes	No Anticipated Impact - Protect
13	Trembling Aspen	Populous tremuloides	No	30.3	3	4	1.6	Yes	Fair	Fair	TK7, LN(L), CON(T), LS, 1SD, EG(B), EG(T)	Municipal- Public	Impact Area	No	Remove
14	Pussy Willow	Salix discolor	No	16.0	2	3	0.9	Yes	Fair	Fair	ML, DW(L), PF, EG(T)	Lions Promenade Open Space - Public	Buffer Area	Yes	Remove
15	Trembling Aspen	Populous tremuloides	No	11.0	2	3	0.6	Yes	Fair	Fair	TT, ER, CON(T), LS	Municipal- Public	Impact Area	Yes	Remove
16	Pussy Willow	Salix discolor	No	11.1	2	3	0.6	Yes	Fair	Fair	TK3, ER, CON(T), LS	Municipal- Public	Impact Area	Yes	Remove
17	Pussy Willow	Salix discolor	No	11.6	2	3	0.6	Yes	Fair	Fair	ML, DW(L), PF, EG(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
18	Trembling Aspen	Populous tremuloides	No	8.0	1	2	0.4	Yes	Fair	Fair	LN(L), 1SD, SS, LS, CON(T)	Municipal- Public	Impact Area	Yes	Remove
19	Pussy Willow	Salix discolor	No	27.8	4	5	1.5	No	Poor	Poor	LG, PF, DW(L), EG(C), DE, PB	Lions Promenade Open Space - Public	Buffer Area	Yes	Injure
20	Trembling Aspen	Populous tremuloides	No	11.0	1	2	0.6	Yes	Fair	Fair	LN(M), 1SD, SS, LS, CON(T), EG(T)	Municipal- Public	Impact Area	Yes	Remove
21	Trembling Aspen	Populous tremuloides	No	13.4	1	2	0.7	Yes	Fair	Fair	LN(M), 1SD, SS, LS, CON(T), VC, EG(B), EG(T)	Municipal- Public	Impact Area	Yes	Remove
22	Pussy Willow	Salix discolor	No	12.6	4	5	0.7	No	Fair	Poor	LG, TK4, EG(C), EG(T), CON(T)	Lions Promenade Open Space - Public	Tree Inventory Area	Yes	No Anticipated Impact
23	Pussy Willow	Salix discolor	No	11.0	2	3	0.6	No	Good	Fair	CT, CON(T), DW(S), EG(T)	Lions Promenade Open Space - Public	Buffer Area	Yes	No Anticipated Impact - Protect
24	Trembling Aspen	Populous tremuloides	No	48.0	4	5	2.6	Yes	Poor	Very Poor	IE, LG, EG(C)	Municipal- Public	Impact Area	Yes	Remove
25	Pussy Willow	Salix discolor	No	13.7	2	3	0.7	No	Fair	Fair	PF, BR, ML, IN(U), DW(L)	Lions Promenade Open Space - Public	Buffer Area	Yes	Injure
26	Balsam Poplar	Populus balsamifera	No	35.0	1	2.4	1.9	No	Very Poor	Very Poor	IE, LG, PF, EG(T)	Lions Promenade Open Space - Public	Buffer Area	Yes	No Anticipated Impact - Protect
27	Crack Willow	Salix fragilis	No	26.1	4	5	1.4	Yes	Fair	Fair	IE, TK2, EG(T)	Municipal- Public	Impact Area	Yes	Remove
28	Pussy Willow	Salix discolor	No	23.4	3	4	1.3	No	Fair	Fair	ML, IN(U), DE(H), FS, CON(T), VC	Lions Promenade Open Space - Public	Buffer Area	Yes	No Anticipated Impact - Protect
29	Manitoba Maple	Acer negundo	No	32.0	4	5	1.7	No	Fair	Very Poor	IE, LN(H), CON(T), TK2, PF, DW(L), DW(S), EG(C), PF, tree failed onto this one	Lions Promenade Open Space - Public	Buffer Area	Yes	Injure
30	Crack Willow	Salix fragilis	No	67.6	6	7	3.6	Yes	Fair	Fair	TK5, WI, LN(L), EG(B), EG(T), CON(T)	Municipal- Public	Impact Area	Yes	Remove
31	Crack Willow	Salix fragilis	No	60.0	6	7	3.2	Yes	Fair	Fair	TK4, LN(L), EG(B), EG(T), CON(T)	Municipal- Public	Impact Area	Yes	Remove
32	Willow sp.	Salix sp.	No	71.0	1	4.8	3.8	No	Very Poor	Very Poor	IE, LG, EG(T)	Lions Promenade Open Space - Public	Buffer Area	Yes	No Anticipated Impact - Protect
33	Trembling Aspen	Populous tremuloides	No	55.0	1	3.6	3.0	Yes	Very Poor	Very Poor	IE, LG, EG(C)	Municipal- Public	Impact Area	Yes	Remove
34	Trembling Aspen	Populous tremuloides	No	40.0	1	2.4	2.2	Yes	Very Poor	Very Poor	IE, LG, EG(C)	Municipal- Public	Impact Area	Yes	Remove
35	Willow sp.	Salix sp.	No	89.5	2	5.4	4.8	No	Poor	Very Poor	IE, PF, LG, EG(T), DW(L), PB, DE(H)	Lions Promenade Open Space - Public	Tree Inventory Area	Yes	No Anticipated Impact
36	Trembling Aspen	Populous tremuloides	No	25.0	3	4	1.4	Yes	Fair	Fair	VC, CON(T), DE(S), BR	Municipal- Public	Impact Area	Yes	Remove
37	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Fair	Fair	SS, HL, VC	Municipal- Public	Impact Area	Yes	Remove
38	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Fair	Fair	SS, HL, VC	Municipal- Public	Impact Area	Yes	Remove
39	Willow sp.	Salix sp.	No	81.0	2	5.4	4.4	No	Very Poor	Very Poor	IE, PF, LG, EG(T), DW(L), PB, DE(H)	Lions Promenade Open Space - Public	Buffer Area	Yes	Injure
40	Willow sp.	Salix sp.	No	11.2	1	2	0.6	No	Fair	Poor	LN(H), CON(T), DW(S)	Lions Promenade Open Space - Public	Buffer Area	Yes	No Anticipated Impact - Protect
41	Trembling Aspen	Populous tremuloides	No	3.0	3	4	0.2	Yes	Very Poor	Very Poor	VC, CON(T), PF, EG(C)	Municipal- Public	Impact Area	Yes	Remove
42	Manitoba Maple	Acer negundo	No	15.0	2	3	0.8	No	Poor	Very Poor	LN(H), CON(T), EG(T), EG(C), DW(S)	Lions Promenade Open Space - Public	Buffer Area	Yes	No Anticipated Impact - Protect
43	Manitoba Maple	Acer negundo	No	13.0	3	4	0.7	Yes	Fair	Fair	LN(M), EG(B), EG(T), VC, CON(T)	Municipal- Public	Impact Area	Yes	Remove
44	Manitoba Maple	Acer negundo	No	18.8	3	4	1.0	Yes	Fair	Poor	LN(M), CON(T), EG(C), EG(T)	Municipal- Public	Impact Area	Yes	Remove
45	Crack Willow	Salix fragilis	No	86.7	10	11	4.7	Yes	Poor	Very Poor	IE, LN(H), OL, EG(B), EG(T), EG(C), DE(H)	Municipal- Public	Impact Area	Yes	Remove
46	Crack Willow	Salix fragilis	No	86.7	10	11	4.7	Yes	Poor	Very Poor	IE, LN(H), OL, EG(B), EG(T), EG(C), DE(H)	Municipal- Public	Impact Area	Yes	Remove
47	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Fair	Fair	SS, 1SD, CON(T)	Municipal- Public	Impact Area	Yes	Remove
48	Crack Willow	Salix fragilis	No	70.0	8	9	3.8	Yes	Fair	Fair	TK2, CON(T), VC, PF, DW(L), EG(C), BR	Municipal- Public	Impact Area	Yes	Remove
49	Trembling Aspen	Populous tremuloides	No	15.0	0	0	0.8	Yes	Dead	Dead	VC, DW(L)	Municipal- Public	Impact Area	Yes	Remove
50	Willow sp.	Salix sp.	No	51.0	3	4	2.8	Yes	Fair	Fair	IE, CON(T), PF, DW(L), VC, DW(S)	Municipal- Public	Impact Area	Yes	Remove
51	Trembling Aspen	Populous tremuloides	No	6.0	1	2	0.3	Yes	Fair	Fair	SS, HL	Municipal- Public	Impact Area	Yes	Remove
52	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Fair	Fair	SS, HL, VC	Municipal- Public	Impact Area	Yes	Remove
53	Manitoba Maple	Acer negundo	No	11.0	3	4	0.6	Yes	Fair	Fair	LS, CON(T), EG(C)	Municipal- Public	Impact Area	Yes	Remove
54	Trembling Aspen	Populous tremuloides	No	12.0	0	0	0.6	Yes	Dead	Dead	VC, DW(L)	Municipal- Public	Impact Area	Yes	Remove
55	Manitoba Maple	Acer negundo	No	12.0	3	4	0.6	Yes	Fair	Fair	LS, CON(T), EG(C)	Municipal- Public	Impact Area	Yes	Remove
56	Trembling Aspen	Populous tremuloides	No	19.0	2	3	1.0	Yes	Fair	Fair	VC, FS, BR, CON(T)	Municipal- Public	Impact Area	Yes	Remove
57	Manitoba Maple	Acer negundo	No	5.5	2	3	0.3	Yes	Fair	Fair	LS, CON(T), EG(C), DW(S)	Municipal- Public	Impact Area	Yes	Remove
58	Trembling Aspen	Populous tremuloides	No	18.0	2	3	1.0	Yes	Fair	Fair	VC, BR, CON(T)	Municipal- Public	Impact Area	Yes	Remove
59	Trembling Aspen	Populous tremuloides	No	8.0	0	0	0.4	Yes	Dead	Dead	VC, DW(L)	Municipal- Public	Impact Area	Yes	Remove
60	Manitoba Maple	Acer negundo	No	11.0	3	4	0.6	Yes	Fair	Fair	LS, CON(T), EG(C), DW(S)	Municipal- Public	Impact Area	Yes	Remove
61	Trembling Aspen	Populous tremuloides	No	11.0	0	0	0.6	Yes	Dead	Dead	VC, DW(L)	Municipal- Public	Impact Area	Yes	Remove
62	Trembling Aspen	Populous tremuloides	No	7.0	1	2	0.4	Yes	Fair	Fair	VC, CON(T)	Municipal- Public	Impact Area	Yes	Remove
63	Trembling Aspen	Populous tremuloides	No	8.0	2	3	0.4	Yes	Fair	Fair	CON(T), DW(S)	Municipal- Public	Impact Area	Yes	Remove
64	Trembling Aspen	Populous tremuloides	No	35.0	3	4	1.9	Yes	Fair	Fair	ER, VC, BR, DW(S)	Municipal- Public	Impact Area	Yes	Remove
65	Trembling Aspen	Populous tremuloides	No	11.0	1	2	0.6	Yes	Fair	Fair	ER, LS, BR	Municipal- Public	Impact Area	Yes	Remove
66	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Fair	Fair	SS, EG(T)	Municipal- Public	Impact Area	Yes	Remove
67	Trembling Aspen	Populous tremuloides	No	10.0	1	2	0.5	Yes	Fair	Fair	SS, EG(T), VC, CON(T)	Municipal- Public	Impact Area	Yes	Remove
68	Trembling Aspen	Populous tremuloides	No	17.0	1	2	0.9	Yes	Fair	Fair	SS, EG(T), VC, CON(T)	Municipal- Public	Impact Area	Yes	Remove
69	Trembling Aspen	Populous tremuloides	No	16.0	2	3	0.9	Yes	Fair	Fair	EG(T), VC, CON(T)	Municipal- Public	Impact Area	Yes	Remove
70	Manitoba Maple	Acer negundo	No	27.0	4	5	1.5	Yes	Fair	Fair	TK2, IN(U), DW(S), CON(T), EG(C), CA	Municipal- Public	Impact Area	Yes	Remove
71	Trembling Aspen	Populous tremuloides	No	6.0	1	2	0.3	Yes	Fair	Fair	EG(T), VC, CON(T), TT, FS, LN(L)	Municipal- Public	Impact Area	Yes	Remove
72	Poplar sp.	Populus sp.	No	15.0	0	0	0.8	Yes	Dead	Dead	PF, PB	Municipal- Public	Impact Area	Yes	Remove
73	Trembling Aspen	Populous tremuloides	No	10.0	1	2	0.5	Yes	Fair	Fair	EG(T), VC, CON(T), TT, FS, LN(L)	Municipal- Public	Impact Area	Yes	Remove
74	Poplar sp.	Populus sp.	No	25.2	0	0	1.4	Yes	Dead	Dead	TK2, PF, PB	Municipal- Public	Impact Area	Yes	Remove
75	Manitoba Maple	Acer negundo	No	8.0	2	3	0.4	Yes	Fair	Fair	CT, CON(T), LS, DW(S), EG(C)	Municipal- Public	Impact Area	Yes	Remove

Tree #	Common Name	Scientfic Name	Species at Risk Tree?	DBH Analysis (cm)	Dripline (m)	Minimum Tree Protection Zone	Structural Root Zone (m)	Structural Root Zone Impacted?	Tree Condition - Health	Tree Condition - Structure	Observations/Comments	Tree Ownership	Tree Location (Impact Area, Buffer Area, Tree Inventory Area)	CLOCA Regulated Limit (Y/N)	Recommended Action
76	Trembling Aspen	Populous tremuloides	No	16.0	1	2	0.9	Yes	Very Poor	Very Poor	LN(H), PF, VC, DW(S), BR	Municipal- Public	Impact Area	Yes	Remove
77	Manitoba Maple	Acer negundo	No	12.0	3	4	0.6	Yes	Fair	Fair	CT, CON(T), LS, DW(S), EG(C)	Municipal- Public	Impact Area	Yes	Remove
78	Trembling Aspen	Populous tremuloides	No	13.0	1	2	0.7	Yes	Very Poor	Very Poor	LN(M),, VC, DW(S), BR	Municipal- Public	Impact Area	Yes	Remove
79	Poplar sp.	Populus sp.	No	19.0	0	0	1.0	Yes	Dead	Dead	PB, ID, PF	Municipal- Public	Impact Area	Yes	Remove
80	Trembling Aspen	Populous tremuloides	No	19.0	1	2	1.0	Yes	Very Poor	Very Poor	CD, DW(L), DW(S), BR	Municipal- Public	Impact Area	Yes	Remove
81	Balsam Poplar	Populus balsamifera	No	8.5	2	3	0.5	Yes	Fair	Fair	CON(T), DW(S), EG(C)	Municipal- Public	Impact Area	Yes	Remove
82	Trembling Aspen	Populous tremuloides	No	16.0	2	3	0.9	Yes	Fair	Fair	1SD, CON(T), BR, DW(S)	Municipal- Public	Impact Area	Yes	Remove
83	Pussy Willow	Salix discolor	No	8.7	2	3	0.5	Yes	Poor	Poor	TK4, ID, PB, EG(B)	Municipal- Public	Impact Area	Yes	Remove
84	Trembling Aspen	Populous tremuloides	No	18.4	0	0	1.0	Yes	Dead	Dead	PF, TK2, VC, DW(L)	Municipal- Public	Impact Area	Yes	Remove
85	Poplar sp.	Populus sp.	No	14.0	0	0	0.8	Yes	Dead	Dead	PF, PB, FU	Municipal- Public	Impact Area	Yes	Remove
86	Trembling Aspen	Populous tremuloides	No	7.0	1	2	0.4	Yes	Fair	Fair	SS, CON(T), LN(L), TT	Municipal- Public	Impact Area	Yes	Remove
87	Willow sp.	Salix sp.	No	8.7	1	2	0.5	Yes	Poor	Poor	TK3, DE(S), PB,	Municipal- Public	Impact Area	Yes	Remove
88	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Fair	Fair	SS, TT, CON(T), VC	Municipal- Public	Impact Area	Yes	Remove
89	Trembling Aspen	Populous tremuloides	No	17.8	2	3	1.0	Yes	Poor	Poor	PF, DE, FU, NST, DW(S), EG(C), CON(T), larger stem dead	Municipal- Public	Impact Area	Yes	Remove
90	Trembling Aspen	Populous tremuloides	No	9.0	1	2	0.5	Yes	Fair	Fair	SS, TT, CON(T), VC	Municipal- Public	Impact Area	Yes	Remove
91	Trembling Aspen	Populous tremuloides	No	14.0	0	0	0.8	Yes	Dead	Dead	PF, PB	Municipal- Public	Impact Area	Yes	Remove
92	Poplar sp.	Populus sp.	No	41.0	0	0	2.2	Yes	Dead	Dead	PF, DW(L)	Municipal- Public	Impact Area	Yes	Remove
93	Manitoba Maple	Acer negundo	No	16.0	3	4	0.9	Yes	Fair	Fair	LN(M), EG(C), DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
94	Manitoba Maple	Acer negundo	No	14.0	3	4	0.8	Yes	Fair	Fair	CT, EG(C), DW(S), CON(T), VC	Municipal- Public	Impact Area	Yes	Remove
95	Trembling Aspen	Populous tremuloides	No	30.0	0	0	1.6	Yes	Dead	Dead	LG, PF	Municipal- Public	Impact Area	Yes	Remove
96	Trembling Aspen	Populous tremuloides	No	16.0	0	0	0.9	Yes	Dead	Dead	LG, PF	Municipal- Public	Impact Area	Yes	Remove
97	Trembling Aspen	Populous tremuloides	No	12.0	2	3	0.6	Yes	Good	Good	CON(T), DW(S) , VC	Municipal- Public	Impact Area	Yes	Remove
98	Trembling Aspen	Populous tremuloides	No	15.0	2	3	0.8	Yes	Good	Good	CON(T), DW(S) , VC	Municipal- Public	Impact Area	Yes	Remove
99	Poplar sp.	Populus sp.	No	16.0	0	0	0.9	Yes	Dead	Dead	PB, LN(M)	Municipal- Public	Impact Area	Yes	Remove
100	Poplar sp.	Populus sp.	No	9.0	0	0	0.5	Yes	Dead	Dead	PB, PF	Municipal- Public	Impact Area	Yes	Remove
101	Manitoba Maple	Acer negundo	No	24.8	4	5	1.3	Yes	Fair	Poor	LN(H), CON(T), EG(T), EG(C), VC, DW(S), failed tree leaning on this one	Municipal- Public	Impact Area	Yes	Remove
102	Trembling Aspen	Populous tremuloides	No	13.0	2	3	0.7	No	Fair	Poor	CT, VC	Lions Promenade Open Space - Public	Buffer Area	Yes	Injure
103	Trembling Aspen	Populous tremuloides	No	5.0	2	3	0.3	No	Good	Good	CON(T)	Lions Promenade Open Space - Public	Buffer Area	Yes	No Anticipated Impact - Protect
104	Trembling Aspen	Populous tremuloides	No	6.0	2	3	0.3	No	Good	Good	CON(T)	Lions Promenade Open Space - Public	Buffer Area	Yes	No Anticipated Impact - Protect
105	Trembling Aspen	Populous tremuloides	No	6.0	2	3	0.3	No	Good	Good	CON(T)	Lions Promenade Open Space - Public	Buffer Area	Yes	No Anticipated Impact - Protect
106	Crack Willow	Salix fragilis	No	79.0	7	8	4.3	Yes	Fair	Fair	BR, DW(L), CON(T)	Municipal- Public	Impact Area	Yes	Remove
107	Trembling Aspen	Populous tremuloides	No	11.0	0	0	0.6	Yes	Dead	Dead	DW(L)	Municipal- Public	Impact Area	Yes	Remove
108	Trembling Aspen	Populous tremuloides	No	48.0	0	0	2.6	Yes	Dead	Dead	DW(L), LG	Municipal- Public	Impact Area	Yes	Remove
109	Trembling Aspen	Populous tremuloides	No	10.0	0	0	0.5	Yes	Dead	Dead	DW(L)	Municipal- Public	Impact Area	Yes	Remove
110	Trembling Aspen	Populous tremuloides	No	23.0	4	5	1.2	Yes	Good	Good	CT	Lions Promenade Open Space - Public	Buffer Area	Yes	Remove
111	Trembling Aspen	Populous tremuloides	No	14.0	1	2	0.8	Yes	Poor	Fair	CD, DW(S), 1SD, CON(T)	Municipal- Public	Impact Area	Yes	Remove
112	Trembling Aspen	Populous tremuloides	No	10.0	1	2	0.5	Yes	Fair	Fair	ER, LN(L)	Municipal- Public	Impact Area	Yes	Remove
113	Trembling Aspen	Populous tremuloides	No	25.0	4	5	1.4	Yes	Good	Good	CON(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
114	Trembling Aspen	Populous tremuloides	No	15.0	3	4	0.8	Yes	Good	Good	CON(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
115	Trembling Aspen	Populous tremuloides	No	8.0	1	2	0.4	Yes	Fair	Fair	SS, CON(T)	Municipal- Public	Impact Area	Yes	Remove
116	Amur Maple	Acer ginnala	No	8.0	2	3	0.4	Yes	Fair	Fair	CON(T), LS, VC	Municipal- Public	Impact Area	Yes	Remove
117	Manitoba Maple	Acer negundo	No	15.0	3	4	0.8	Yes	Fair	Fair	LN(L), CT, EG(T), EG(C), DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
118	Poplar sp.	Populus sp.	No	16.0	0	0	0.9	Yes	Dead	Dead	PF, PB, VC	Municipal- Public	Impact Area	Yes	Remove
119	Trembling Aspen	Populous tremuloides	No	16.0	2	3	0.9	Yes	Poor	Fair	CD, DW(S), VC	Municipal- Public	Impact Area	Yes	Remove
120	Trembling Aspen	Populous tremuloides	No	35.0	5	6	1.9	Yes	Good	Good	CON(T), DW(S), EG(C)	Municipal- Public	Impact Area	Yes	Remove
121	Trembling Aspen	Populous tremuloides	No	14.9	0	0	0.8	Yes	Dead	Dead	TK2, ER, PB	Municipal- Public	Impact Area	Yes	Remove
122	Trembling Aspen	Populous tremuloides	No	9.0	0	0	0.5	Yes	Dead	Dead	LBL, CON(T)	Municipal- Public	Impact Area	Yes	Remove
123	Willow sp.	Salix sp.	No	70.0	5	6	3.8	Yes	Poor	Very Poor	CV, WC(P), DE(H), ID, EG(T), EG(C), DW(L), PF, BR, CV	Municipal- Public	Impact Area	Yes	Remove
124	Trembling Aspen	Populous tremuloides	No	8.0	2	3	0.4	Yes	Fair	Fair	CT, DW(S), EG(C)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
125	Trembling Aspen	Populous tremuloides	No	24.0	2	3	1.3	Yes	Poor	Poor	CD, VC, LN(L)	Municipal- Public	Impact Area	Yes	Remove
126	Trembling Aspen	Populous tremuloides	No	16.0	2	3	0.9	Yes	Good	Good	CON(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
127	Trembling Aspen	Populous tremuloides	No	8.0	1	2	0.4	Yes	Good	Good	CON(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
128	Trembling Aspen	Populous tremuloides	No	12.0	0	0	0.6	Yes	Dead	Dead	PF, PB	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
129	Trembling Aspen	Populous tremuloides	No	12.0	0	0	0.6	Yes	Dead	Dead	VC, CON(T)	Municipal- Public	Impact Area	Yes	Remove
130	Trembling Aspen	Populous tremuloides	No	12.0	0	0	0.6	Yes	Dead	Dead	VC, CON(T)	Municipal- Public	Impact Area	Yes	Remove
131	Trembling Aspen	Populous tremuloides	No	14.0	1	2	0.8	Yes	Very Poor	Poor	VC, CON(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
132	Trembling Aspen	Populous tremuloides	No	7.0	1	2	0.4	Yes	Fair	Fair	VC, CON(T)	Municipal- Public	Impact Area	Yes	Remove
133	Trembling Aspen	Populous tremuloides	No	16.0	1	2	0.9	Yes	Very Poor	Poor	CT, CON(T), DW(L)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
134	Trembling Aspen	Populous tremuloides	No	9.0	1	2	0.5	Yes	Fair	Fair	VC, CON(T), 1SD	Municipal- Public	Impact Area	Yes	Remove
135	Trembling Aspen	Populous tremuloides	No	9.0	1	2	0.5	Yes	Fair	Fair	VC, CON(T), 1SD, LN(L)	Municipal- Public	Impact Area	Yes	Remove
136	Trembling Aspen	Populous tremuloides	No	37.0	3	4	2.0	Yes	Good	Good	CT, DW(S), CON(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
137	Poplar sp.	Populus sp.	No	14.0	0	0	0.8	Yes	Dead	Dead	PF, PB	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
138	Trembling Aspen	Populous tremuloides	No	29.0	5	6	1.6	Yes	Good	Fair	DW(S), EG(C), CON(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
139	Trembling Aspen	Populous tremuloides	No	18.0	2	3	1.0	Yes	Fair	Fair	VC, 1SD, ER	Municipal- Public	Impact Area	Yes	Remove
140	Willow sp.	Salix sp.	No	35.0	0	0	1.9	Yes	Dead	Dead	PF, PB, CV	Municipal- Public	Impact Area	Yes	Remove
141	Willow sp.	Salix sp.	No	10.5	2	3	0.6	Yes	Fair	Fair	TK5, EG(B), EG(T), DW(S)	Municipal- Public	Impact Area	Yes	Remove
142	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Poor	Poor	VC, 1SD, CON(T)	Municipal- Public	Impact Area	Yes	Remove
143	Trembling Aspen	Populous tremuloides	No	21.0	2	3	1.1	Yes	Poor	Fair	CD, 1SD, CON(T)	Municipal- Public	Impact Area	Yes	Remove
144	Trembling Aspen	Populous tremuloides	No	14.0	0	0	0.8	Yes	Dead	Dead	PB, DW(L)	Municipal- Public	Impact Area	Yes	Remove
145	Trembling Aspen	Populous tremuloides	No	6.0	0	0	0.3	Yes	Dead	Dead	PB, DW(L)	Municipal- Public	Impact Area	Yes	Remove
146	Trembling Aspen	Populous tremuloides	No	6.0	0	0	0.3	Yes	Dead	Dead	PB, DW(L)	Municipal- Public	Impact Area	Yes	Remove
147	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Fair	Fair	SS, CON(T), LS	Municipal- Public	Impact Area	Yes	Remove
148	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Poor	Fair	SS, CON(T), LS	Municipal- Public	Impact Area	Yes	Remove
149	Trembling Aspen	Populous tremuloides	No	23.0	3	4	1.2	Yes	Fair	Fair	LN(L), DW(S), EG(C)	Municipal- Public	Impact Area	Yes	Remove
150	Trembling Aspen	Populous tremuloides	No	11.0	1	2	0.6	Yes	Poor	Fair	SS, CON(T), 1SD	Municipal- Public	Impact Area	Yes	Remove

Tree #	Common Name	Scientfic Name	Species at Risk Tree?	DBH Analysis (cm)	Dripline (m)	Minimum Tree Protection Zone	Structural Root Zone (m)	Structural Root Zone Impacted?	Tree Condition - Health	Tree Condition - Structure	Observations/Comments	Tree Ownership	Tree Location (Impact Area, Buffer Area, Tree Inventory Area)	CLOCA Regulated Limit (Y/N)	Recommended Action
151	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Fair	Fair	CON(T), LS	Municipal- Public	Impact Area	Yes	Remove
152	Trembling Aspen	Populous tremuloides	No	19.0	0	0	1.0	Yes	Dead	Dead	PB, VC, CON(T)	Municipal- Public	Impact Area	Yes	Remove
153	Trembling Aspen	Populous tremuloides	No	9.0	0	0	0.5	Yes	Dead	Dead	PB, VC, CON(T)	Municipal- Public	Impact Area	Yes	Remove
154	Poplar sp.	Populus sp.	No	19.0	0	0	1.0	Yes	Dead	Dead	PF, PB	Municipal- Public	Impact Area	Yes	Remove
155	Poplar sp.	Populus sp.	No	17.0	0	0	0.9	Yes	Dead	Dead	PF, PB, DW(L), VC	Municipal- Public	Impact Area	Yes	Remove
156	Trembling Aspen	Populous tremuloides	No	27.0	3	4	1.5	Yes	Fair	Fair	VC, 1SD, CON(T)	Municipal- Public	Impact Area	Yes	Remove
157	Trembling Aspen	Populous tremuloides	No	11.0	1	2	0.6	Yes	Fair	Fair	VC, 1SD, CON(T), LS	Municipal- Public	Impact Area	Yes	Remove
158	Trembling Aspen	Populous tremuloides	No	21.0	0	0	1.1	Yes	Dead	Dead	VC, DW(L)	Municipal- Public	Impact Area	Yes	Remove
159	Trembling Aspen	Populous tremuloides	No	12.0	2	3	0.6	Yes	Fair	Poor	ER, VC, CON(T), LN(L), 1SD	Municipal- Public	Impact Area	Yes	Remove
160	Trembling Aspen	Populous tremuloides	No	14.0	2	3	0.8	Yes	Fair	Poor	ER, VC, CON(T), LN(L), 1SD	Municipal- Public	Impact Area	Yes	Remove
161	Trembling Aspen	Populous tremuloides	No	16.0	2	3	0.9	Yes	Fair	Poor	ER, VC, CON(T), 1SD	Municipal- Public	Impact Area	Yes	Remove
162	Trembling Aspen	Populous tremuloides	No	61.0	8	9	3.3	Yes	Fair	Fair	BR, PF, DW(L), VC, CD	Municipal- Public	Impact Area	Yes	Remove
163	Trembling Aspen	Populous tremuloides	No	27.0	2	3	1.5	Yes	Fair	Fair	DW(S), CT	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
164	Trembling Aspen	Populous tremuloides	No	35.0	3	4	1.9	Yes	Good	Good	DW(S), CON(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
165	Trembling Aspen	Populous tremuloides	No	11.0	2	3	0.6	Yes	Fair	Fair	ER, VC, CON(T), 1SD	Municipal- Public	Impact Area	Yes	Remove
166	Trembling Aspen	Populous tremuloides	No	32.0	3	4	1.7	Yes	Good	Fair	DW(S), CON(T), CT	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
167	Trembling Aspen	Populous tremuloides	No	24.0	2	3	1.3	Yes	Fair	Fair	ER, DW(S), BR, VC, CON(T)	Municipal- Public	Impact Area	Yes	Remove
168	Trembling Aspen	Populous tremuloides	No	14.0	2	3	0.8	Yes	Fair	Good	DW(S), EG(T), EG(C), CON(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
169	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Fair	Fair	SS, HL	Municipal- Public	Impact Area	Yes	Remove
170	Trembling Aspen	Populous tremuloides	No	15.0	0	0	0.8	Yes	Dead	Dead	DW(L)	Municipal- Public	Impact Area	Yes	Remove
171	Poplar sp.	Populus sp.	No	14.0	0	0	0.8	Yes	Dead	Dead	PB, DW(L)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
172	Poplar sp.	Populus sp.	No	8.0	0	0	0.4	Yes	Dead	Dead	PB, DW(L)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
173	Trembling Aspen	Populous tremuloides	No	14.0	1	2	0.8	Yes	Very Poor	Fair	CD, DW(S)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
174	Trembling Aspen	Populous tremuloides	No	27.0	2	3	1.5	Yes	Fair	Fair	DW(S), 1SD	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
175	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Fair	Fair	CT, VC	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
176	Crack Willow	Salix fragilis	No	45.8	5	6	2.5	Yes	Fair	Fair	TK4, BR, DW(S) WI, VC	Municipal- Public	Impact Area	Yes	Remove
177	Trembling Aspen	Populous tremuloides	No	24.0	3	4	1.3	Yes	Good	Good	VC, DW(S), CT	Municipal- Public	Impact Area	Yes	Remove
178	Crack Willow	Salix fragilis	No	36.1	4	5	1.9	Yes	Fair	Fair	TK2, PP, WI, CON(T), VC, 1SD	Municipal- Public	Impact Area	Yes	Remove
179	Trembling Aspen	Populous tremuloides	No	21.0	2	3	1.1	Yes	Poor	Fair	CD, DW(L), mechanical damage to stem	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
180	Trembling Aspen	Populous tremuloides	No	20.0	2	3	1.1	Yes	Fair	Fair	1SD, VC, DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
181	Trembling Aspen	Populous tremuloides	No	24.0	2	3	1.3	Yes	Fair	Fair	CD, DW(S), GR, VC, 1SD fill at base	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
182	Trembling Aspen	Populous tremuloides	No	15.0	2	3	0.8	Yes	Fair	Fair	1SD, DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
183	Trembling Aspen	Populous tremuloides	No	16.0	2	3	0.9	Yes	Fair	Fair	1SD, DW(S), CON(T), VC	Municipal- Public	Impact Area	Yes	Remove
184	Hawthorn sp.	Crataegus sp.	No	10.0	3	4	0.5	Yes	Fair	Fair	CON(T), DW(S), EG(C), ML	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
185	Trembling Aspen	Populous tremuloides	No	7.0	1	2	0.4	Yes	Fair	Fair	CON(T), LS, DW(S)	Municipal- Public	Impact Area	Yes	Remove
186	Poplar sp.	Populus sp.	No	22.0	0	0	1.2	Yes	Dead	Dead	PF, CR(H), PB, CON(T), FU, LN(H)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
187	Trembling Aspen	Populous tremuloides	No	14.0	1	2	0.8	Yes	Very Poor	Fair	CD, DW(S), VC	Municipal- Public	Impact Area	Yes	Remove
188	Trembling Aspen	Populous tremuloides	No	9.0	1	2	0.5	Yes	Fair	Fair	DW(S)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
189	Trembling Aspen	Populous tremuloides	No	23.0	2	3	1.2	Yes	Fair	Fair	CD, DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
190	Trembling Aspen	Populous tremuloides	No	12.0	2	3	0.6	Yes	Fair	Fair	DW(S), 1SD, CON(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
191	Trembling Aspen	Populous tremuloides	No	12.0	2	3	0.6	Yes	Very Poor	Fair	CD, DW(L), 1SD, CON(T)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
192	Trembling Aspen	Populous tremuloides	No	21.0	0	0	1.1	Yes	Dead	Dead	VC, CON(T)	Municipal- Public	Impact Area	Yes	Remove
193	Trembling Aspen	Populous tremuloides	No	24.0	3	4	1.3	Yes	Fair	Fair	CON(T), DW(S)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
194	Trembling Aspen	Populous tremuloides	No	5.0	0	0	0.3	Yes	Dead	Dead	DW(L)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
195	Crack Willow	Salix fragilis	No	31.1	5	6	1.7	Yes	Fair	Fair	TK2, WI, PP, EG(C), VC	Municipal- Public	Impact Area	Yes	Remove
196	Trembling Aspen	Populous tremuloides	No	8.0	0	0	0.4	Yes	Dead	Dead	DW(L)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
197	Trembling Aspen	Populous tremuloides	No	10.0	0	0	0.5	Yes	Dead	Dead	DW(L)	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
198	Trembling Aspen	Populous tremuloides	No	9.0	0	0	0.5	Yes	Dead	Dead	CON(T), LN(L)	Municipal- Public	Impact Area	Yes	Remove
199	Trembling Aspen	Populous tremuloides	No	9.0	1	2	0.5	Yes	Very Poor	Poor	CON(T), CD, DW(L), EG(C), CT, VC	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
200	Trembling Aspen	Populous tremuloides	No	21.0	3	4	1.1	Yes	Fair	Fair	CON(T), DW(S)	Municipal- Public	Impact Area	Yes	Remove
201	Crack Willow	Salix fragilis	No	36.1	6	7	1.9	Yes	Fair	Fair	TK2, BR, DW(S), WI	Municipal- Public	Impact Area	Yes	Remove
202	Trembling Aspen	Populous tremuloides	No	18.0	3	4	1.0	Yes	Fair	Poor	CON(T), DW(S), CT, failed tree leaning on this one	Municipal- Public	Impact Area	Yes	Remove
203	Crack Willow	Salix fragilis	No	21.0	3	4	1.1	Yes	Fair	Fair	LN(L), CON(T), WI, BR, DW(S)	Municipal- Public	Impact Area	Yes	Remove
204	Trembling Aspen	Populous tremuloides	No	12.0	2	3	0.6	Yes	Fair	Fair	LS, CT, DW(S)	Municipal- Public	Impact Area	Yes	Remove
205	Trembling Aspen	Populous tremuloides	No	21.0	4	5	1.1	Yes	Good	Good	DW(S)	Municipal- Public	Impact Area	Yes	Remove
206	Trembling Aspen	Populous tremuloides	No	10.0	0	0	0.5	Yes	Dead	Dead	DW(L), PF, CON(T)	Municipal- Public	Impact Area	Yes	Remove
207	Trembling Aspen	Populous tremuloides	No	8.0	1	2	0.4	Yes	Fair	Fair	CT, LS, DW(S)	Municipal- Public	Impact Area	Yes	Remove
208	Trembling Aspen	Populous tremuloides	No	7.0	0	0	0.4	Yes	Dead	Dead	DW(L), FU	Municipal- Public	Impact Area	Yes	Remove
209	Trembling Aspen	Populous tremuloides	No	19.0	3	4	1.0	Yes	Fair	Fair	1SD, BR, DW(S), LN(L), CON(T)	Municipal- Public	Impact Area	Yes	Remove
210	Trembling Aspen	Populous tremuloides	No	15.0	0	0	0.8	Yes	Dead	Dead	FU, PB, BR	Municipal- Public	Impact Area	Yes	Remove
211	Trembling Aspen	Populous tremuloides	No	11.0	0	0	0.6	Yes	Dead	Dead	DW(L), LN(L)	Municipal- Public	Impact Area	Yes	Remove
212	Trembling Aspen	Populous tremuloides	No	9.0	1	2	0.5	Yes	Very Poor	Fair	CD, VC	Municipal- Public	Impact Area	Yes	Remove
213	Trembling Aspen	Populous tremuloides	No	24.0	3	4	1.3	Yes	Fair	Fair	GR, VC, CON(T)	Municipal- Public	Impact Area	Yes	Remove
214	Crack Willow	Salix fragilis	No	50.6	5	6	2.7	Yes	Fair	Fair	TK3, EG(B), EG(T), EG(C), WI, CON(T), LN(L)	Municipal- Public	Impact Area	Yes	Remove
215	Poplar sp.	Populus sp.	No	12.0	0	0	0.6	Yes	Dead	Dead	PF, PB	Municipal- Public	Impact Area	Yes	Remove
216	Trembling Aspen	Populous tremuloides	No	8.0	1	0	0.4	Yes	Dead	Dead	CD, DW(L)	Municipal- Public	Impact Area	Yes	Remove
217	Trembling Aspen	Populous tremuloides	No	6.0	1	2	0.3	Yes	Fair	Fair	LN(M), CON(T)	Municipal- Public	Impact Area	Yes	Remove
218	Eastern Cottonwood	Populus deltoides	No	63.0	6	7	3.4	Yes	Fair	Fair	IE, VC, CD, DW(S) ,BR	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
219	Manitoba Maple	Acer negundo	No	46.0	5	6	2.5	Yes	Fair	Fair	FK1@1.5M, TW, WC(P), DW(S), BR, EG(T), EG(C)	Municipal- Public	Impact Area	Yes	Remove
220	Manitoba Maple	Acer negundo	No	17.5	3	4	0.9	Yes	Fair	Fair	TK2, VC, ML, LN(L), DE(S), EG(B), EG(T)	Municipal- Public	Impact Area	Yes	Remove
221	Manitoba Maple	Acer negundo	No	17.8	3	4	1.0	Yes	Fair	Fair	CON(T), BR, PF, EG(C), DW(S)	Municipal- Public	Impact Area	Yes	Remove
222	Green Ash	Fraxinus pennsylvanica	No	6.3	1	2	0.3	Yes	Fair	Fair	CON(T), LS, DW(L)	Municipal- Public	Impact Area	Yes	Remove
223	Eastern Cottonwood	Populus deltoides	No	28.0	3	4	1.5	Yes	Good	Good	CT, DW(S), (M)OB	Municipal- Public	Impact Area	Yes	Remove
224	Eastern Cottonwood	Populus deltoides	No	62.0	6	7	3.3	Yes	Fair	Fair	IE, CON(T), FS, OL, (M)OB, DW(S), DW(L), ML	Municipal- Public	Impact Area	Yes	Remove
225	Willow sp.	Salix sp.	No	27.0	2	3	1.5	Yes	Fair	Fair	CT, DW(S), (M)OB, VC	Municipal- Public	Impact Area	Yes	Remove

Tree #	Common Name	Scientfic Name	Species at Risk Tree?	DBH Analysis (cm)	Dripline (m)	Minimum Tree Protection Zone	Structural Root Zone (m)	Structural Root Zone Impacted?	Tree Condition - Health	Tree Condition - Structure	Observations/Comments	Tree Ownership	Tree Location (Impact Area, Buffer Area, Tree Inventory Area)	CLOCA Regulated Limit (Y/N)	Recommended Action
226	Crack Willow	Salix fragilis	No	71.4	6	7	3.9	Yes	Fair	Fair	IE, CON(T), FS, OL, (M)OB, DW(S), DW(L), ML	Municipal- Public	Impact Area	Yes	Remove
227	Willow sp.	Salix sp.	No	16.0	2	3	0.9	Yes	Fair	Fair	CON(T), DW(S), (M)OB, VC, CT	Municipal- Public	Impact Area	Yes	Remove
228	Crack Willow	Salix fragilis	No	10.0	1	2	0.5	Yes	Fair	Fair	LN(L), LS, DW(S)	Municipal- Public	Impact Area	Yes	Remove
229	Eastern Cottonwood	Populus deltoides	No	8.0	1	2	0.4	Yes	Very Poor	Fair	(M)OB, CD, VC, EG(T)	Municipal- Public	Impact Area	Yes	Remove
230	Eastern Cottonwood	Populus deltoides	No	37.0	3	4	2.0	Yes	Good	Fair	(M)OB, DW(S)	Municipal- Public	Impact Area	Yes	Remove
231	Crack Willow	Salix fragilis	No	27.6	2	3	1.5	Yes	Fair	Fair	TK3, PF, DW(L), EG(T)	Municipal- Public	Impact Area	Yes	Remove
232	Eastern Cottonwood	Populus deltoides	No	31.0	1	2.4	1.7	No	Very Poor	Fair	(M)OB, DW(L), CD, VC	Municipal- Public	Buffer Area	Yes	No Anticipated Impact - Protect
233	Willow sp.	Salix sp.	No	11.0	2	3	0.6	No	Fair	Fair	(M)OB, EG(T), EG(C), DW(S), FK1@2M	Municipal- Public	Buffer Area	Yes	Injure
234	Willow sp.	Salix sp.	No	17.0	2	3	0.9	No	Fair	Fair	(M)OB, EG(C), DW(S), CT, VC	Municipal- Public	Buffer Area	Yes	Injure
235	Eastern Cottonwood	Populus deltoides	No	26.0	2	3	1.4	Yes	Fair	Fair	(M)OB, VC, DW(S)	Municipal- Public	Buffer Area	Yes	Remove
236	Eastern Cottonwood	Populus deltoides	No	51.0	6	7	2.8	Yes	Fair	Fair	ML, ER, BR, DW(S)	Municipal- Public	Impact Area	Yes	Remove
237	Eastern Cottonwood	Populus deltoides	No	10.0	1	2	0.5	No	Fair	Fair	(M)OB, VC, DW(S)	Municipal- Public	Buffer Area	Yes	No Anticipated Impact - Protect
238	Eastern Cottonwood	Populus deltoides	No	6.0	0	0	0.3	No	Dead	Dead	(M)OB, DW(L)	Municipal- Public	Buffer Area	Yes	No Anticipated Impact - Protect
239	Eastern Cottonwood	Populus deltoides	No	30.0	3	4	1.6	Yes	Fair	Fair	(T)OB, DW(S), VC	Municipal- Public	Impact Area	Yes	Remove
240	Eastern Cottonwood	Populus deltoides	No	35.0	3	4	1.9	Yes	Fair	Fair	(T)OB, DW(S), FK1@6M	Municipal- Public	Impact Area	Yes	Remove
241	Eastern Cottonwood	Populus deltoides	No	17.0	2	3	0.9	Yes	Fair	Fair	(T)OB, DW(S), CT	Municipal- Public	Impact Area	Yes	Remove
242	Crack Willow	Salix fragilis	No	25.0	2	3	1.4	Yes	Fair	Fair	(M)OB, 1SD, CON(T), LN(L), BR, DW(S)	Municipal- Public	Impact Area	Yes	Remove
243	Eastern Cottonwood	Populus deltoides	No	12.0	2	3	0.6	Yes	Fair	Fair	(T)OB, DW(S), CT	Municipal- Public	Impact Area	Yes	Remove
244	Eastern Cottonwood	Populus deltoides	No	28.0	3	4	1.5	Yes	Fair	Fair	(M)OB, DW(S)	Municipal- Public	Impact Area	Yes	Remove
245	Crack Willow	Salix fragilis	No	20.0	2	3	1.1	Yes	Fair	Fair	(M)OB, CON(T), 1SD, TW, WC(P)	Municipal- Public	Impact Area	Yes	Remove
246	Willow sp.	Salix sp.	No	9.9	1	2	0.5	Yes	Fair	Fair	(M)OB, TK2, CON(T)	Municipal- Public	Impact Area	Yes	Remove
247	Eastern Cottonwood	Populus deltoides	No	11.0	1	2	0.6	Yes	Fair	Fair	(M)OB, LS, CT	Municipal- Public	Impact Area	Yes	Remove
248	Trembling Aspen	Populous tremuloides	No	22.0	2	3	1.2	Yes	Fair	Fair	(M)OB, CON(T), 1SD, BR, DW(S)	Municipal- Public	Impact Area	Yes	Remove
249	Crack Willow	Salix fragilis	No	10.0	1	2	0.5	Yes	Fair	Fair	(M)OB, CON(T), 1SD, BR, DW(S), VC	Municipal- Public	Impact Area	Yes	Remove
250	Trembling Aspen	Populous tremuloides	No	15.0	1	2	0.8	Yes	Fair	Fair	(M)OB, CON(T), 1SD, BR, DW(S), VC	Municipal- Public	Impact Area	Yes	Remove
251	Crack Willow	Salix fragilis	No	10.0	0	0	0.5	Yes	Dead	Dead	VC, DW(S)	Municipal- Public	Impact Area	Yes	Remove
252	Trembling Aspen	Populous tremuloides	No	19.0	2	3	1.0	Yes	Fair	Fair	(M)OB, VC, 1SD,CON(T)	Municipal- Public	Impact Area	Yes	Remove
253	Eastern Cottonwood	Populus deltoides	No	36.0	3	4	1.9	Yes	Fair	Fair	(M)OB, EG(C), DW(S)	Municipal- Public	Impact Area	Yes	Remove
254	Crack Willow	Salix fragilis	No	10.0	1	2	0.5	Yes	Fair	Fair	(M)OB, VC, 1SD,CON(T), LN(L)	Municipal- Public	Impact Area	Yes	Remove
255	Other	Other	No	16.5	0	0	0.9	Yes	Dead	Dead	CV	Municipal- Public	Impact Area	Yes	Remove
256	Eastern Cottonwood	Populus deltoides	No	38.0	4	5	2.1	Yes	Fair	Fair	(M)OB, CON(T), TT, DW(S)	Municipal- Public	Impact Area	Yes	Remove
257	Crack Willow	Salix fragilis	No	24.2	4	5	1.3	Yes	Fair	Fair	(M)OB, CON(T), TT, DW(S), OL, VC, EG(T)	Municipal- Public	Impact Area	Yes	Remove
258	Eastern Cottonwood	Populus deltoides	No	10.0	1	2	0.5	Yes	Fair	Fair	(M)OB, EG(C), DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
259	Eastern Cottonwood	Populus deltoides	No	14.0	1	2	0.8	Yes	Fair	Fair	(M)OB, EG(C), DW(S), CON(T), CT	Municipal- Public	Impact Area	Yes	Remove
260	Eastern Cottonwood	Populus deltoides	No	24.0	3	4	1.3	Yes	Good	Fair	(M)OB, DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
261	Eastern Cottonwood	Populus deltoides	No	21.0	3	4	1.1	Yes	Good	Fair	(M)OB, DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
262	Eastern Cottonwood	Populus deltoides	No	24.0	4	5	1.3	Yes	Fair	Fair	(M)OB, CON(T), DW(S), VC, BR, DE(S)	Municipal- Public	Impact Area	Yes	Remove
263	Eastern Cottonwood	Populus deltoides	No	5.0	0	0	0.3	Yes	Dead	Dead	(M)OB, DW(L)	Municipal- Public	Impact Area	Yes	Remove
264	Crack Willow	Salix fragilis	No	12.0	2	3	0.6	Yes	Fair	Fair	(M)OB, CON(T), DW(S), VC, BR, DW(S)	Municipal- Public	Buffer Area	Yes	Remove
265	Eastern Cottonwood	Populus deltoides	No	5.0	0	0	0.3	Yes	Dead	Dead	(M)OB, DW(L), LN(M)	Municipal- Public	Impact Area	Yes	Remove
266	Eastern Cottonwood	Populus deltoides	No	22.0	3	4	1.2	Yes	Fair	Fair	(T)OB, LN(L), DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
267	Eastern Cottonwood	Populus deltoides	No	42.0	4	5	2.3	Yes	Fair	Fair	(M)OB, CON(T), DW(S), BR	Municipal- Public	Buffer Area	Yes	Remove
268	Willow sp.	Salix sp.	No	7.0	1	2	0.4	Yes	Very Poor	Poor	(T)OB, PF, DW(S)	Municipal- Public	Impact Area	Yes	Remove
269	Willow sp.	Salix sp.	No	7.0	1	2	0.4	Yes	Fair	Fair	(T)OB, LN(L), DW(S), CON(T), LS	Municipal- Public	Impact Area	Yes	Remove
270	Eastern Cottonwood	Populus deltoides	No	35.0	4	5	1.9	Yes	Fair	Fair	(T)OB, LN(L), BR, DW(S), 1SD	Municipal- Public	Buffer Area	Yes	Remove
271	Eastern Cottonwood	Populus deltoides	No	18.0	3	4	1.0	Yes	Fair	Fair	(T)OB, PF (top), DW(S), EG(C), CON(T)	Municipal- Public	Impact Area	Yes	Remove
272	Hawthorn sp.	Crataegus sp.	No	12.0	3	4	0.6	Yes	Fair	Fair	(T)OB, ML, CON(T), LS	Municipal- Public	Impact Area	Yes	Remove
273	Willow sp.	Salix sp.	No	66.6	6	7	3.6	Yes	Fair	Fair	(T)OB, TK4, DW(L), DW(S), PF, CON(T), EG(C)	Municipal- Public	Impact Area	Yes	Remove
274	Eastern Cottonwood	Populus deltoides	No	45.0	4	5	2.4	Yes	Fair	Fair	(T)OB, ML, CON(T), BR, DW(L), DW(S)	Municipal- Public	Impact Area	Yes	Remove
275	Manitoba Maple	Acer negundo	No	7.0	2	3	0.4	Yes	Fair	Fair	DW(S), LS, CON(T), EG(C)	Municipal- Public	Impact Area	Yes	Remove
276	Eastern Cottonwood	Populus deltoides	No	31.0	4	5	1.7	Yes	Fair	Fair	(T)OB, CON(T), BR, DW(L), DW(S)	Municipal- Public	Impact Area	Yes	Remove
277	Other	Other	No	5.5	0	0	0.3	Yes	Dead	Dead	DW(L), CON(T)	Municipal- Public	Impact Area	Yes	Remove
278	Eastern Cottonwood	Populus deltoides	No	15.0	2	3	0.8	Yes	Fair	Fair	(M)OB, CON(T), LS, 1SD	Municipal- Public	Impact Area	Yes	Remove
279	Willow sp.	Salix sp.	No	12.0	1	2	0.6	Yes	Fair	Fair	CD, EG(C), DW(S)	Municipal- Public	Impact Area	Yes	Remove
280	Eastern Cottonwood	Populus deltoides	No	33.0	5	6	1.8	No	Fair	Fair	(M)OB, FK1@6M, CON(T), DW(S), BR	Lions Promenade Open Space - Public	Buffer Area	Yes	Injure
281	Crack Willow	Salix fragilis	No	10.0	1	2	0.5	Yes	Fair	Fair	(M)OB, TT, CON(T), LS	Municipal- Public	Impact Area	Yes	Remove
282	Eastern Cottonwood	Populus deltoides	No	12.0	1	2	0.6	Yes	Fair	Fair	(M)OB, TT, CON(T), LS, CD	Municipal- Public	Impact Area	Yes	Remove
283	Eastern Cottonwood	Populus deltoides	No	45.0	5	6	2.4	Yes	Fair	Fair	(T)OB, CON(T), ML, FK1@8M, BR, DW(S)	Municipal- Public	Impact Area	Yes	Remove
284	Manitoba Maple	Acer negundo	No	26.0	0.5	1.8	1.4	No	Very Poor	Very Poor	PB, PF, ID, FK1@2M, EG(B)	Municipal- Public	Buffer Area	Yes	No Anticipated Impact - Protect
285	Eastern Cottonwood	Populus deltoides	No	40.8	5	6	2.2	Yes	Fair	Fair	(T)OB, CON(T), ML, BR, DW(S), DW(L)	Municipal- Public	Impact Area	Yes	Remove
286	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	CON(T), (M)OB	Municipal- Public	Impact Area	Yes	Remove
287	Willow sp.	Salix sp.	No	7.0	1	2	0.4	Yes	Poor	Fair	EG(T), DW(S), CD	Municipal- Public	Impact Area	Yes	Remove
288	Crack Willow	Salix fragilis	No	8.5	1	2	0.5	Yes	Fair	Fair	CON(T), TK2, DW(S), BR	Municipal- Public	Impact Area	Yes	Remove
289	Willow sp.	Salix sp.	No	7.1	1	2	0.4	Yes	Fair	Fair	(B)OB, LN(L), DW(L), EG(C)	Municipal- Public	Impact Area	Yes	Remove
290	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Poor	Fair	EG(C), DW(L)	Municipal- Public	Impact Area	Yes	Remove
291	Crack Willow	Salix fragilis	No	8.0	1	2	0.4	Yes	Fair	Fair	CON(T), DW(S), BR, ML	Municipal- Public	Impact Area	Yes	Remove
292	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Poor	Fair	EG(C), DW(L), PF	Municipal- Public	Impact Area	Yes	Remove
293	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Poor	Fair	EG(C), DW(L), PF	Municipal- Public	Impact Area	Yes	Remove
294	Crack Willow	Salix fragilis	No	5.8	1	2	0.3	Yes	Fair	Fair	CON(T), DW(S), BR, ML, TK2	Municipal- Public	Impact Area	Yes	Remove
295	Crack Willow	Salix fragilis	No	8.0	1	2	0.4	Yes	Fair	Fair	CON(T), DW(S), BR, ML, LN(L)	Municipal- Public	Impact Area	Yes	Remove
296	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	(B)OB, CON(T)	Municipal- Public	Impact Area	Yes	Remove
297	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	(M)OB, CON(T)	Municipal- Public	Impact Area	Yes	Remove
298	Crack Willow	Salix fragilis	No	7.6	1	2	0.4	Yes	Fair	Fair	CON(T), DW(S), BR, ML, GTF, TK5	Municipal- Public	Impact Area	Yes	Remove
299	Willow sp.	Salix sp.	No	7.8	1	2	0.4	Yes	Fair	Fair	(M)OB, CON(T), TK2	Municipal- Public	Impact Area	Yes	Remove
300	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	(M)OB, EG(T), DW(S)	Municipal- Public	Impact Area	Yes	Remove

Tree #	Common Name	Scientfic Name	Species at Risk Tree?	DBH Analysis (cm)	Dripline (m)	Minimum Tree Protection Zone	Structural Root Zone (m)	Structural Root Zone Impacted?	Tree Condition - Health	Tree Condition - Structure	Observations/Comments	Tree Ownership	Tree Location (Impact Area, Buffer Area, Tree Inventory Area)	CLOCA Regulated Limit (Y/N)	Recommended Action
301	Willow sp.	Salix sp.	No	6.0	2	3	0.3	Yes	Fair	Fair	(M)OB, EG(T), DW(S)	Municipal- Public	Impact Area	Yes	Remove
302	Crack Willow	Salix fragilis	No	8.4	1	2	0.5	Yes	Fair	Fair	CON(T), DW(S), BR, ML, GTF, TK3	Municipal- Public	Impact Area	Yes	Remove
303	Willow sp.	Salix sp.	No	5.0	2	3	0.3	Yes	Fair	Fair	(M)OB, DW(S)	Municipal- Public	Impact Area	Yes	Remove
304	Willow sp.	Salix sp.	No	5.4	1	2	0.3	Yes	Fair	Fair	(M)OB, DW(S), TK2, EG(T)	Municipal- Public	Impact Area	Yes	Remove
305	Crack Willow	Salix fragilis	No	6.8	1	2	0.4	Yes	Fair	Fair	CON(T), DW(S), BR, ML, GTF, TK9	Municipal- Public	Impact Area	Yes	Remove
306	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	(M)OB, DW(S)	Municipal- Public	Impact Area	Yes	Remove
307	Crack Willow	Salix fragilis	No	5.4	1	2	0.3	Yes	Fair	Fair	CON(T), DW(S), BR, ML, TK2	Municipal- Public	Impact Area	Yes	Remove
308	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	(T)OB, DW(S)	Municipal- Public	Impact Area	Yes	Remove
309	Willow sp.	Salix sp.	No	41.0	5	6	2.2	Yes	Fair	Fair	(M)OB, EG(C), DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
310	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	DW(S), EG(T)	Municipal- Public	Impact Area	Yes	Remove
311	Crack Willow	Salix fragilis	No	5.0	1	2	0.3	Yes	Fair	Fair	LN(L), BR, DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
312	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	DW(S), EG(T), LN(L), CON(S)	Municipal- Public	Impact Area	Yes	Remove
313	Willow sp.	Salix sp.	No	6.0	2	3	0.3	Yes	Fair	Fair	(M)OB, EG(T), EG(C)	Municipal- Public	Impact Area	Yes	Remove
314	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	(M)OB, EG(T), EG(C)	Municipal- Public	Impact Area	Yes	Remove
315	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	(M)OB, EG(T), EG(C)	Municipal- Public	Impact Area	Yes	Remove
316	Willow sp.	Salix sp.	No	6.0	1	2	0.3	Yes	Fair	Fair	(M)OB, EG(T), EG(C), DW(S)	Municipal- Public	Impact Area	Yes	Remove
317	Willow sp.	Salix sp.	No	5.0	0.5	1.5	0.3	Yes	Very Poor	Poor	(M)OB, EG(B), PF, FU	Municipal- Public	Impact Area	Yes	Remove
318	Crack Willow	Salix fragilis	No	33.6	5	6	1.8	Yes	Fair	Fair	LN(L), BR, DW(S), CON(T), VC	Municipal- Public	Impact Area	Yes	Remove
319	Willow sp.	Salix sp.	No	5.0	0	0	0.3	Yes	Dead	Dead	LN(M), CON(T), DW(L)	Municipal- Public	Impact Area	Yes	Remove
320	Willow sp.	Salix sp.	No	5.0	0.5	1.5	0.3	Yes	Very Poor	Very Poor	PF, BR, EG(T), CON(S)	Municipal- Public	Impact Area	Yes	Remove
321	Crack Willow	Salix fragilis	No	6.0	0	0	0.3	Yes	Dead	Dead	DW(S)	Municipal- Public	Impact Area	Yes	Remove
322	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	(T)OB, DW(S)	Municipal- Public	Impact Area	Yes	Remove
323	Willow sp.	Salix sp.	No	5.0	0	0	0.3	Yes	Dead	Dead	(M)OB, FU, PF	Municipal- Public	Impact Area	Yes	Remove
324	Crack Willow	Salix fragilis	No	5.0	1	2	0.3	Yes	Fair	Fair	ML, CON(T)	Municipal- Public	Impact Area	Yes	Remove
325	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	(M)OB, EG(T), DW(S)	Municipal- Public	Impact Area	Yes	Remove
326	Willow sp.	Salix sp.	No	12.2	1	2	0.7	Yes	Fair	Fair	(M)OB, EG(T), DW(S), EG(C)	Municipal- Public	Impact Area	Yes	Remove
327	Crack Willow	Salix fragilis	No	5.0	1	2	0.3	Yes	Fair	Fair	ML, CON(T)	Municipal- Public	Impact Area	Yes	Remove
328	Willow sp.	Salix sp.	No	6.0	1	2	0.3	Yes	Fair	Fair	(T)OB, EG(T), DW(L), PF	Municipal- Public	Impact Area	Yes	Remove
329	Willow sp.	Salix sp.	No	6.0	2	3	0.3	Yes	Fair	Fair	DW(S)	Municipal- Public	Impact Area	Yes	Remove
330	Eastern Cottonwood	Populus deltoides	No	58.8	7	8	3.2	Yes	Fair	Fair	ML, CON(T), TK2, BR, DW(S)	Municipal- Public	Impact Area	Yes	Remove
331	Eastern Cottonwood	Populus deltoides	No	63.8	7	8	3.4	Yes	Fair	Fair	ML, CON(T), TK4, BR, DW(S)	Municipal- Public	Impact Area	Yes	Remove
332	Eastern Cottonwood	Populus deltoides	No	24.0	2	3	1.3	Yes	Fair	Fair	(T)OB, CON(T), DW(S), BR	Municipal- Public	Impact Area	Yes	Remove
333	Eastern Cottonwood	Populus deltoides	No	27.0	2	3	1.5	Yes	Fair	Fair	(T)OB, CON(T), DW(S), BR, 1SD	Municipal- Public	Impact Area	Yes	Remove
334	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	LN(M), EG(T), DW(S)	Municipal- Public	Impact Area	Yes	Remove
335	Eastern Cottonwood	Populus deltoides	No	25.2	3	4	1.4	Yes	Fair	Fair	(T)OB, CON(T), LN(L), TK2	Municipal- Public	Impact Area	Yes	Remove
336	Willow sp.	Salix sp.	No	10.0	2	3	0.5	Yes	Fair	Fair	EG(T), DW(S)	Municipal- Public	Impact Area	Yes	Remove
337	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	EG(T), DW(S), LN(L)	Municipal- Public	Impact Area	Yes	Remove
338	Willow sp.	Salix sp.	No	16.4	2	3	0.9	Yes	Fair	Fair	TK2, EG(T), EG(B), DW(S)	Municipal- Public	Impact Area	Yes	Remove
339	Eastern Cottonwood	Populus deltoides	No	28.0	3	4	1.5	Yes	Fair	Fair	(T)OB, CON(T), DW(S), BR, 1SD	Municipal- Public	Impact Area	Yes	Remove
340	Eastern Cottonwood	Populus deltoides	No	22.0	3	4	1.2	Yes	Good	Good	CON(T), DW(S), EG(C)	Municipal- Public	Impact Area	Yes	Remove
341	Willow sp.	Salix sp.	No	26.4	3	4	1.4	No	Fair	Fair	TK2, IN(U), DE, EG(T)	Municipal- Public	Buffer Area	Yes	Injure
342	Willow sp.	Salix sp.	No	9.6	3	4	0.5	Yes	Fair	Fair	(M)OB, TK3, EG(B), EG(T), DW(S), LN(M)	Municipal- Public	Impact Area	Yes	Remove
343	Willow sp.	Salix sp.	No	47.9	3	4	2.6	Yes	Fair	Fair	TK3, IN(U), EG(T), EG(C), DW(S), ER, GR, FS	Municipal- Public	Impact Area	Yes	Remove
344	Eastern Cottonwood	Populus deltoides	No	42.0	3	4	2.3	Yes	Fair	Fair	(T)OB, FK1@7M, ML, DW(S), BR, CON(T)	Municipal- Public	Impact Area	Yes	Remove
345	Crack Willow	Salix fragilis	No	20.0	3	4	1.1	Yes	Fair	Fair	(M)OB, CON(T), LN(L), DW(S), EG(C)	Municipal- Public	Impact Area	Yes	Remove
346	Willow sp.	Salix sp.	No	12.0	2	3	0.6	Yes	Fair	Fair	(M)OB, CON(T), LN(L), DW(S), EG(B), TK7	Municipal- Public	Impact Area	Yes	Remove
347	Willow sp.	Salix sp.	No	9.2	2	3	0.5	Yes	Fair	Fair	EG(B), EG(T), DW(S), CON(T), TK2, DE(H)	Municipal- Public	Impact Area	Yes	Remove
348	Willow sp.	Salix sp.	No	14.4	2	3	0.8	Yes	Fair	Fair	(M)OB, CON(T), LN(L), DW(S), EG(B), TK6	Municipal- Public	Impact Area	Yes	Remove
349	Willow sp.	Salix sp.	No	9.0	2	3	0.5	Yes	Fair	Fair	EG(T), DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
350	Pussy Willow	Salix discolor	No	13.1	3	4	0.7	Yes	Fair	Fair	(T)OB, TK12, CON(T), EG(B), EG(C), DW(S)	Municipal- Public	Impact Area	Yes	Remove
351	Willow sp.	Salix sp.	No	10.0	3	4	0.5	Yes	Fair	Fair	ML, EG(T), DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
352	Willow sp.	Salix sp.	No	13.6	3	4	0.7	Yes	Fair	Fair	TK4, EG(T), DW(S), CON(T), (B)OB	Municipal- Public	Impact Area	Yes	Remove
353	Pussy Willow	Salix discolor	No	34.0	3	4	1.8	Yes	Fair	Fair	DW(S), BR, FK1@6M	Municipal- Public	Impact Area	Yes	Remove
354	Willow sp.	Salix sp.	No	9.0	2	3	0.5	Yes	Fair	Fair	EG(T), DW(S), CON(T), (M)OB	Municipal- Public	Impact Area	Yes	Remove
355	Willow sp.	Salix sp.	No	9.2	2	3	0.5	Yes	Fair	Fair	EG(T), DW(S), CON(T), (M)OB	Municipal- Public	Impact Area	Yes	Remove
356	Crack Willow	Salix fragilis	No	22.0	3	4	1.2	Yes	Fair	Fair	CON(T), LN(L), 1SD, BR, DW(S)	Municipal- Public	Impact Area	Yes	Remove
357	Willow sp.	Salix sp.	No	23.3	2	3	1.3	Yes	Fair	Fair	TK3, ER, (M)OB, EG(T), DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
358	Crack Willow	Salix fragilis	No	23.0	3	4	1.2	Yes	Fair	Fair	CON(T), LN(L), 1SD, BR, DW(S)	Municipal- Public	Impact Area	Yes	Remove
359	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Fair	(M)OB, EG(T), DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
360	Eastern Cottonwood	Populus deltoides	No	38.0	3	4	2.1	Yes	Fair	Fair	CON(T), LN(L), 1SD, BR, DW(S)	Municipal- Public	Impact Area	Yes	Remove
361	Willow sp.	Salix sp.	No	11.0	2	3	0.6	Yes	Fair	Fair	(M)OB, EG(T), DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
362	Pussy Willow	Salix discolor	No	9.4	2	3	0.5	Yes	Fair	Fair	CON(T), LN(L), TK2, BR, DW(S), LS	Municipal- Public	Impact Area	Yes	Remove
363	Willow sp.	Salix sp.	No	15.0	2	3	0.8	Yes	Fair	Fair	(M)OB, EG(T), DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
364	Gray Birch	Betula populifolia	No	17.0	3	4	0.9	Yes	Good	Good	(M)OB, EG(B), DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
365	Crack Willow	Salix fragilis	No	24.3	4	5	1.3	Yes	Fair	Fair	CON(T), LN(L), TK2, BR, DW(S), LS	Municipal- Public	Impact Area	Yes	Remove
366	Eastern Cottonwood	Populus deltoides	No	37.0	3	4	2.0	Yes	Good	Good	CON(T), DW(S), EG(C)	Municipal- Public	Impact Area	Yes	Remove
367	Willow sp.	Salix sp.	No	10.6	1	2	0.6	Yes	Fair	Fair	CON(T), TK2, BR, DW(S), LS	Municipal- Public	Impact Area	Yes	Remove
368	Eastern Cottonwood	Populus deltoides	No	19.0	2	3	1.0	Yes	Fair	Fair	CON(T), DW(S), EG(C), LS, LN(L), 1SD	Municipal- Public	Impact Area	Yes	Remove
369	Crack Willow	Salix fragilis	No	17.0	3	4	0.9	Yes	Fair	Fair	CON(T), LN(L), 1SD, BR, DW(S), LS	Municipal- Public	Impact Area	Yes	Remove
370	Eastern Cottonwood	Populus deltoides	No	34.0	3	4	1.8	Yes	Fair	Fair	CON(T), DW(S), EG(C), CT	Municipal- Public	Impact Area	Yes	Remove
371	Crack Willow	Salix fragilis	No	10.6	2	3	0.6	Yes	Fair	Fair	CON(T), LN(L), 1SD, BR, DW(S), LS	Municipal- Public	Impact Area	Yes	Remove
372	Crack Willow	Salix fragilis	No	11.0	1	2	0.6	Yes	Fair	Fair	CON(T), LN(L), 1SD, BR, DW(S), LS	Municipal- Public	Impact Area	Yes	Remove
373	Autumn Olive	Elaeagnus umbellata	No	40.8	6	7	2.2	Yes	Fair	Fair	TK9, WGB, WGT, EG(C), LN(L), DW(S), CON(T)	Municipal- Public	Impact Area	Yes	Remove
374	Autumn Olive	Elaeagnus umbellata	No	19.3	2	3	1.0	Yes	Fair	Fair	ML, IN(U), CON(T), LS, TW, WC(P), FS	Municipal- Public	Impact Area	Yes	Remove
375	Autumn Olive	Elaeagnus umbellata	No	6.0	2	3	0.3	Yes	Fair	Fair	CON(T), EG(T), DW(S)	Municipal- Public	Impact Area	Yes	Remove

Tree #	Common Name	Scientfic Name	Species at Risk Tree?	DBH Analysis (cm)	Dripline (m)	Minimum Tree Protection Zone	Structural Root Zone (m)	Structural Root Zone Impacted?	Tree Condition - Health	Tree Condition - Structure	Observations/Comments	Tree Ownership	Tree Location (Impact Area, Buffer Area, Tree Inventory Area)	CLOCA Regulated Limit (Y/N)	Recommended Action
376	Green Ash	Fraxinus pennsylvanica	No	36.0	6	7	1.9	No	Fair	Fair	LT, ER, ML, CON(T), DW(S)	Lions Promenade Open Space - Public	Buffer Area	Yes	Injure
377	Green Ash	Fraxinus pennsylvanica	No	37.0	5	6	2.0	Yes	Fair	Fair	ER, GR, CON(T), TW, WC(P), EG(C), DW(S)	Lions Promenade Open Space - Public	Buffer Area	Yes	Remove
378	Austrian Pine	Pinus nigra	No	36.0	4	5	1.9	Yes	Fair	Fair	IE, AD, CD, ML, DW(S)	Lions Promenade Open Space - Public	Buffer Area	Yes	Remove
379	Serviceberry sp.	Amelanchier sp.	No	14.0	2	3	0.8	No	Fair	Poor	CON(T), LS, LN(M), GR, FS, DW(S)	Lions Promenade Open Space - Public	Buffer Area	Yes	Injure
380	Austrian Pine	Pinus nigra	No	36.0	4	5	1.9	Yes	Fair	Fair	IE, AD, CD, ML, DW(S)	Lions Promenade Open Space - Public	Buffer Area	Yes	Remove
381	Austrian Pine	Pinus nigra	No	26.5	3	4	1.4	Yes	Fair	Fair	DW(L), CON(T), DIS	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
382	Austrian Pine	Pinus nigra	No	35.7	3	4	1.9	Yes	Poor	Fair	TK4, ML, PP, BR, DW(S), CD	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
383	Austrian Pine	Pinus nigra	No	34.0	3	4	1.8	Yes	Fair	Fair	DW(L), CON(T), DIS, AD	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
384	Colorado Spruce	Picea pungens	No	28.0	3	4	1.5	Yes	Poor	Fair	IE, CD, DW(S), CON(T), CON(U), BR	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
385	Colorado Spruce	Picea pungens	No	28.0	3	4	1.5	Yes	Poor	Fair	IE, CD, DW(S), CON(T), CON(U), BR	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
386	Serviceberry sp.	Amelanchier sp.	No	7.0	2	3	0.4	No	Fair	Fair	CON(T), LS, RH, EG(B), DW(S), EG(C)	Lions Promenade Open Space - Public	Buffer Area	Yes	Remove
387	Colorado Spruce	Picea pungens	No	32.0	3	4	1.7	Yes	Poor	Fair	IE, CD, DW(S), CON(T), CON(U), BR	Lions Promenade Open Space - Public	Impact Area	Yes	Remove
388	Norway Maple	Acer platanoides	No	29.0	4	5	1.6	Yes	Good	Fair	LT, PP, FK2@2M, ML, CON(U), DW(S)	Municipal- Public	Impact Area	Yes	Remove
389	Trembling Aspen	Populous tremuloides	No	5.0	2	3	0.3	No	Good	Good	IE, CON(S)	Municipal- Public	Buffer Area	No	No Anticipated Impact - Protect
390	Trembling Aspen	Populous tremuloides	No	12.8	1	2	0.7	No	Fair	Fair	IE, ML, IN(U), PP, EG(C), DW(S), CON(S)	Municipal- Public	Tree Inventory Area	No	No Anticipated Impact
391	Russian Olive	Elaeagnus angustifolia	No	13.6	2	3	0.7	Yes	Good	Good	DW(S), WI, (M)OB	Municipal- Public	Impact Area	No	Remove
392	Norway Spruce	Picea abies	No	21.0	3	4	1.1	No	Good	Good	IE, LT, DW(S), CON(T)	Private	Tree Inventory Area	No	No Anticipated Impact
393	Eastern White Cedar	Thuja occidentalis	No	7.0	1	2	0.4	Yes	Fair	Fair	GTF, CON(T), FS, WI, DW(S)	Private	Buffer Area	No	Remove
394	Norway Spruce	Picea abies	No	25.0	3	4	1.4	No	Good	Good	IE, LT, DW(S), CON(T)	Private	Buffer Area	No	No Anticipated Impact - Protect
395	Choke Cherry	Prunus virginiana	No	8.0	2	3	0.4	Yes	Fair	Fair	CON(T), 1SD, LS, LN(L), DW(S)	Private	Impact Area	Yes	Remove
396	Trembling Aspen	Populous tremuloides	No	5.0	2	3	0.3	Yes	Fair	Fair	GTF, CON(T), LS, CT, LN(L), DW(S)	Private	Impact Area	No	Remove
397	Choke Cherry	Prunus virginiana	No	5.0	1	2	0.3	No	Fair	Fair	CON(T), 1SD, LS, LN(L), DW(S)	Private	Buffer Area	Yes	Remove
398	Littleleaf Linden	Tilia cordata	No	21.0	4	5	1.1	No	Good	Fair	DW(S), GR, PP, CON(T)	Private	Buffer Area	No	Injure
399	Littleleaf Linden	Tilia cordata	No	37.9	5	6	2.0	No	Good	Fair	DW(S), CON(T), ER, EG(B)	Private	Tree Inventory Area	No	No Anticipated Impact
400	Gray Birch	Betula populifolia	No	10.0	1	2	0.5	No	Poor	Fair	EG(C), DW(S), CD, CON(T)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
401	Littleleaf Linden	Tilia cordata	No	27.0	4	5	1.5	Yes	Good	Good	DW(S), CON(T)	Private	Buffer Area	No	Remove
402	Eastern White Cedar	Thuja occidentalis	No	11.0	2	3	0.6	No	Good	Good	CON(T), DW(S)	Private	Buffer Area	Yes	Injure
403	Colorado Spruce	Picea pungens	No	25.0	2	3	1.4	No	Fair	Good	IE, DW(S)	Private	Buffer Area	No	No Anticipated Impact - Protect
404	Eastern White Cedar	Thuja occidentalis	No	5.0	1	2	0.3	No	Good	Good	CON(T), DW(S), LS	Private	Buffer Area	Yes	No Anticipated Impact - Protect
405	Colorado Spruce	Picea pungens	No	22.0	2	3	1.2	Yes	Good	Good	IE, DW(S)	Private	Impact Area	No	Remove
406	Red Oak	Quercus rubra	No	19.0	3	4	1.0	Yes	Good	Good	DW(S), PP	Private	Impact Area	No	Remove
407	Eastern White Cedar	Thuja occidentalis	No	7.0	1	2	0.4	No	Fair	Fair	CON(T), DW(S), LS, 1SD	Private	Buffer Area	Yes	No Anticipated Impact - Protect
408	Red Oak	Quercus rubra	No	23.0	3	4	1.2	Yes	Good	Good	DW(S), PP	Private	Impact Area	No	Remove
409	Eastern White Cedar	Thuja occidentalis	No	10.0	1	2	0.5	No	Fair	Fair	CON(T), DW(S), LS, 1SD	Private	Buffer Area	Yes	Injure
410	Eastern White Cedar	Thuja occidentalis	No	10.0	1	2	0.5	No	Fair	Fair	CON(T), DW(S), LS, 1SD	Private	Buffer Area	Yes	No Anticipated Impact - Protect
411	Eastern White Cedar	Thuja occidentalis	No	8.0	1	2	0.4	No	Fair	Fair	CON(T), DW(S)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
412	Trembling Aspen	Populous tremuloides	No	15.0	3	4	0.8	No	Fair	Fair	CON(T), 1SD, TT, DW(S)	Private	Buffer Area	Yes	Injure
413	Gray Birch	Betula populifolia	No	21.0	2	3	1.1	No	Fair	Fair	1SD, CON(T), EG(T), EG(C), DW(S)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
414	Balsam Poplar	Populus balsamifera	No	7.0	2	3	0.4	No	Good	Good	SS, HL	Private	Buffer Area	Yes	No Anticipated Impact - Protect
415	Eastern White Cedar	Thuja occidentalis	No	12.0	2	3	0.6	No	Fair	Fair	CON(T), DW(S), LS,	Private	Buffer Area	Yes	No Anticipated Impact - Protect
416	Autumn Olive	Elaeagnus umbellata	No	15.7	2	3	0.8	No	Fair	Fair	ID, TK2, CON(T), DW(S), EG(C)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
417	Willow sp.	Salix sp.	No	7.2	2	3	0.4	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Tree Inventory Area	Yes	No Anticipated Impact
418	Black Cherry	Prunus serotina	No	55.9	4	5	3.0	No	Fair	Poor	DW(L), PB, BW, DE(S)	Gordon Richards Park - Public	Buffer Area	No	No Anticipated Impact - Protect
419	Willow sp.	Salix sp.	No	5.0	1	2	0.3	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Tree Inventory Area	Yes	No Anticipated Impact
420	Willow sp.	Salix sp.	No	7.8	1	2	0.4	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B), TK2	Private	Tree Inventory Area	Yes	No Anticipated Impact
421	Willow sp.	Salix sp.	No	9.2	1	2	0.5	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B), TK2	Private	Tree Inventory Area	Yes	No Anticipated Impact
422	Other	Other	No	9.0	0	0	0.5	Yes	Dead	Dead	GTF, PF, DW(L)	Private	Impact Area	No	Remove
423	European Mountain-Ash	Sorbus aucuparia	No	12.0	2	3	0.6	No	Fair	Poor	DW(S), CON(T)	Municipal- Public	Buffer Area	No	No Anticipated Impact - Protect
424	Willow sp.	Salix sp.	No	9.2	2	3	0.5	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B), TK8	Private	Buffer Area	Yes	No Anticipated Impact - Protect
425	Other	Other	No	14.0	0	0	0.8	No	Dead	Dead	PB, PF	Private	Buffer Area	Yes	No Anticipated Impact - Protect
426	White Elm	Ulmus americana	No	38.2	0	0	2.1	No	Dead	Dead	DW(L), CON(T)	Municipal- Public	Buffer Area	No	No Anticipated Impact - Protect
427	Hawthorn sp.	Crataegus sp.	No	9.0	1.5	2.5	0.5	No	Fair	Fair	DW(S)	Municipal- Public	Buffer Area	No	No Anticipated Impact - Protect
428	Hawthorn sp.	Crataegus sp.	No	6.0	1.5	2.5	0.3	No	Fair	Fair	DW(S)	Municipal- Public	Buffer Area	No	No Anticipated Impact - Protect
429	Willow sp.	Salix sp.	No	8.5	2	3	0.5	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B), TK2	Private	Tree Inventory Area	Yes	No Anticipated Impact
430	Trembling Aspen	Populous tremuloides	No	21.0	3	4	1.1	No	Good	Good	CON(T), DW(S), EG(C)	Private	Buffer Area	Yes	Injure
431	Willow sp.	Salix sp.	No	7.2	1	2	0.4	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B), TK2	Private	Buffer Area	Yes	No Anticipated Impact - Protect
432	Hawthorn sp.	Crataegus sp.	No	11.3	3	4	0.6	No	Fair	Fair	GTF, WI, FS, ML, EG(C), DW(S)	Private	Buffer Area	Yes	Remove
433	White Elm	Ulmus americana	No	83.9	0	0	4.5	No	Dead	Dead	IE, DW(L) CON(T)	Municipal- Public	Buffer Area	No	No Anticipated Impact - Protect
434	Willow sp.	Salix sp.	No	6.0	1	2	0.3	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B), TK2	Private	Buffer Area	Yes	No Anticipated Impact - Protect
435	White Elm	Ulmus americana	No	61.3	0	0	3.3	No	Dead	Dead	IE, DW(L), CON(T)	Municipal- Public	Buffer Area	No	No Anticipated Impact - Protect
436	Willow sp.	Salix sp.	No	7.0	1	2	0.4	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
437	Willow sp.	Salix sp.	No	7.0	1	2	0.4	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
438	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Fair	Fair	SS, SP, CON(T)	Private	Impact Area	Yes	Remove
439	Willow sp.	Salix sp.	No	8.0	1	2	0.4	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
440	White Elm	Ulmus americana	No	29.9	3	4	1.6	No	Poor	Poor	DW(L), EG(T)	Municipal- Public	Buffer Area	No	Injure
441	Willow sp.	Salix sp.	No	6.0	1	2	0.3	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
442	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Fair	Fair	SS, SP, CON(T)	Private	Impact Area	Yes	Remove
443	Willow sp.	Salix sp.	No	5.0	1	2	0.3	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
444	White Elm	Ulmus americana	No	34.8	3	4	1.9	No	Poor	Poor	DW(L), EG(T)	Municipal- Public	Buffer Area	No	No Anticipated Impact - Protect
445	Willow sp.	Salix sp.	No	5.0	1	2	0.3	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
446	Green Ash	Fraxinus pennsylvanica	No	10.0	1.5	2.5	0.5	No	Fair	Fair	DW(S), EG(T), CON(T)	Municipal- Public	Buffer Area	No	No Anticipated Impact - Protect
447	Willow sp.	Salix sp.	No	8.5	1	2	0.5	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
448	Willow sp.	Salix sp.	No	7.0	1	2	0.4	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Buffer Area	Yes	Injure
449	Willow sp.	Salix sp.	No	10.0	1	2	0.5	No	Poor	Good	SS, CON(T), LN(L), DW(S), EG(B), CD	Private	Buffer Area	Yes	No Anticipated Impact - Protect
450	Manitoba Maple	Acer negundo	No	21.0	3	4	1.1	Yes	Fair	Fair	EG(C), EG(T), CON(T), LS, CT	Private	Impact Area	Yes	Remove

Tree #	Common Name	Scientfic Name	Species at Risk Tree?	DBH Analysis (cm)	Dripline (m)	Minimum Tree Protection Zone	Structural Root Zone (m)	Structural Root Zone Impacted?	Tree Condition - Health	Tree Condition - Structure	Observations/Comments	Tree Ownership	Tree Location (Impact Area, Buffer Area, Tree Inventory Area)	CLOCA Regulated Limit (Y/N)	Recommended Action
451	Willow sp.	Salix sp.	No	75.0	6	7	4.1	Yes	Fair	Poor	IE, LN(H), GTF, DW(L), PF, CON(T), DW(S)	Private	Impact Area	Yes	Remove
452	Willow sp.	Salix sp.	No	6.0	1	2	0.3	Yes	Poor	Good	SS, CON(T), LN(L), DW(S), EG(B), CD	Private	Impact Area	Yes	Remove
453	White Elm	Ulmus americana	No	80.0	5	6	4.3	No	Fair	Fair	DW(L), DW(S), CON(T)	Municipal- Public	Buffer Area	No	Injure
454	Willow sp.	Salix sp.	No	7.0	1	2	0.4	Yes	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Buffer Area	Yes	Remove
455	Willow sp.	Salix sp.	No	8.0	1	2	0.4	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Buffer Area	Yes	Injure
456	Willow sp.	Salix sp.	No	6.0	1	2	0.3	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
457	Willow sp.	Salix sp.	No	20.0	2	3	1.1	Yes	Fair	Fair	IE, CT, LN(M), GTF, DW(S), PF	Private	Impact Area	No	Remove
458	Willow sp.	Salix sp.	No	6.0	1	2	0.3	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
459	Willow sp.	Salix sp.	No	6.0	1	2	0.3	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B)	Private	Buffer Area	Yes	Injure
460	Willow sp.	Salix sp.	No	10.0	1	2	0.5	No	Fair	Good	SS, CON(T), LN(L), DW(S), EG(B), TK2	Private	Buffer Area	Yes	No Anticipated Impact - Protect
461	Choke Cherry	Prunus virginiana	No	15.0	3	4	0.8	Yes	Good	Good	DW(S), PP	Municipal- Public	Impact Area	No	Remove
462	Choke Cherry	Prunus virginiana	No	6.0	3	4	0.3	Yes	Good	Good	DW(S), PP	Municipal- Public	Impact Area	No	Remove
463	Willow sp.	Salix sp.	No	10.0	1	2	0.5	No	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Buffer Area	Yes	Injure
464	Willow sp.	Salix sp.	No	10.8	1	2	0.6	No	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Buffer Area	Yes	Injure
465	Willow sp.	Salix sp.	No	6.0	1	2	0.3	No	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Buffer Area	Yes	Injure
466	Willow sp.	Salix sp.	No	8.0	1	2	0.4	No	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Buffer Area	Yes	No Anticipated Impact - Protect
467	Manitoba Maple	Acer negundo	No	50.0	4	5	2.7	Yes	Fair	Fair	IN(B), GTF, LS, DW(S), EG(C), EG(B), EG(T)	Private	Impact Area	Yes	Remove
468	Willow sp.	Salix sp.	No	6.0	1	2	0.3	No	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Buffer Area	Yes	No Anticipated Impact - Protect
469	Manitoba Maple	Acer negundo	No	20.0	1	2	1.1	Yes	Very Poor	Very Poor	IE, GTF (girdling), PF, CD, EG(T)	Private	Impact Area	Yes	Remove
470	Willow sp.	Salix sp.	No	9.0	1	2	0.5	No	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Buffer Area	Yes	No Anticipated Impact - Protect
471	Willow sp.	Salix sp.	No	7.2	1	2	0.4	No	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Buffer Area	Yes	Injure
472	Willow sp.	Salix sp.	No	5.0	1	2	0.3	No	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
473	Willow sp.	Salix sp.	No	8.6	1	2	0.5	No	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Buffer Area	Yes	Injure
474	Sugar Maple	Acer saccharum	No	60.0	5	6	3.2	No	Good	Good	DW(S), ER, BW, PP	Kiwanis Heydenshore Park - Public	Buffer Area	No	Injure
475	Willow sp.	Salix sp.	No	13.0	3	4	0.7	Yes	Fair	Fair	CON(T), DW(S), FS, EG(C), ML, IN(U), CR(V)	Private	Impact Area	Yes	Remove
476	Willow sp.	Salix sp.	No	7.0	1	2	0.4	No	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
477	Willow sp.	Salix sp.	No	7.0	1	2	0.4	No	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
478	Willow sp.	Salix sp.	No	7.0	1	2	0.4	No	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
479	Norway Maple	Acer platanoides	No	35.0	4	5	1.9	Yes	Good	Good	DW(S), ER, PP	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
480	Willow sp.	Salix sp.	No	9.2	1	2	0.5	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Buffer Area	Yes	Remove
481	Norway Maple	Acer platanoides	No	35.0	4	5	1.9	Yes	Good	Good	DW(S), ER, PP	Municipal- Public	Impact Area	No	Remove
482	Willow sp.	Salix sp.	No	32.0	2	3	1.7	No	Fair	Fair	TW, CV, WC(P), FK1@2M, DW(L), CON(T)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
483	Willow sp.	Salix sp.	No	9.0	1	2	0.5	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Buffer Area	Yes	Remove
484	Willow sp.	Salix sp.	No	9.0	1	2	0.5	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
485	Norway Maple	Acer platanoides	No	25.0	3	4	1.4	Yes	Fair	Fair	DW(S), ER, PP, BW, SM(V)	Municipal- Public	Impact Area	No	Remove
486	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
487	Willow sp.	Salix sp.	No	32.0	3	4	1.7	No	Fair	Poor	CT, LN(M), CON(T), DW(L), EG(C), PF	Private	Tree Inventory Area	Yes	No Anticipated Impact
488	Willow sp.	Salix sp.	No	5.0	1	2	0.3	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
489	Willow sp.	Salix sp.	No	7.0	1	2	0.4	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
490	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	No	15.0	2	3	0.8	Yes	Fair	Fair	DW(S), BW	Municipal- Public	Impact Area	No	Remove
491	Willow sp.	Salix sp.	No	7.6	1	2	0.4	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Impact Area	Yes	Remove
492	Willow sp.	Salix sp.	No	6.7	1	2	0.4	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Impact Area	Yes	Remove
493	Willow sp.	Salix sp.	No	6.0	1	2	0.3	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
494	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	No	17.0	2	3	0.9	Yes	Fair	Fair	DW(S), BW	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
495	Willow sp.	Salix sp.	No	8.7	2	3	0.5	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK4	Private	Impact Area	Yes	Remove
496	Willow sp.	Salix sp.	No	21.4	3	4	1.2	No	Fair	Poor	PF, CON(T), IN(U), CR(V), DW(L), EG(C), VC	Private	Buffer Area	Yes	Injure
497	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	No	19.0	2	3	1.0	Yes	Fair	Fair	DW(S), BW	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
498	Willow sp.	Salix sp.	No	6.4	1	2	0.3	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Impact Area	Yes	Remove
499	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	No	18.0	2	3	1.0	Yes	Fair	Poor	DW(S), BW, LN(M)	Kiwanis Heydenshore Park - Public	Buffer Area	No	Remove
500	Willow sp.	Salix sp.	No	6.0	1	2	0.3	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
501	Willow sp.	Salix sp.	No	10.0	2	3	0.5	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Impact Area	Yes	Remove
502	Willow sp.	Salix sp.	No	10.0	2	3	0.5	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Impact Area	Yes	Remove
503	Willow sp.	Salix sp.	No	6.0	2	3	0.3	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
504	Willow sp.	Salix sp.	No	6.0	2	3	0.3	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
505	Willow sp.	Salix sp.	No	6.0	2	3	0.3	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
506	Willow sp.	Salix sp.	No	61.0	6	7	3.3	No	Fair	Fair	DW(L), LN(L), EG(C), DW(L), PF, CON(T)	Private	Buffer Area	Yes	Injure
507	Willow sp.	Salix sp.	No	6.0	2	3	0.3	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
508	Willow sp.	Salix sp.	No	5.0	2	3	0.3	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
509	Willow sp.	Salix sp.	No	8.0	2	3	0.4	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
510	Willow sp.	Salix sp.	No	8.0	2	3	0.4	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
511	Willow sp.	Salix sp.	No	6.0	2	3	0.3	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
512	Willow sp.	Salix sp.	No	8.1	2	3	0.4	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK3	Private	Impact Area	Yes	Remove
513	Willow sp.	Salix sp.	No	6.0	2	3	0.3	Yes	Fair	Good	LN(H), CON(T), EG(B), DW(S), TK3	Private	Impact Area	Yes	Remove
514	Trembling Aspen	Populous tremuloides	No	20.0	3	4	1.1	No	Fair	Fair	CON(T), TW, DW(S)	Private	Tree Inventory Area	Yes	No Anticipated Impact
515	Willow sp.	Salix sp.	No	7.0	1	2	0.4	Yes	Fair	Good	LN(H), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
516	Willow sp.	Salix sp.	No	9.0	2	3	0.5	Yes	Fair	Good	LN(H), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
517	Willow sp.	Salix sp.	No	8.0	2	3	0.4	Yes	Fair	Good	LN(H), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
518	Willow sp.	Salix sp.	No	8.6	2	3	0.5	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Impact Area	Yes	Remove
519	Norway Spruce	Picea abies	No	56.0	4	5	3.0	Yes	Fair	Fair	DW(S), PP, BW, TW, WI	Private	Impact Area	No	Remove
520	Willow sp.	Salix sp.	No	9.9	2	3	0.5	Yes	Fair	Good	LN(L), CON(T), EG(B), DW(S), TK2	Private	Impact Area	Yes	Remove
521	Willow sp.	Salix sp.	No	8.0	2	3	0.4	Yes	Fair	Good	LN(H), CON(T), EG(B), DW(S)	Private	Impact Area	Yes	Remove
522	Norway Spruce	Picea abies	No	60.0	4	5	3.2	Yes	Poor	Fair	DW(S), PP, TW	Private	Impact Area	No	Remove
523	Other	Other	No	11.0	0	0	0.6	No	Dead	Dead	PB, PF, CON(T)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
524	Norway Spruce	Picea abies	No	48.0	4	5	2.6	No	Fair	Fair	DW(S), PP, TW	Private	Buffer Area	No	Injure
525	Norway Maple	Acer platanoides	No	42.0	4	5	2.3	Yes	Good	Good	DW(S), ER, GR, PP, CON(T)	Kiwanis Heydenshore Park - Public	Buffer Area	No	Injure

Tree #	Common Name	Scientfic Name	Species at Risk Tree?	DBH Analysis (cm)	Dripline (m)	Minimum Tree Protection Zone	Structural Root Zone (m)	Structural Root Zone Impacted?	Tree Condition - Health	Tree Condition - Structure	Observations/Comments	Tree Ownership	Tree Location (Impact Area, Buffer Area, Tree Inventory Area)	CLOCA Regulated Limit (Y/N)	Recommended Action
526	Norway Maple	Acer platanoides	No	37.0	4	5	2.0	No	Fair	Fair	DW(S), SM(H), PP	Kiwanis Heydenshore Park - Public	Buffer Area	No	Injure
527	Norway Maple	Acer platanoides	No	38.0	4	5	2.1	No	Good	Good	DW(S), ER, PP	Kiwanis Heydenshore Park - Public	Buffer Area	No	Injure
528	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	No	16.0	2	3	0.9	Yes	Fair	Fair	DW(S), WI, PP	Municipal- Public	Impact Area	No	Remove
529	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	No	19.0	2	3	1.0	Yes	Fair	Fair	DW(S), WI, PP, CON(T)	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
530	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	No	15.0	2	3	0.8	Yes	Fair	Fair	DW(S), WI, PP, EG(B)	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
531	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	No	16.0	2	3	0.9	Yes	Fair	Fair	DW(S), WI, PP, BW	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
532	Norway Maple	Acer platanoides	No	37.0	4	5	2.0	No	Good	Good	DW(S), ER, PP, BW	Kiwanis Heydenshore Park - Public	Buffer Area	No	Injure
533	Norway Maple	Acer platanoides	No	44.0	4	5	2.4	No	Fair	Fair	DW(S), ER, PP, GR	Kiwanis Heydenshore Park - Public	Buffer Area	No	Injure
534	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	No	15.0	2	3	0.8	Yes	Fair	Good	DW(S), PP, WI, BW	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
535	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	No	15.0	2	3	0.8	Yes	Fair	Good	DW(S), PP, WI, BW	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
536	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	No	17.0	2	3	0.9	Yes	Fair	Good	DW(S), PP, WI, BW	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
537	Manitoba Maple	Acer negundo	No	7.3	1	2	0.4	Yes	Fair	Fair	SS, TK3, EG(B), GTF	Private	Impact Area	Yes	Remove
538	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	No	17.0	2	3	0.9	Yes	Fair	Good	DW(S), PP, BW, LN(L), CON(T)	Kiwanis Heydenshore Park - Public	Buffer Area	No	Remove
539	Norway Maple	Acer platanoides	No	33.0	3	4	1.8	Yes	Good	Fair	DW(S), CON(T), WI, SM(V)	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
540	Eastern Cottonwood	Populus deltoides	No	60.2	6	7	3.3	No	Good	Good	TK2, FK1@4M, EG(T), EG(C), DW(S), BR	Private	Buffer Area	Yes	Injure
541	White Spruce	Picea glauca	No	19.0	3	4	1.0	No	Good	Good	IE, DW(S), CON(T)	Kiwanis Heydenshore Park - Public	Buffer Area	No	Remove
542	White Spruce	Picea glauca	No	17.0	3	4	0.9	Yes	Good	Good	IE, DW(S), CON(T)	Kiwanis Heydenshore Park - Public	Buffer Area	No	Remove
543	Manitoba Maple	Acer negundo	No	69.6	7	8	3.8	No	Fair	Fair	TK3, EG(T), DW(L), BR, DW(S), CD	Private	Tree Inventory Area	Yes	Injure
544	White Spruce	Picea glauca	No	11.0	3	4	0.6	No	Good	Good	IE, DW(S), CON(T)	Kiwanis Heydenshore Park - Public	Buffer Area	No	Injure
545	White Spruce	Picea glauca	No	14.0	3	4	0.8	Yes	Good	Good	IE, DW(S), CON(T)	Kiwanis Heydenshore Park - Public	Buffer Area	No	Remove
546	White Spruce	Picea glauca	No	15.0	3	4	0.8	No	Good	Good	IE, DW(S), CON(T)	Kiwanis Heydenshore Park - Public	Buffer Area	No	No Anticipated Impact - Protect
547	White Spruce	Picea glauca	No	16.0	3	4	0.9	No	Good	Good	IE, DW(S), CON(T)	Kiwanis Heydenshore Park - Public	Buffer Area	No	Injure
548	White Spruce	Picea glauca	No	12.0	3	4	0.6	No	Good	Good	IE, DW(S), CON(T)	Kiwanis Heydenshore Park - Public	Buffer Area	No	Injure
549	Willow sp.	Salix sp.	No	14.5	2	3	0.8	Yes	Fair	Fair	IE, TK4, LN(M), LS, CON(T), GTF, DW(S)	Private	Impact Area	No	Remove
550	Common Hackberry	Celtis occidentalis	No	12.0	2	3	0.6	Yes	Good	Good	DW(S), RH	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
551	Common Hackberry	Celtis occidentalis	No	15.0	2	3	0.8	Yes	Good	Good	DW(S), RH, PP	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
552	Trembling Aspen	Populous tremuloides	No	18.0	0	0	1.0	No	Dead	Dead	PB, DW(L)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
553	Common Hackberry	Celtis occidentalis	No	14.0	2	3	0.8	No	Good	Good	DW(S), RH, PP, ER, EG(T)	Kiwanis Heydenshore Park - Public	Buffer Area	No	No Anticipated Impact - Protect
554	Common Hackberry	Celtis occidentalis	No	17.0	2	3	0.9	Yes	Good	Good	DW(S), RH, PP	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
555	Trembling Aspen	Populous tremuloides	No	16.0	0	0	0.9	Yes	Dead	Dead	PB, DW(L)	Private	Buffer Area	Yes	Remove
556	Common Hackberry	Celtis occidentalis	No	21.0	3	4	1.1	No	Good	Good	DW(S), PP, ER	Kiwanis Heydenshore Park - Public	Buffer Area	No	Injure
557	Common Hackberry	Celtis occidentalis	No	22.0	3	4	1.2	Yes	Good	Good	DW(S), PP, WI	Kiwanis Heydenshore Park - Public	Impact Area	No	Remove
558	White Spruce	Picea glauca	No	18.0	2	3	1.0	No	Fair	Good	IE, DW(S), CON(T)	Kiwanis Heydenshore Park - Public	Buffer Area	No	No Anticipated Impact - Protect
559	Trembling Aspen	Populous tremuloides	No	22.0	3	4	1.2	No	Good	Good	DW(S), BR, CON(T), 1SD	Private	Buffer Area	Yes	Injure
560	Common Hackberry	Celtis occidentalis	No	24.0	3	4	1.3	Yes	Good	Good	DW(S), PP, WI	Municipal- Public	Impact Area	No	Remove
561	Trembling Aspen	Populous tremuloides	No	9.0	2	3	0.5	Yes	Good	Good	EG(B), DW(S)	Private	Impact Area	Yes	Remove
562	Common Hackberry	Celtis occidentalis	No	20.0	3	4	1.1	Yes	Good	Good	DW(S), PP, WI	Municipal- Public	Impact Area	No	Remove
563	Trembling Aspen	Populous tremuloides	No	7.0	0	0	0.4	No	Dead	Dead	PF, PB	Private	Buffer Area	Yes	No Anticipated Impact - Protect
564	Trembling Aspen	Populous tremuloides	No	11.0	0	0	0.6	No	Dead	Dead	PB, DW(S)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
565	Trembling Aspen	Populous tremuloides	No	5.8	2	3	0.3	No	Fair	Fair	TK2, IN(U), ID, TW, WC(P), CON(T)	Private	Tree Inventory Area	Yes	No Anticipated Impact
566	White Spruce	Picea glauca	No	11.0	1.5	2.5	0.6	Yes	Fair	Good	DW(S), LT	Municipal- Public	Buffer Area	No	Remove
567	Trembling Aspen	Populous tremuloides	No	19.0	3	4	1.0	Yes	Poor	Fair	PF, CD, DW(S), CON(T), 1SD	Private	Impact Area	Yes	Remove
568	White Spruce	Picea glauca	No	11.0	1.5	2.5	0.6	No	Fair	Good	DW(S), LT	Municipal- Public	Buffer Area	No	No Anticipated Impact - Protect
569	White Spruce	Picea glauca	No	10.6	1.5	2.5	0.6	No	Fair	Good	DW(S), LT, ML	Municipal- Public	Buffer Area	No	No Anticipated Impact - Protect
570	Trembling Aspen	Populous tremuloides	No	20.0	3	4	1.1	No	Good	Good	DW(S), CON(T), EG(C), NST	Private	Buffer Area	Yes	No Anticipated Impact - Protect
571	Trembling Aspen	Populous tremuloides	No	20.0	3	4	1.1	Yes	Fair	Fair	CON(T), 1SD, BR, DW(S)	Private	Impact Area	Yes	Remove
572	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	No	Good	Good	DW(S), CON(T), EG(C)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
573	White Spruce	Picea glauca	No	10.0	1.5	2.5	0.5	No	Fair	Good	DW(S), LT	Municipal- Public	Buffer Area	No	Injure
574	Trembling Aspen	Populous tremuloides	No	19.0	3	4	1.0	No	Good	Good	DW(S), CON(T), EG(C)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
575	Trembling Aspen	Populous tremuloides	No	14.3	0	0	0.8	No	Dead	Dead	TK2, PB, PF	Private	Buffer Area	Yes	No Anticipated Impact - Protect
576	Austrian Pine	Pinus nigra	No	38.0	3	4	2.1	Yes	Fair	Fair	DW(S), PP, CON(T), WI	Municipal- Public	Impact Area	No	Remove
577	Austrian Pine	Pinus nigra	No	23.0	3	4	1.2	Yes	Fair	Fair	DW(S), PP, CON(T)	Municipal- Public	Buffer Area	No	Remove
578	Trembling Aspen	Populous tremuloides	No	23.0	3	4	1.2	Yes	Fair	Fair	CON(T), 1SD, BR, DW(S)	Private	Impact Area	Yes	Remove
579	Austrian Pine	Pinus nigra	No	39.0	3	4	2.1	Yes	Fair	Fair	DW(S), PP, CON(T)	Municipal- Public	Buffer Area	No	Remove
580	Trembling Aspen	Populous tremuloides	No	14.0	3	4	0.8	Yes	Fair	Fair	CON(T), 1SD, BR, DW(S)	Private	Impact Area	Yes	Remove
581	Trembling Aspen	Populous tremuloides	No	16.0	2	3	0.9	No	Fair	Fair	CON(T), DW(S), FK1@5M	Private	Buffer Area	Yes	Injure
582	Honey Locust	Gleditsia triacanthos	No	27.0	3	4	1.5	Yes	Fair	Fair	DW(S), PP, BW, WI	Municipal- Public	Impact Area	No	Remove
583	Trembling Aspen	Populous tremuloides	No	24.0	4	5	1.3	Yes	Fair	Fair	CON(T), 1SD, BR, DW(S)	Private	Impact Area	Yes	Remove
584	Trembling Aspen	Populous tremuloides	No	13.0	1	2	0.7	Yes	Very Poor	Fair	CD, DW(L), EG(C)	Private	Buffer Area	Yes	Remove
585	Honey Locust	Gleditsia triacanthos	No	35.0	3	4	1.9	Yes	Fair	Fair	DW(S), PP, BW, WI	Municipal- Public	Impact Area	No	Remove
586	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	Yes	Fair	Fair	CON(T), 1SD, BR, DW(S), LS	Private	Impact Area	Yes	Remove
587	Trembling Aspen	Populous tremuloides	No	15.0	2	3	0.8	Yes	Fair	Fair	SN, DW(S), EG(C)	Private	Buffer Area	Yes	Remove
588	Honey Locust	Gleditsia triacanthos	No	40.0	3	4	2.2	Yes	Fair	Fair	DW(S), PP, BW, WI	Municipal- Public	Impact Area	No	Remove
589	Trembling Aspen	Populous tremuloides	No	14.0	3	4	0.8	Yes	Poor	Fair	PF, CD, LS, 1SD, BR, DW(S)	Private	Impact Area	Yes	Remove
590	Trembling Aspen	Populous tremuloides	No	16.1	1	2	0.9	No	Very Poor	Poor	TK2, EG(C), PB, CD, DW(L), PF	Private	Buffer Area	Yes	No Anticipated Impact - Protect
591	Trembling Aspen	Populous tremuloides	No	16.0	0	0	0.9	Yes	Dead	Dead	DW(S), BR	Private	Impact Area	Yes	Remove
592	Trembling Aspen	Populous tremuloides	No	25.0	0	0	1.4	Yes	Dead	Dead	DW(S), BR	Private	Buffer Area	Yes	Remove
593	Trembling Aspen	Populous tremuloides	No	22.0	3	4	1.2	No	Fair	Fair	EG(C), DW(S), PF, FK2@2M	Private	Buffer Area	Yes	No Anticipated Impact - Protect
594	Trembling Aspen	Populous tremuloides	No	13.0	0	0	0.7	No	Dead	Dead	DW(S), BR	Private	Buffer Area	Yes	No Anticipated Impact - Protect
595	Trembling Aspen	Populous tremuloides	No	10.0	0	0	0.5	No	Dead	Dead	DW(S), BR	Private	Buffer Area	Yes	No Anticipated Impact - Protect
596	Other	Other	No	14.0	0	0	0.8	No	Dead	Dead	PB, PF	Private	Tree Inventory Area	Yes	No Anticipated Impact
597	Trembling Aspen	Populous tremuloides	No	20.0	0	0	1.1	No	Dead	Dead	DW(S), BR	Private	Buffer Area	Yes	No Anticipated Impact - Protect
598	Trembling Aspen	Populous tremuloides	No	9.5	1	2	0.5	No	Poor	Fair	CD, CON(T), LS, CT, DW(L), EG(C)	Private	Tree Inventory Area	Yes	No Anticipated Impact
599	Trembling Aspen	Populous tremuloides	No	10.5	0	0	0.6	No	Dead	Dead	DW(L), PB	Private	Tree Inventory Area	Yes	No Anticipated Impact
600	Trembling Aspen	Populous tremuloides	No	33.0	4	5	1.8	No	Fair	Fair	TT, CON(T), BR, DW(S), CD	Private	Buffer Area	Yes	Injure

Tree #	Common Name	Scientfic Name	Species at Risk Tree?	DBH Analysis (cm)	Dripline (m)	Minimum Tree Protection Zone	Structural Root Zone (m)	Structural Root Zone Impacted?	Tree Condition - Health	Tree Condition - Structure	Observations/Comments	Tree Ownership	Tree Location (Impact Area, Buffer Area, Tree Inventory Area)	CLOCA Regulated Limit (Y/N)	Recommended Action
601	Silver Birch	Betula pendula	No	29.0	3	4	1.6	No	Good	Good	DW(S), ER, CON(T)	Municipal- Public	Buffer Area	No	Injure
602	Trembling Aspen	Populous tremuloides	No	13.0	0	0	0.7	No	Dead	Dead	DW(L), PB	Private	Tree Inventory Area	Yes	No Anticipated Impact
603	Austrian Pine	Pinus nigra	No	32.0	4	5	1.7	Yes	Good	Fair	DW(S), CON(T), PP	Municipal- Public	Buffer Area	No	Remove
604	Trembling Aspen	Populous tremuloides	No	17.0	2	3	0.9	No	Fair	Fair	LS, CT, DW(S), EG(C)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
605	Trembling Aspen	Populous tremuloides	No	33.0	6	7	1.8	Yes	Fair	Fair	ML, FK2@6M, BR, CON(T), DW(S), 1SD	Private	Buffer Area	Yes	Remove
606	Trembling Aspen	Populous tremuloides	No	13.0	0	0	0.7	No	Dead	Dead	PB, PF, ID	Private	Buffer Area	Yes	No Anticipated Impact - Protect
607	Austrian Pine	Pinus nigra	No	28.0	4	5	1.5	Yes	Good	Fair	DW(S), CON(T), PP, WI, LN(L)	Municipal- Public	Impact Area	No	Remove
608	Trembling Aspen	Populous tremuloides	No	9.0	0	0	0.5	Yes	Dead	Dead	PF, PB, BR	Private	Impact Area	Yes	Remove
609	Trembling Aspen	Populous tremuloides	No	31.0	3	4	1.7	No	Fair	Fair	SM(V), CON(T), FK1@3M, EG(C), DW(S)	Private	Buffer Area	Yes	Injure
610	Trembling Aspen	Populous tremuloides	No	28.0	4	5	1.5	No	Fair	Fair	SM(V), CON(T), CT, EG(C), DW(S)	Private	Buffer Area	Yes	Injure
611	Trembling Aspen	Populous tremuloides	No	22.0	4	5	1.2	Yes	Fair	Fair	1SD, CON(T), CON(U), BR, DW(S)	Private	Impact Area	Yes	Remove
612	Scots Pine	Pinus sylvestris	No	61.0	4	5	3.3	Yes	Fair	Fair	DW(S), PP, WI, ER	Lions Promenade Open Space - Public	Impact Area	No	Remove
613	Trembling Aspen	Populous tremuloides	No	11.0	0	0	0.6	Yes	Dead	Dead	PF, DW(S), BR, PB	Private	Buffer Area	Yes	Remove
614	Trembling Aspen	Populous tremuloides	No	7.0	1	2	0.4	No	Fair	Fair	CT, LS, DW(S), EG(C)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
615	White Elm	Ulmus americana	No	82.0	5	6	4.4	Yes	Good	Good	DW(S), PP, WI, CON(T)	Lions Promenade Open Space - Public	Impact Area	No	Remove
616	Trembling Aspen	Populous tremuloides	No	30.0	4	5	1.6	No	Fair	Fair	DW(S)	Private	Buffer Area	Yes	Injure
617	Trembling Aspen	Populous tremuloides	No	18.0	3	4	1.0	Yes	Fair	Fair	1SD, CON(T), PF, CD, BR	Private	Impact Area	Yes	Remove
618	Scots Pine	Pinus sylvestris	No	48.0	5	6	2.6	Yes	Good	Good	DW(S), PP, CON(T), WI	Lions Promenade Open Space - Public	Impact Area	No	Remove
619	Trembling Aspen	Populous tremuloides	No	22.0	3	4	1.2	No	Fair	Fair	DW(S), CON(T)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
620	Trembling Aspen	Populous tremuloides	No	19.0	3	4	1.0	Yes	Fair	Fair	1SD, CON(T), LN(L), BR, DW(S)	Private	Impact Area	Yes	Remove
621	Trembling Aspen	Populous tremuloides	No	12.0	0	0	0.6	Yes	Dead	Dead	DW(S), PB	Private	Impact Area	Yes	Remove
622	Trembling Aspen	Populous tremuloides	No	29.0	3	4	1.6	No	Fair	Fair	DW(S), NST, EG(C), CON(T)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
623	Trembling Aspen	Populous tremuloides	No	9.0	0	0	0.5	Yes	Dead	Dead	DW(S), PB	Private	Impact Area	Yes	Remove
624	Trembling Aspen	Populous tremuloides	No	12.5	0	0	0.7	No	Dead	Dead	PB, PF	Private	Buffer Area	Yes	No Anticipated Impact - Protect
625	Serviceberry sp.	Amelanchier sp.	No	10.0	1.5	2.5	0.5	No	Fair	Fair	DW(S), PP, EG(T), BW	Lions Promenade Open Space - Public	Buffer Area	No	No Anticipated Impact - Protect
626	Trembling Aspen	Populous tremuloides	No	21.0	0	0	1.1	No	Dead	Dead	PB, PF	Private	Buffer Area	Yes	No Anticipated Impact - Protect
627	Trembling Aspen	Populous tremuloides	No	8.0	1	2	0.4	Yes	Fair	Fair	LS, CON(T), 1SD, DW(S)	Private	Impact Area	Yes	Remove
628	Freeman Maple	Acer x freemanii	No	44.0	4	5	2.4	Yes	Fair	Fair	DW(S), ML, ER, GR, PP, CR(V)	Lions Promenade Open Space - Public	Buffer Area	No	Remove
629	Trembling Aspen	Populous tremuloides	No	19.0	3	4	1.0	No	Fair	Fair	LS, CT, DW(S), EG(C)	Private	Buffer Area	Yes	Injure
630	Trembling Aspen	Populous tremuloides	No	13.0	0	0	0.7	Yes	Dead	Dead	PF, PB, DW(S)	Private	Impact Area	Yes	Remove
631	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	No	Fair	Fair	ID, FS, DW(S), EG(C), FK1@2M	Private	Buffer Area	Yes	No Anticipated Impact - Protect
632	Trembling Aspen	Populous tremuloides	No	12.0	3	4	0.6	Yes	Fair	Fair	1SD, CON(T), LN(L), DW(S)	Private	Impact Area	Yes	Remove
633	Freeman Maple	Acer x freemanii	No	43.0	4	5	2.3	Yes	Fair	Fair	DW(S), ML, ER, GR, PP, CR(V)	Lions Promenade Open Space - Public	Impact Area	No	Remove
634	Trembling Aspen	Populous tremuloides	No	26.0	3	4	1.4	No	Fair	Fair	CON(T), DW(L), CT	Private	Buffer Area	Yes	No Anticipated Impact - Protect
635	Trembling Aspen	Populous tremuloides	No	20.0	3	4	1.1	Yes	Poor	Fair	1SD, PF, CD, BR	Private	Buffer Area	Yes	Remove
636	Freeman Maple	Acer x freemanii	No	42.0	4	5	2.3	Yes	Fair	Fair	DW(S), ML, ER, GR, PP, CR(V)	Lions Promenade Open Space - Public	Impact Area	No	Remove
637	Trembling Aspen	Populous tremuloides	No	7.5	2	3	0.4	No	Fair	Fair	LN(L), FK1@3M, DW(S), EG(C)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
638	Trembling Aspen	Populous tremuloides	No	7.0	2	3	0.4	Yes	Fair	Fair	1SD, CON(T), LS, LN(L)	Private	Impact Area	Yes	Remove
639	Freeman Maple	Acer x freemanii	No	18.0	3	4	1.0	Yes	Fair	Fair	DW(S), ER, GR, PP	Lions Promenade Open Space - Public	Impact Area	No	Remove
640	Trembling Aspen	Populous tremuloides	No	7.5	2	3	0.4	No	Fair	Fair	LN(L), LS, CT, DW(S), EG(C)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
641	Trembling Aspen	Populous tremuloides	No	12.0	0	0	0.6	Yes	Dead	Dead	BR, PB, DW(S)	Private	Impact Area	Yes	Remove
642	Freeman Maple	Acer x freemanii	No	16.0	3	4	0.9	Yes	Fair	Fair	DW(S), ER, GR, PP	Lions Promenade Open Space - Public	Impact Area	No	Remove
643	Other	Other	No	9.5	0	0	0.5	No	Dead	Dead	PF, PB	Private	Tree Inventory Area	Yes	No Anticipated Impact
644	Trembling Aspen	Populous tremuloides	No	18.0	3	4	1.0	Yes	Poor	Fair	BR, PF, CD, DW(S), CON(T), 1SD	Private	Impact Area	Yes	Remove
645	Freeman Maple	Acer x freemanii	No	41.0	4	5	2.2	No	Fair	Fair	DW(S), ER, GR, PP, BW	Lions Promenade Open Space - Public	Buffer Area	No	No Anticipated Impact - Protect
646	Trembling Aspen	Populous tremuloides	No	17.0	3	4	0.9	Yes	Fair	Fair	1SD, LS, CON(T), BR, DW(S)	Private	Buffer Area	Yes	Remove
647	Freeman Maple	Acer x freemanii	No	43.0	4	5	2.3	Yes	Fair	Fair	DW(S), ER, GR, PP, BW, ML	Lions Promenade Open Space - Public	Buffer Area	No	Remove
648	Trembling Aspen	Populous tremuloides	No	14.0	3	4	0.8	Yes	Poor	Fair	PF, CD, BR, 1SD, CON(T)	Private	Impact Area	Yes	Remove
649	Freeman Maple	Acer x freemanii	No	38.0	4	5	2.1	Yes	Fair	Fair	DW(S), ER, GR, PP, BW, ML	Lions Promenade Open Space - Public	Impact Area	No	Remove
650	Trembling Aspen	Populous tremuloides	No	18.0	3	4	1.0	Yes	Fair	Fair	CON(T), LN(L), 1SD, BR, DW(S)	Private	Impact Area	Yes	Remove
651	Trembling Aspen	Populous tremuloides	No	7.0	2	3	0.4	Yes	Fair	Fair	CON(T), LN(L), 1SD, BR, DW(S)	Private	Impact Area	Yes	Remove
652	Sugar Maple	Acer saccharum	No	42.0	4	5	2.3	Yes	Fair	Fair	DW(S), PP, ER, GR	Lions Promenade Open Space - Public	Impact Area	No	Remove
653	Trembling Aspen	Populous tremuloides	No	18.0	2	3	1.0	Yes	Fair	Fair	CON(T), VC, 1SD, BR, DW(S)	Private	Impact Area	Yes	Remove
654	Sugar Maple	Acer saccharum	No	28.0	4	5	1.5	Yes	Fair	Fair	DW(S), PP, ER, GR	Lions Promenade Open Space - Public	Impact Area	No	Remove
655	Serviceberry sp.	Amelanchier sp.	No	13.5	2	3	0.7	Yes	Good	Good	DW(S), CON(T)	Lions Promenade Open Space - Public	Impact Area	No	Remove
656	Serviceberry sp.	Amelanchier sp.	No	11.4	2	3	0.6	Yes	Good	Good	DW(S), CON(T)	Lions Promenade Open Space - Public	Impact Area	No	Remove
657	Sugar Maple	Acer saccharum	No	34.0	5	6	1.8	Yes	Good	Fair	DW(S), CON(T), ER, GR, PP	Lions Promenade Open Space - Public	Impact Area	No	Remove
658	Trembling Aspen	Populous tremuloides	No	39.6	5	6	2.1	Yes	Fair	Fair	1SD, CON(T), CON(U), LN(L), LN(M), BR, OL	Private	Buffer Area	Yes	Remove
659	Norway Maple	Acer platanoides	No	37.0	4	5	2.0	No	Good	Fair	DW(S), CON(T), ER, GR, PP	Lions Promenade Open Space - Public	Buffer Area	No	Injure
660	Trembling Aspen	Populous tremuloides	No	14.0	2	3	0.8	No	Fair	Fair	TT, LS, CON(T), BR	Private	Buffer Area	Yes	No Anticipated Impact - Protect
661	Willow sp.	Salix sp.	No	141.5	8	9	7.6	Yes	Fair	Fair	TK3, PF, BR, DW(L), EG(C), EG(T), VC, ET	Private	Buffer Area	Yes	Remove
662	Trembling Aspen	Populous tremuloides	No	34.5	4	5	1.9	Yes	Fair	Fair	LN(L), 1SD, DW(L), BR, CON(T), TK2	Private	Buffer Area	Yes	Remove
663	Freeman Maple	Acer x freemanii	No	38.0	4	5	2.1	No	Good	Good	DW(S), ER, PP, ML	Private	Buffer Area	No	Injure
664	Other	Other	No	17.0	0	0	0.9	No	Dead	Dead	PB, ID, PF	Private	Tree Inventory Area	Yes	No Anticipated Impact
665	Trembling Aspen	Populous tremuloides	No	31.0	2	3	1.7	No	Fair	Fair	DW(L), LN(L), EG(C), CD	Private	Buffer Area	Yes	No Anticipated Impact - Protect
666	Norway Maple	Acer platanoides	No	28.0	4	5	1.5	No	Good	Good	DW(S), PP	Private	Buffer Area	No	Injure
667	Trembling Aspen	Populous tremuloides	No	10.0	1	2	0.5	No	Fair	Fair	DW(S), LN(L), CT, EG(C), CD	Private	Buffer Area	Yes	No Anticipated Impact - Protect
668	Manitoba Maple	Acer negundo	No	24.0	6	7	1.3	No	Fair	Poor	LN(M), EG(B), EG(T), EG(C), ER, CON(T), DW(S)	Private	Buffer Area	Yes	Injure
669	Trembling Aspen	Populous tremuloides	No	34.0	2	3	1.8	No	Fair	Poor	DW(L), LN(L), CT, EG(C), CD	Private	Buffer Area	Yes	No Anticipated Impact - Protect
670	Trembling Aspen	Populous tremuloides	No	10.0	1	2	0.5	No	Fair	Fair	CON(T), LS, 1SD, BR, TT	Private	Tree Inventory Area	Yes	No Anticipated Impact
671	Littleleaf Linden	Tilia cordata	No	21.5	3	4	1.2	Yes	Fair	Fair	DW(S), CON(T)	Private	Impact Area	No	Remove
672	Trembling Aspen	Populous tremuloides	No	12.0	2	3	0.6	Yes	Fair	Fair	DW(S), EG(C), CT	Private	Impact Area	Yes	Remove
673	Other	Other	No	6.0	0	0	0.3	No	Dead	Dead	VC, DW(L), PB	Private	Buffer Area	Yes	No Anticipated Impact - Protect
674	Trembling Aspen	Populous tremuloides	No	23.0	4	5	1.2	No	Fair	Fair	LN(M), CON(T), BR, DW(S), 1SD	Private	Buffer Area	Yes	Injure
675	Weeping Willow	Salix x sepulcralis	No	94.0	6	7	5.1	Yes	Fair	Poor	IE, DW(S), DWP, PP, EG(T)	Private	Buffer Area	Yes	Remove

Tree #	Common Name	Scientfic Name	Species at Risk Tree?	DBH Analysis (cm)	Dripline (m)	Minimum Tree Protection Zone	Structural Root Zone (m)	Structural Root Zone Impacted?	Tree Condition - Health	Tree Condition - Structure	Observations/Comments	Tree Ownership	Tree Location (Impact Area, Buffer Area, Tree Inventory Area)	CLOCA Regulated Limit (Y/N)	Recommended Action
676	Trembling Aspen	Populous tremuloides	No	12.0	2	3	0.6	No	Fair	Very Poor	PF, (one leader), LN(L), CT, FK1@3M	Private	Buffer Area	Yes	Injure
677	Trembling Aspen	Populous tremuloides	No	21.0	3	4	1.1	No	Fair	Fair	TT, LN(L), CON(T), BR, 1SD	Private	Buffer Area	Yes	Injure
678	Weeping Willow	Salix x sepulcralis	No	89.0	5	6	4.8	Yes	Fair	Poor	IE, DW(S), DWP, PP, EG(T)	Private	Buffer Area	Yes	Remove
679	Trembling Aspen	Populous tremuloides	No	40.0	5	6	2.2	Yes	Fair	Fair	LN(M), TK2, CON(T), BR, DW(S), PB	Private	Impact Area	Yes	Remove
680	Trembling Aspen	Populous tremuloides	No	12.0	2	3	0.6	No	Fair	Fair	ER, DW(L), CON(T), EG(C)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
681	Trembling Aspen	Populous tremuloides	No	12.0	2	3	0.6	Yes	Fair	Fair	TT, LN(L), 1SD, LS, DW(S)	Private	Impact Area	Yes	Remove
682	Trembling Aspen	Populous tremuloides	No	6.0	0	0	0.3	No	Dead	Dead	VC	Private	Buffer Area	Yes	No Anticipated Impact - Protect
683	Balsam Poplar	Populus balsamifera	No	15.0	2	3	0.8	No	Fair	Fair	DW(S), (M)OB, WI	Private	Tree Inventory Area	Yes	No Anticipated Impact
684	Trembling Aspen	Populous tremuloides	No	12.0	2	3	0.6	No	Fair	Fair	DW(S), EG(C), LN(L), FK1@3M, EG(C)	Private	Tree Inventory Area	Yes	No Anticipated Impact
685	Trembling Aspen	Populous tremuloides	No	12.0	3	4	0.6	Yes	Poor	Poor	PF, CD, BR, DW(S), CON(T)	Private	Buffer Area	Yes	Remove
686	Manitoba Maple	Acer negundo	No	70.8	5	6	3.8	No	Fair	Poor	DW(S), PF, DE(H), DE(S), FU, EG(B)	Private	Buffer Area	Yes	Injure
687	Manitoba Maple	Acer negundo	No	59.1	7	8	3.2	Yes	Fair	Fair	IN(B), TK2, ML, OL, EG(T), EG(C), CD, DW(S), BR	Private	Impact Area	Yes	Remove
688	Pussy Willow	Salix discolor	No	36.8	2	3	2.0	No	Fair	Poor	IE, LN(H), ML, EG(B), EG(T), EG(C), PF, DW(S)	Lions Promenade Open Space - Public	Tree Inventory Area	Yes	No Anticipated Impact
689	Manitoba Maple	Acer negundo	No	41.0	6	7	2.2	No	Fair	Fair	DW(S), CON(T), EG(T), PP, CV, DE(H)	Private	Tree Inventory Area	Yes	Injure
690	Trembling Aspen	Populous tremuloides	No	19.7	1	2	1.1	No	Fair	Fair	IE, DW(S), ML	Private	Buffer Area	Yes	Injure
691	Manitoba Maple	Acer negundo	No	80.1	5	6	4.3	No	Fair	Fair	DW(L), PP, BW, PB, PF	Private	Buffer Area	Yes	Injure
692	Trembling Aspen	Populous tremuloides	No	19.7	1	2	1.1	No	Fair	Fair	IE, DW(S), ML	Private	Buffer Area	Yes	No Anticipated Impact - Protect
693	Manitoba Maple	Acer negundo	No	55.5	5	6	3.0	Yes	Fair	Poor	DW(L), BR, VC, PF, DW(L)	Private	Impact Area	No	Remove
694	Manitoba Maple	Acer negundo	No	54.2	4	5	2.9	Yes	Poor	Poor	DW(L), BR, VC, PF, DW(L), IN(U)	Private	Buffer Area	No	Remove
695	Manitoba Maple	Acer negundo	No	79.4	5	6	4.3	Yes	Poor	Poor	IE, DW(L), DW(S), PP, PF, BR, VC	Private	Impact Area	No	Remove
696	Manitoba Maple	Acer negundo	No	11.0	2	3	0.6	No	Fair	Fair	DW(S), EG(C), LN(L)	Private	Buffer Area	No	No Anticipated Impact - Protect
697	Manitoba Maple	Acer negundo	No	51.0	6	7	2.8	No	Fair	Poor	DW(L), BR, PF, CON(T), VC	Private	Buffer Area	No	Injure
698	Crack Willow	Salix fragilis	No	44.2	6	7	2.4	No	Fair	Poor	DW(S), LN(H), EG(T), PF, DW(L)	Private	Tree Inventory Area	No	Injure
699	Crack Willow	Salix fragilis	No	111.1	6	7	6.0	Yes	Fair	Poor	DW(L), PF, EG(T), VC	Private	Impact Area	No	Remove
700	Other	Other	No	41.8	0	0	2.3	Yes	Dead	Dead	DW(L), PB	Private	Impact Area	No	Remove
701	Crack Willow	Salix fragilis	No	24.6	1	2	1.3	No	Fair	Fair	ML, DW(S), EG(T), EG(C)	Private	Buffer Area	No	No Anticipated Impact - Protect
702	Norway Maple	Acer platanoides	No	61.0	5	6	3.3	Yes	Good	Fair	DW(S), PP, ER, GR	Private	Impact Area	No	Remove
703	Norway Maple	Acer platanoides	No	49.0	5	6	2.6	Yes	Fair	Fair	DW(S), PP, (M)OB, SM(V), SM(H)	Private	Impact Area	No	Remove
704	Norway Maple	Acer platanoides	No	44.0	4	5	2.4	Yes	Fair	Poor	DW(S), PP, PF, TW, BW, WC(P), EG(B)	Private	Impact Area	No	Remove
705	Crack Willow	Salix fragilis	No	68.0	7	8	3.7	No	Fair	Fair	TK4, CD, PB, DW(S) , CON(U), BR, EG(T)	Private	Buffer Area	Yes	Injure
706	Norway Maple	Acer platanoides	No	34.0	4	5	1.8	Yes	Poor	Fair	DW(S), PP, GR	Private	Impact Area	No	Remove
707	Norway Maple	Acer platanoides	No	41.0	4	5	2.2	Yes	Good	Good	DW(S), PP	Private	Impact Area	No	Remove
708	Norway Maple	Acer platanoides	No	48.0	5	6	2.6	Yes	Good	Good	DW(S), PP, ER, GR, CR(V), WC(P), DE(H)	Private	Impact Area	No	Remove
709	Norway Maple	Acer platanoides	No	53.0	5	6	2.9	Yes	Good	Good	DW(S), PP, ER, GR, IN(U)	Private	Impact Area	No	Remove
710	Largetooth Aspen	Populus grandidentata	No	9.0	2	3	0.5	No	Good	Good	SS, CON(T), TT	Private	Buffer Area	Yes	No Anticipated Impact - Protect
711	Amur Maple	Acer ginnala	No	14.9	2	3	0.8	Yes	Fair	Fair	DW(S), EG(T), ML, PP	Private	Impact Area	No	Remove
712	Trembling Aspen	Populous tremuloides	No	5.0	1	2	0.3	No	Good	Good	SS, CON(T)	Private	Tree Inventory Area	Yes	No Anticipated Impact
713	Amur Maple	Acer ginnala	No	9.0	2	3	0.5	Yes	Fair	Fair	DW(S), EG(T), PP	Private	Impact Area	No	Remove
714	Amur Maple	Acer ginnala	No	17.9	2	3	1.0	Yes	Fair	Fair	DW(S), EG(T), PP, DW(L)	Private	Impact Area	No	Remove
715	Largetooth Aspen	Populus grandidentata	No	8.0	2	3	0.4	No	Good	Good	SS, CON(T), TT, DW(S)	Private	Buffer Area	Yes	No Anticipated Impact - Protect
716	Amur Maple	Acer ginnala	No	20.6	2	3	1.1	Yes	Fair	Fair	DW(S), EG(T), PP, DW(L)	Private	Impact Area	No	Remove
717	Largetooth Aspen	Populus grandidentata	No	16.0	3	4	0.9	No	Good	Good	LN(L), 1SD, CON(T), BR, DW(S)	Private	Buffer Area	Yes	Injure
718	Norway Maple	Acer platanoides	No	30.0	4	5	1.6	Yes	Good	Good	DW(S), ER, (M)OB, PP	Private	Impact Area	No	Remove
719	Norway Maple	Acer platanoides	No	39.0	4	5	2.1	Yes	Fair	Poor	DW(S), BW, PF, WC(P), DE(H), EG(T)	Private	Buffer Area	No	Remove
720	Serviceberry sp.	Amelanchier sp.	No	9.3	2	3	0.5	No	Fair	Fair	DW(S), RH, BW	Private	Buffer Area	No	No Anticipated Impact - Protect

Appendix C

Tree Inventory Abbreviations

AECOM

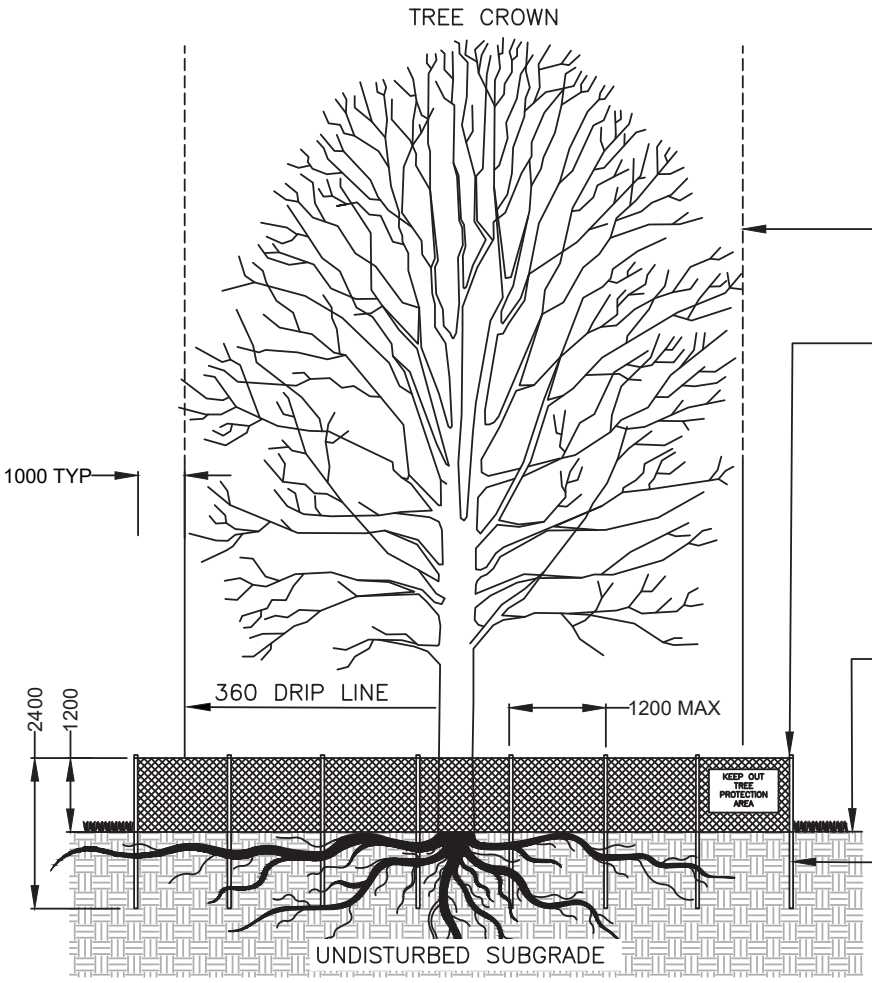
Tree Inventory Abbreviations

1SD	One-Sided Crown
AD	Animal Damage
BC	Broken Crown
BH	Bat Habitat
BN	Bark Necrosis
BOB	Located at Bottom of Bank
BR#	# of Broken Branches
BSD	Basal Trunk Damage
CA#	Canker (# total)
CD	Crown Dieback
CL	Chlorotic Leaves
CN	Crown Necrosis
CP	Clump Form
CS	Close to Building
CT	Crooked/ Bent Trunk
CV	Cavity
DC	Developed Crown Form
DE(H)(S)	Decay: (H) Heartwood /(S) Softwood
DED	Dutch Elm Disease
DF	Defoliated
DIS	Diseased
DL	Developed Leader
DT	Distinctive Tree
DW	Deadwood
EAB	Emerald Ash Borer
EM	Excessive mulch/ soil
ER	Exposed Roots
ETB	Enlarged Trunk Base
FK#@#M	# of Trunks at # Metres Above Ground
FC	Frost Cracks
FP	Fastigiate/ Columnar Form
FS	Fused Branches/Limbs
FU	Fungus/ Conk/ Fruiting Body
GC	Grade Changed
GL	Globe Form
GR	Girdling Root(s)
GTF	Growing Through Fence
HE	Hedge/ Sheared
HP	Hazard Potential of Tree
IB	Included Bark
ID	Insect Damage
IE	Information Estimated (inaccessible)
LD	Lion's-Tailed/ Excessive End Weight
LG	Laying On Ground
LN(*x*)	Lean: (*x*= L [Low, <5°], M [Moderate, 5-15°], [High, >15°])
LS	Light Suppressed
LT	Landscape Tree
MB	Multi-Branch Nodes on Trunk
ML	Multiple Leaders
MOB	Middle of Bank
NST	Bird Nest in Tree
PB	Peeling Bark
PC	Pollarded Crown
PF	Previous Failure
PL	Poor Leader development
PP	Past Pruning
PTH	Planted Too High
PTL	Planted Too Low
RB	Remove Basket / Burlap
RC(#)	Requires Cabling (# of Cables)
RFS	Regeneration from Stump
RH	Remove Tree Hardware
RM	Remove Plant
RP	Requires Pruning and/or Thinning
RPM	Root Plate Movement
RT	Requires Under-Story Thinning
SB	Sprouts at Trunk Base
SC	Sprouts in Crown
SF	Superior Tree Form
SL	Slender Form
SN	Squirrel Nest
SP	Sapling
SS	Self-Seeded
ST	Sprouts on Trunk
TK#	# of Trunks at or Below 1.4 metre
TOB	Located at Top of Bank
TS	Trunk Split
TT	Twisted Trunk
TW	Trunk Wound
UC	Unbalanced Crown
UW	Tree Under/ Over Power Wires
VC	Vine Covered
WC	Wound Compartmentalized
WE	Weeping Form
WNC	Wound Not Compartmentalized

Quantified Conditions (defects, diseases): L (low/minor), M (moderate), H (high/severe) e.g. LN(L) = minor lean
DBH = Diameter at Breast Height (i.e. 1.4 metres)
Last Updated: *October 7, 2021*

Appendix D

Town of Whitby's Tree Protection Fencing



DRIP LINE; THE WIDTH OF THE TREE CROWN AT ITS WIDEST BRANCHING, 360 DEGREES AROUND THE TREE

TREE PROTECTION FENCE TO BE 1200mm HEIGHT, HEAVY–DUTY / WIRED ORANGE PLASTIC WEB SNOW FENCING, OR APPROVED EQUIVALENT. PROTECTIVE FENCING FOR INDIVIDUAL TREES SHALL BE POSITIONED IN ACCORDANCE WITH DISTANCES IDENTIFIED IN TABLE 1:TREE PROTECTION ZONES. APPROVED SIGNAGE SHALL BE PROVIDED EVERY 15m OF FENCE LENGTH.

EXISTING GRADE TO BE MAINTAINED AT FULL LIMITS OF PROTECTIVE FENCING

(50mm X 50mm X 6mm) STEEL T–BARS, 2400mm LENGTH, SPACED 1200mm APART MAXIMUM ON CENTRE AND TO AVOID VISIBLE SURFACE ROOTS. T–BARS SECURED TO APPROVED TREE PROTECTION FENCE WITH #10 GALVANIZED WIRE AT THREE EVENLY SPACED LOCATIONS ALONG LENGTH OF T–BAR. T–BARS TO BE INSTALLED AT MINIMUM 1200mm DEPTH BELOW GRADE, TYPICAL ENTIRE LENGTH OF PROTECTIVE FENCING.

PROTECTIVE FENCING FOR WOOD LOTS OR GROUPS OF TREES TO BE POSITIONED AT A MINIMUM DISTANCE OF 1000mm BEYOND THE DRIP LINE OF EACH WOOD LOT OR GROUP OF TREES TO BE PRESERVED, OR AS DIRECTED BY THE CONSULTING ARBORIST.

TABLE 1: TREE PRESERVATION ZONE

DBH (Diameter at Breast Height) Trunk Diameter (cm)	Minimum Protection Zone (TPZ) Distance Required (m)
less than 10	1.2
10 – 29	1.8
30 – 40	2.4
41 – 50	3.0
51 – 60	3.6
61 – 70	4.2
71 – 80	4.8
81 – 90	5.4
91 – 100	6.0
> 100	6cm / 1cm dia.

* measurement of DBH taken at 1.4m above grade
* TPZ distances measured from outside edge of trunk flare

NOTES:

1. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED
2. ALL PROTECTIVE FENCING TO BE LOCATED AS DIRECTED BY I.S.A CERTIFIED ARBORIST
3. TPZ FENCING SHALL NOT BE ATTACHED TO TREES
4. ALL TREE PROTECTION SHALL BE IN PLACE AND MUST BE INSPECTED AND APPROVED BY THE TOWN PRIOR TO ANY CONSTRUCTION ACTIVITIES, AND REMAIN IN PLACE UNTIL ALL CONSTRUCTION ACTIVITIES HAVE CONCLUDED, OR AS DIRECTED BY THE CONSULTING ARBORIST
5. NO CONSTRUCTION ACTIVITY, MATERIAL STORAGE, GRADE CHANGES, SURFACE TREATMENT OR EXCAVATIONS OF ANY KIND IS PERMITTED WITHIN THE TREE PROTECTION ZONE
6. REFER TO TREE INVENTORY & PRESERVATION PLAN FOR REQUIRED FENCING TYPE
7. REFER TO TOWN OF WHITBY STANDARD #702 FOR GENERAL TREE PROTECTION NOTES

THE CORPORATION OF THE TOWN OF WHITBY — **PLANNING & DEVELOPMENT DEPARTMENT**

CHECKED	**LIGHT DUTY TREE PRESERVATION FENCE**	DWG. DATE: JANUARY 2021
APPROVED		REVISION No.: 002
SCALE: N.T.S		REVISION DATE: MAY. 2022
		DWG No. 700

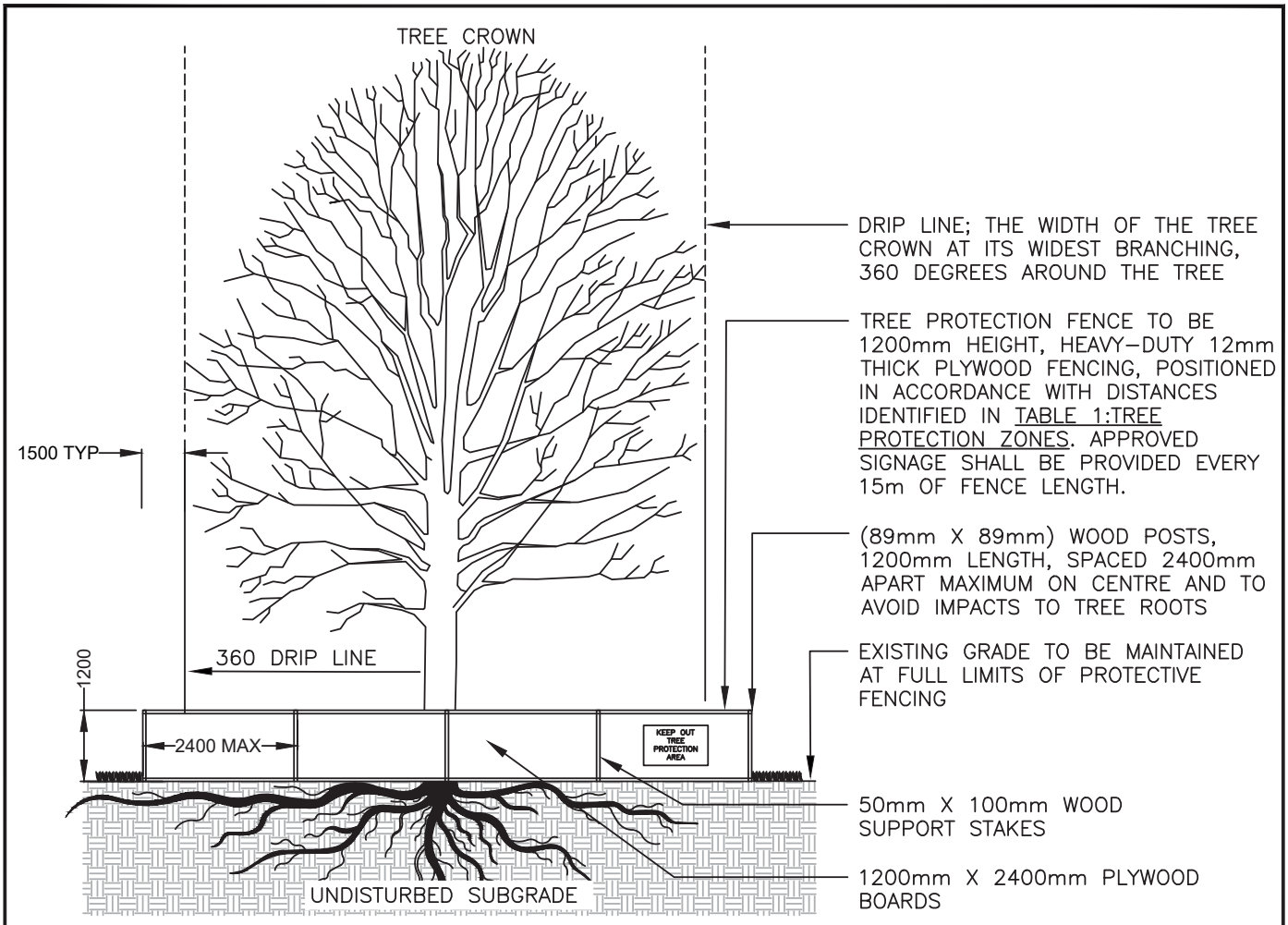
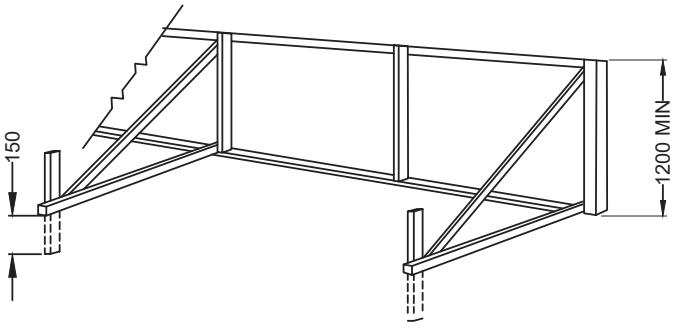


TABLE 1: TREE PRESERVATION ZONE

DBH (Diameter at Breast Height) Trunk Diameter (cm)	Minimum Protection Zone (TPZ) Distance Required (m)
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41 – 50	3.0
51 – 60	3.6
61 – 70	4.2
71 – 80	4.8
81 – 90	5.4
91 – 100	6.0
> 100	6cm / 1cm dia.

* measurement of DBH taken at 1.4m above grade
* TPZ distances measured from outside edge of trunk flare

FENCE CONSTRUCTION



* all connection points to be rigid
** all supporting stakes and hoarding posts to be wood 50mm x 100mm members
*** dashed line represent below grade

NOTES:

1. ALL DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE NOTED
2. ALL PROTECTIVE FENCING TO BE LOCATED AS DIRECTED BY I.S.A CERTIFIED ARBORIST
3. TPZ FENCING SHALL NOT BE ATTACHED TO TREES
4. ALL TREE PROTECTION SHALL BE IN PLACE AND MUST BE INSPECTED AND APPROVED BY THE TOWN PRIOR TO ANY CONSTRUCTION ACTIVITIES, AND REMAIN IN PLACE UNTIL ALL CONSTRUCTION ACTIVITIES HAVE CONCLUDED, OR AS DIRECTED BY THE CONSULTING ARBORIST
5. NO CONSTRUCTION ACTIVITY, MATERIAL STORAGE, GRADE CHANGES, SURFACE TREATMENT OR EXCAVATIONS OF ANY KIND IS PERMITTED WITHIN THE TREE PROTECTION ZONE
6. REFER TO TREE INVENTORY & PRESERVATION PLAN FOR REQUIRED FENCING TYPE
7. REFER TO TOWN OF WHITBY STANDARD #702 FOR GENERAL TREE PROTECTION NOTES

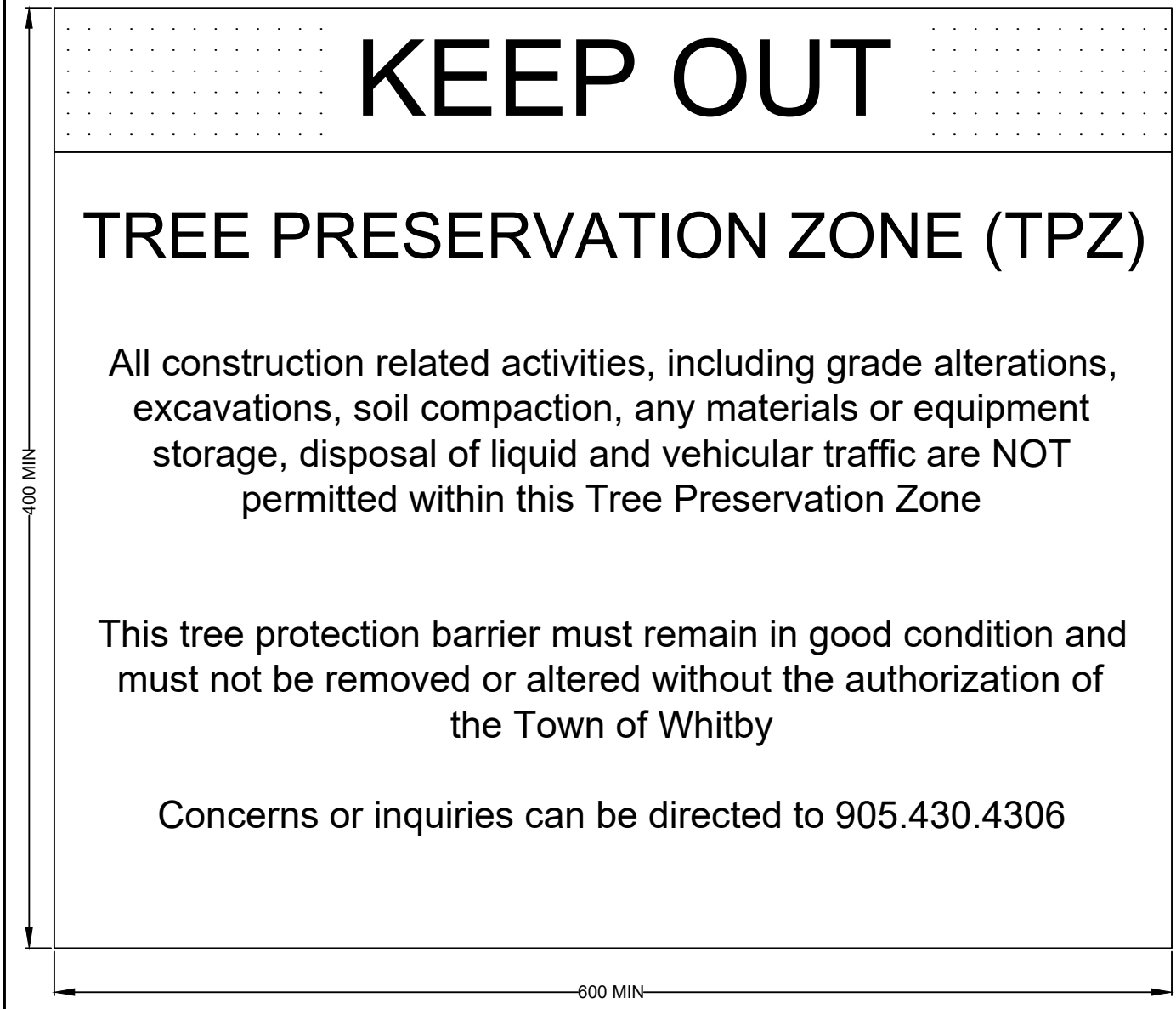
THE CORPORATION OF THE TOWN OF WHITBY — **PLANNING & DEVELOPMENT DEPARTMENT**

CHECKED	**HEAVY DUTY TREE PRESERVATION FENCE**	DWG. DATE: JANUARY 2021
APPROVED		REVISION No.: 002
SCALE: N.T.S		REVISION DATE: MAY. 2022
		DWG No. 701

1. THE AREA WITHIN THE DRIPLINE OF ALL EXISTING TREES AND / OR AREAS TO BE PROTECTED SHALL BE PROPERLY PROTECTED WITH TREE PROTECTION FENCING AS DETAILED ON THE APPROVED TREE INVENTORY AND PRESERVATION PLAN. ALL EXISTING TREES WHICH ARE TO REMAIN ON SITE, OR ON ADJACENT PROPERTIES WHICH MAY BE AFFECTED, WILL BE FULLY PROTECTED WITH PROTECTIVE FENCING ERECTED MINIMUM 1.0m OUTSIDE THE DRIPLINE OF TREES, OR IN THE CASE OF INDIVIDUAL SPECIMEN TREES, AS PER TABLE 1: TREE PROTECTION ZONES, PRIOR TO COMMENCEMENT OF ANY SITE DISTURBANCE, CLEARING, DEMOLITION AND/OR CONSTRUCTION, TO THE SATISFACTION OF THE ISA ARBORIST AND THE TOWN.
2. GROUPS OF TREES AND OTHER EXISTING PLANTINGS TO BE PROTECTED WILL BE DONE IN A LIKE MANNER WITH SIMILAR STRUCTURES AROUND THE ENTIRE CLUMP(S).
3. AREAS WITHIN THE PROTECTIVE FENCING WILL REMAIN UNDISTURBED, AND WILL NOT BE USED FOR THE STORAGE OF BUILDING MATERIALS, EQUIPMENT, SURPLUS SOILS, OR CONSTRUCTION DEBRIS.
4. ALL SUPPORTS AND BRACING SHALL BE IN ACCORDANCE WITH APPLICABLE DETAIL. ALL SUCH SUPPORTS SHOULD MINIMIZE DAMAGING ROOTS OUTSIDE THE TREE PROTECTION FENCE.
5. NO CONSTRUCTION ACTIVITY, GRADE CHANGES, SURFACE TREATMENT OR EXCAVATIONS OF ANY KIND ARE PERMITTED WITHIN THE TREE PROTECTION ZONE.
6. NO RIGGING CABLES WILL BE WRAPPED AROUND OR INSTALLED IN TREES AND / OR PROTECTED AREAS.
7. NO CONTAMINANTS WILL BE DUMPED OR FLUSHED WHERE FEEDER ROOTS OF PROTECTED TREES AND / OR AREAS EXIST.
8. THE DEVELOPER AND / OR CONTRACTOR WILL TAKE EVERY PRECAUTION NECESSARY TO PREVENT DAMAGE TO TREES, SHRUBS OR OTHER PLANTS TO BE RETAINED.
9. DAMAGED LIMBS WILL BE PRUNED TO REMOVE DAMAGED BRANCHES. ALL PRUNING CUTS WILL BE MADE TO A GROWING POINT SUCH AS A BUD. TWIG OR BRANCH. NO STUBS SHOULD BE LEFT. POOR CUT LOCATION, POOR CUT ANGLE AND TORN CUTS ARE NOT ACCEPTABLE. PRUNING OF THOSE TREES WHERE HEAVY BLEEDING MAY OCCUR TO BE POSTPONED UNTIL IN FULL LEAF. DO NOT DAMAGE LEAD BRANCHES OR REMOVE SMALLER TWIGS ALONG MAIN BRANCHES.
10. WHERE ISA CERTIFIED ARBORIST APPROVES, LIMBS OR PORTIONS OF TREES ARE TO BE REMOVED TO ACCOMMODATE CONSTRUCTION WORK, THEY WILL BE REMOVED CAREFULLY IN ACCORDANCE WITH ACCEPTED ARBORICULTURE PRACTICE AND MEASURES WILL BE TAKEN TO PREVENT ANY FURTHER DAMAGE.
11. WHERE ROOT SYSTEMS OF PROTECTED TREES ARE EXPOSED DIRECTLY ADJACENT TO OR DAMAGED BY CONSTRUCTION WORK, THEY WILL BE TRIMMED NEATLY AND SPRAYED WITH AN APPROVED ANTIDESSICANT TO PREVENT DRYING, AND THE AREA IMMEDIATELY BACK–FILLED WITH APPROPRIATE MATERIAL.
12. ROOTS OF EXISTING TREES DISTURBED BY EXCAVATION WILL BE CLEANLY PRUNED, AS DIRECTED BY THE ISA CERTIFIED ARBORIST. TOOLS MUST BE DISINFECTED AFTER PRUNING TREES AND WHEN PRUNING MANY MEMBERS OF THE SAME GENERA, TO PREVENT THE SPREAD OF DISEASE.
13. IF GRADES AROUND TREES TO BE PROTECTED ARE LIKELY TO CHANGE, PRECAUTIONS MUST BE UNDERTAKEN TO THE SATISFACTION OF THE ISA CERTIFIED ARBORIST AND THE TOWN. THESE PRECAUTIONS ARE THE RESPONSIBILITY OF THE DEVELOPER AND / OR CONTRACTOR. THESE PRECAUTIONS MAY INCLUDE DRY WELLING AND ROOT FEEDING, AND MUST BE IN ACCORDANCE WITH THE TOWN TREE PROTECTION REQUIREMENTS.
14. TREES THAT HAVE DIED OR BEEN DAMAGED BEYOND REPAIR WILL BE REPLACED BY THE CONTRACTOR AT HIS OWN EXPENSE BY TREES OF A SIMILAR SIZE AND SPECIES AND SUCH SIZE AND SPECIES AS MAY BE APPROVED BY THE ISA CERTIFIED ARBORIST OR THE TOWN.
15. ANY TREES DESIGNATED FOR REMOVAL WILL HAVE THE STUMPS COMPLETELY EXCAVATED AND REMOVED UNLESS SUCH REMOVAL WILL ADVERSELY AFFECT EXISTING TREES / ECOLOGY TO REMAIN, IN WHICH CASE TRUNKS WILL BE CUT FLUSH TO EXISTING GRADE.
16. ALL WOODY MATERIAL REMOVED WILL BE RECYCLED AS DIRECTED BY THE TOWN OF WHITBY, AND USED FOR FENCE POSTS, SAW LOGS, FIREWOOD OR WOODCHIPS WHERE APPROPRIATE. MATERIAL TO REMAIN ON THE SITE WILL BE DROPPED AND BUCKED TO A MAXIMUM 1.8m LENGTH.

THE CORPORATION OF THE TOWN OF WHITBY **PLANNING & DEVELOPMENT DEPARTMENT**

CHECKED	**GENERAL TREE PRESERVATION AND PROTECTION NOTES**	DWG. DATE: JANUARY 2021
APPROVED		REVISION No.: 002
SCALE: N.T.S		REVISION DATE: MAY. 2022
		DWG No. 702



NOTES:

1. INSTALL TREE PROTECTION SIGN ON FENCE FACING CONSTRUCTION ZONE AT 100 METER INTERVALS
2. SIGN MUST BE MOUNTED ON AT LEAST ONE SIDE OF THE FENCE
3. THE SIGN MUST BE CLEARLY VISIBLE
4. THE SIGN SHOULD BE A MINIMUM OF 40CM X 60CM, AND MADE OF WHITE COROPLAST BOARD OR EQUIVALENT MATERIAL

THE CORPORATION OF THE TOWN OF WHITBY | **PLANNING & DEVELOPMENT DEPARTMENT**

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APPROVED		REVISION No.:
SCALE: N.T.S		REVISION DATE:
		DWG No. 703

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AECOM

Appendix D

Drainage and Stormwater Management Report

This document is not an accessible document. Please contact Engineering@whitby.ca for assistance with any accessibility issues.

Final Drainage and Stormwater Management Report

Water Street Improvements between Brock Street South and South Blair Street
Municipal Class Environmental Assessment Schedule ‘C’

Town of Whitby

60591304

April 2025

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Revision History

Rev #	Revision Date	Revised By:	Revision Description
1	April 2025	Sara Esmaeili	Road drainages were updated to address the Town's comment

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Executive Summary

AECOM Canada ULC was retained by the Town of Whitby to conduct a Schedule 'C' Municipal Class Environmental Assessment (Class EA) and Preliminary Design for modifications to Water Street between Brock Street South and South Blair Street. This Class EA evaluates potential upgrades to Water Street to enhance the Whitby Waterfront corridor, support active transportation, and resolve issues related to road alignment and drainage. The study area includes institutional, commercial, industrial, and parkland uses, with the southern portion characterized by parks, parking lots, playgrounds, waterfront trails, and the Durham Regional Water Supply Plant (WSP). The northern area is predominantly commercial and light industrial, including warehouses and offices set back from the road. The western end contains a large undeveloped lot and remnants of a former railway corridor. The stormwater from Water Street discharges to Lake Ontario via existing storm infrastructure, under the jurisdiction of the Central Lake Ontario Conservation Authority (CLOCA).

A comprehensive PCSWMM modeling exercise was undertaken to assess flooding issues and evaluate stormwater management (SWM) solutions for the preferred Road Modification Plan. A 2D model was initially employed to evaluate existing conditions, given the predominance of surface runoff. For the proposed conditions, a 1D model was adopted to analyze the newly designed major and minor drainage systems, offering more efficient runtime and precise design insights.

The study reviewed surface topography and imagery to determine flow patterns. Under current conditions, stormwater from Water Street is directed to Lake Ontario through a network of ditches, sewers, and culverts, collecting runoff from both the road and external areas. Water Street experiences overtopping during 100-year storm events, particularly on the west segment, where flow moves from north to south. The overtopping is attributed to the flat, low elevation of the roadway, especially on the west.

The SWM Study and Report are designed to support the preferred Road Modification Plan, accounting for the WSP expansion, Energy Centre construction, and future developments at 220 Water Street. The proposed SWM system collects and conveys road runoff through a minor system designed for a 5-year storm event, while a major system is designed to manage runoff from both the road and external areas during a 100-year event. Road runoff will be directed into storm sewers via catch basins for the 5-year storm and roadside ditches will be maintained or reconstructed in some areas to manage external flows.

Existing subcatchments were adjusted to align with the Road Modification Plan, and catch basins were placed according to the proposed road slope (ranging from 0.48% to 4%). The major and minor drainage systems were modeled along both sides of the road, with sewer sizes and slopes designed to prevent flooding during a 5-year storm. The major system was designed to keep water within the road's gutter during larger storm events.

To evaluate the potential for road overtopping from the northwest of Water Street under the proposed conditions, the ditches were segmented and modeled in PCSWMM 1D, with adjustments to road elevations per the Road Modification Plan. The capacity of the culverts was increased to mitigate the risk of flooding. The proposed stormwater system upgrades, including upsized sewers, culverts, and an elevated road surface, are expected to eliminate the risk of spillovers on Water Street. The road runoff will be effectively managed within the minor and major drainage systems in line with the design criteria outlined in this report.

For runoff treatment, Oil and Grit Separators (OGSs) are proposed at the outlets of each road sewer, with the final design and placement to be confirmed during the detailed design phase to ensure compliance with Enhanced Level of Protection (80% TSS removal). The potential for additional green infrastructure, such as grassed swales or vegetated buffer strips, will also be considered to meet water quality standards, pending land availability and soil contamination studies.

The resilience of the stormwater system to climate change will be assessed in the detailed design phase, ensuring the infrastructure can withstand extreme weather events.

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Appendix C. Subcatchments (Existing and Proposed Conditions)
Appendix D. Proposed Roadside Ditches (Northwest of Water Street)

1. Introduction

AECOM Canada ULC was retained by the Town of Whitby (The Town), to complete Schedule 'C' Class Municipal Class Environmental Assessment Study & Preliminary Design for the modifications of Water Street between Brock Street South and South Blair Street. The Study Limit subject to this Class EA is illustrated in **Figure 1-1**.

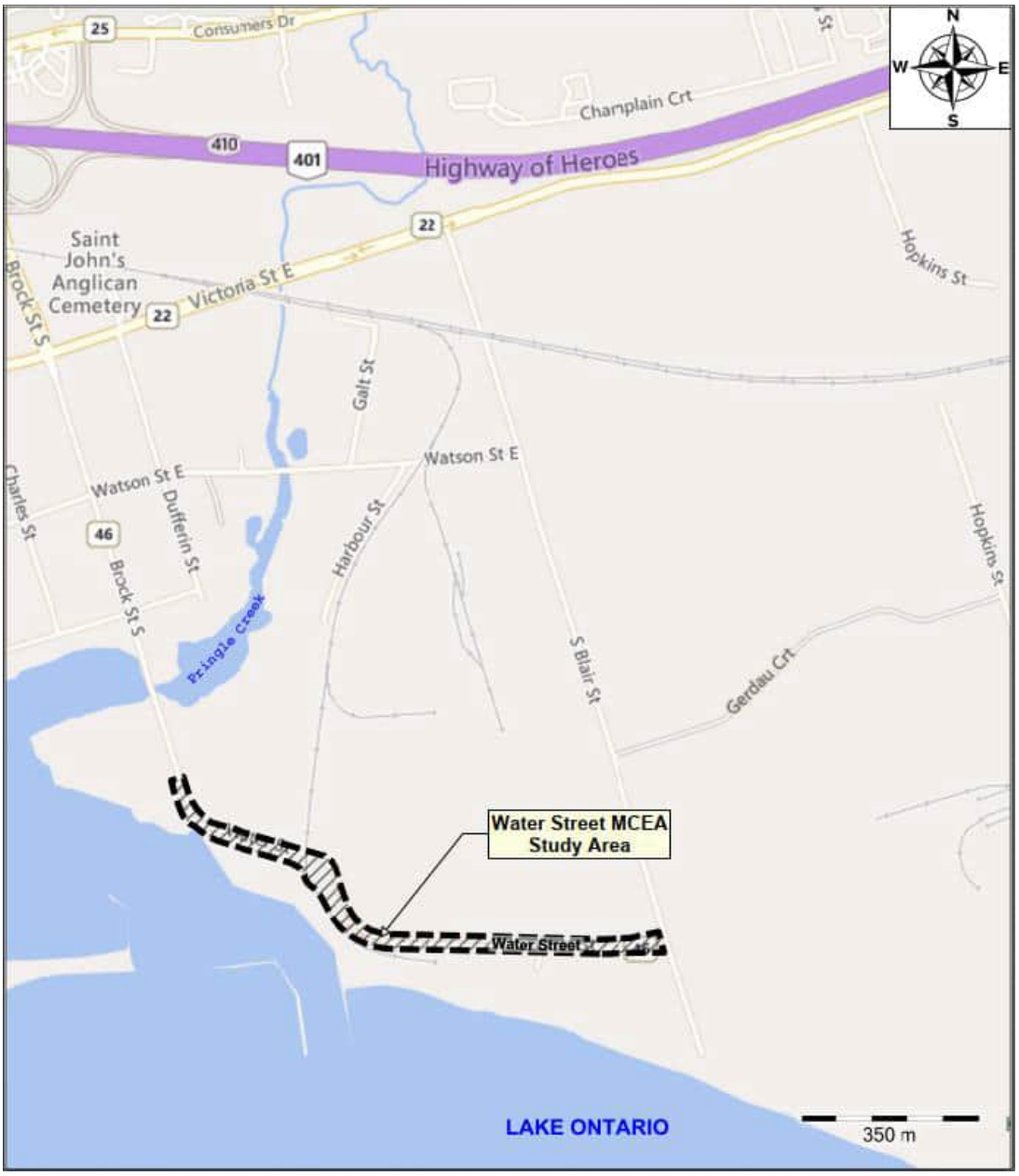


Figure 1-1: Project Study Area

This Class EA aims to evaluate potential modifications and upgrades to Water Street, with the goal of improving the Whitby Waterfront corridor. The focus is on enhancing the overall experience, supporting active transportation, and resolving issues related to road alignment and drainage. These efforts align with the Town's ongoing initiatives and collaborations to make the Whitby waterfront a top destination for residents and visitors alike.

1.1 Study Background

In the Fall of 2018, the Town of Whitby (the Town) and the Regional Municipality of Durham (the Region) initiated the Brock Street South and Water Street Schedule 'C' Municipal Class Environmental Assessment (Class EA) study aimed at investigating road modifications to Brock Street South (between Victoria Street and Front Street, and from south of the Pringle Creek Bridge to Water Street), as well as Water Street (between Brock Street South and South Blair Street). Additionally, Brookfield Residential, in partnership with the Region, commenced the Pringle Creek Bridge Schedule 'C' Class EA with the objective of improving the Pringle Creek Bridge on Brock Street South. Due to the proximity of these two studies and the effects of the Pringle Creek Bridge Class EA on the ongoing Brock Street South / Water Street project, the Town placed the Brock Street South/Water Street Class EA on hold.

Following the completion of the Pringle Creek Bridge Class EA study in 2023, the Town resumed the Class EA process for the current project; however, the project study area was reduced to include only Water Street between Brock Street South and South Blair Street, and the Town was now the sole proponent of the study. The Brock Street South component was removed so that the study could focus on Water Street.

1.2 Environmental Assessment Studies Within the Study Area

The Environmental Assessment Studies within the project area are as follows:

1.2.1 Durham Region Pringle Creek Bridge MCEA

In 2017 Brookfield Residential, in partnership with the Region initiated the Pringle Creek Bridge Schedule 'C' Municipal Class EA with the objective of improving the Pringle Creek Bridge on Brock Street South. The existing bridge was fully re-constructed in 1962 and required rehabilitation. In addition, the limited width of the creek under the bridge was causing flooding upstream. The Class EA process was completed in 2023.

1.2.2 Durham Region Whitby Water Supply Plant Expansion

In 2005, the Durham Region completed a Municipal Class Environmental Assessment study that recommended an expansion of the Whitby Water Supply Plant (WSP) on the north side of Water Street. In 2018, as a result of lower water demands and construction issues on the north side of Water Street, the Region completed an Addendum to the Whitby WSP Municipal Class EA and proposed an expansion of the facility within the existing property limits on the south side of Water Street.

In April 2023 the Region completed a second addendum to address updates to the project description including relocation of the proposed Energy Centre to 270 Water Street and a revised alignment of the waterfront trail fronting the Whitby WSP. The EA Study has been completed in accordance with the MCEA document and the amendments. The study considered what has changed in terms of project description and updated existing and future land uses. In support of the MCEA, a stormwater management (SWM) report has been completed. The findings of this study are utilized and integrated into the current EA Study of road modifications for Water Street as explained is **Section 7.1**.

1.3 Land Development Projects Within the Study Area

There are two land development projects within the study area:

1.3.1 Brookfield Residential

Brookfield Residential has proposed a predominantly residential condominium development on two parcels lands on opposite sides of Brock Street South with municipal address of 1846 and 1900 Brock Street South with areas of 6.57 and 15.74 ha respectively. The Functional Servicing Report was completed by SCS in 2017.

1.3.2 220 Water Street

An industrial development is proposed at 220 Water Street, west of South Blair Street in Whitby. The total site area is 9.87ha. The Functional Servicing and Stormwater Management Report was completed by HUSSON in 2022.

1.4 Site Description

The existing land use within the study consists of a variety of uses including institutional, commercial, industrial, and parkland. Existing land use to the south of Water Street consists of parks, parking lots, playgrounds, waterfront trails, and a Region of Durham WSP. The north side of Water Street is characterized primarily by commercial and light industrial land uses, including warehouses and low-rise office complexes situated on large lots set well back from the road. The western end of the study area includes a large undeveloped wooded lot and the remnants of a former railway corridor.

The Water Street stormwater discharges to Lake Ontario via existing storm infrastructure and falls entirely within the jurisdiction of Central Lake Ontario Conservation Authority (CLOCA).

1.5 Background Data

The following documents, reports, and drawings were reviewed to support the analysis and design of the site stormwater system for the site and to prepare this Report:

- Technical Guidelines for Stormwater Management Submissions (Central Lake Ontario Conservation,
- 2007);
- Town of Whitby Design Criteria and Engineering Standards;
- The Regional Municipality of Durham Design Specifications for Storm Drainage (2021);
- Stormwater Management Planning and Design Manual (MOE, 2003);
- Lake Ontario Shoreline Management Plan Hazard Maps (CLOCA, 2020);
- Preliminary Findings – Environmental Soil and Groundwater Investigation Water Supply Plant Expansion,
- Water Street, Whitby (SPL, 2014);
- Draft Factual Data Report on Geotechnical Investigation (AECOM,2016);
- Pringle Creek Bridge Crossing at Brock Street (SCS, 2020);
- Rowe Channel Improvement Feasibility Study (Town of Whitby/ Resilient, 2020);
- Fisheries and Ocean Canada (https://www.tides.gc.ca/C&A/network_means-eng.html, accessed 2021-
- 07-21)
- Storm sewer design sheets provided by Town of Whitby;
- Lake Park (Water Street) Storm Sewer Outfall provided by Town of Whitby (Drawing number P1);
- Water Street Contract Drawing (W-9-S-698, W-9-S-698);
- Comments/Recommendations on Preliminary Findings for Environmental Soil and Groundwater
- Investigation of the Town of Whitby Property (AECOM, 2014) and,
- Design Water Level Review for Whitby Waterfront (Shoreplan 2021).

2. Purpose & Objectives

The purpose of this Class EA is to explore possible road modifications and improvements along Water Street from Brock Street South to South Blair Street to identify opportunities to enhance the corridor experience along the Whitby Waterfront; accommodate active transportation and travel needs within the area; and address road alignment and drainage deficiencies.

The study has been conducted in accordance with the planning and design process for a Schedule 'C' project, as outlined in the Municipal Class Environmental Assessment parent document (October 2000, amended in 2007, 2011, 2015 and 2023) as prepared by the Municipal Engineers Association, approved under the Ontario Environmental Assessment Act (R.S.O. 1990, c. E.18).

The purpose of this Report is to outline design criteria as well as the preliminary stormwater management design to service Water Street in support of the preferred Road Modification Plan as proposed as part of this EA study. In preparation of this report the following assumptions are made:

- The design is supporting the ultimate road built-out including the Town of Whitby ultimate WSP build-out.
- Stormwater is discharged to Lake Ontario through existing and proposed infrastructure.

The information presented in this report includes the following:

- A description of site characteristics and the existing drainage area (i.e. land use, flow direction, etc.);
- Summary of the Road Modification Plan;
- Stormwater management opportunities and constraints;
- Water levels to be used for Lake Ontario;
- A description of the proposed SWM design;
- Technical analysis results (modeling results); and
- Hydraulic performance of the current/proposed sewer/culvert infrastructure and report any overtopping of Water Street.

3. Preferred Road Modification Plan

The preferred road plan utilizes the existing road alignment for most of the project length but implements a curve correction of 130 metres and includes two roundabouts, one on Water Street just east of Brock Street South, and another roundabout at the intersection of Water Street and South Blair Street.

The preferred cross section maintains a single traffic lane for both eastbound and westbound vehicles with two Multi-Use Paths and a two-way cycle track on the south side. The cross section of the preferred solution provides boulevard and median streetscaping opportunities. The preferred plan and cross section are shown in **Appendix A**.

To mitigate the risk of high lake water conditions over topping Water Street, to keep the surface dry for vehicles and to promote road sub-base aggregates in dry condition, the minimum crown elevation for the proposed road is 77.09 m. This was calculated using the 100-year high lake level of 75.99 m and adding a pavement structure of 0.85 m and adding 0.25 m for a 3% sub-grade slope to determine the crown elevation that would keep the sub-grade above the Lake Ontario High Water Level.

4. Design Criteria and Standards

4.1 Design Storm

The Town of Whitby IDF was adopted for this study and is accepted by CLOCA (Technical Guides for Stormwater Management, **Appendix B**). Rainfall amount based on the Town of Whitby IDF was applied. **Table 4-1** summarizes the rainfall depth and peak intensity for the design storms applied to this study area. As recommended by CLOCA, 24-hour SCS Type II design storm distribution was applied as the design storm to demonstrate peak flow control and calculate required storage volume.

Table 4-1: Design Storms

Return Period	Distribution	Duration (hr)	Peak Intensity (mm/hr)	Rainfall Depth (mm)
2-year	SCS II	24	62.54	51.10
5-year	SCS II	24	79.72	65.13
10-year	SCS II	24	91.39	74.67
25-year	SCS II	24	104.30	85.23
50-year	SCS II	24	115.90	94.69
100-year	SCS II	24	127.00	103.80

4.2 Stormwater Management Criteria

The applicable stormwater management criteria for the site development were provided by the project stakeholders including the Town of Whitby, Region of Durham, CLOCA and MECP. The criteria are summarized in **Table 4-2** below.

Table 4-2: Stormwater Management Design Criteria Summary

Criteria	Town of Whitby Design Criteria and Engineering Standard	Region of Durham: The Regional Municipality of Durham, Design Specifications for Storm Drainage (2021)	CLOCA: Technical Guidelines for Stormwater Management Submissions (2007)	Proposed Criteria
Minor System	5-year	10-year, 5-year may be considered when discharging into an existing system.	N/A	5-year
Major System	100-year less than 5-year	N/A	N/A	100-year

Criteria	Town of Whitby Design Criteria and Engineering Standard	Region of Durham: The Regional Municipality of Durham, Design Specifications for Storm Drainage (2021)	CLOCA: Technical Guidelines for Stormwater Management Submissions (2007)	Proposed Criteria
Quality Control	N/A	Varies by Site	Enhanced Level '1' Treatment, 80% SS removal	Enhanced Level '1' Treatment, 80% TSS removal
Quantity Control	N/A	Varies by Site	2-year to 100-year post-development to pre-development peak flows unless otherwise noted in Master Plans	Quantity control is not required due to the proximity of Lake Ontario.
Water Balance	N/A	N/A	Maintained or increased infiltration per pre-development condition is desirable	According to Whitby's Official Plan, the project area is located on a highly vulnerable aquifer. In light of this, further analysis of the local soil's physical and environmental conditions is recommended during detailed design at available locations. This will determine whether Low Impact Development (LID) measures to increase infiltration are appropriate, or if alternatives, such as Oil and Grit Separators (OGS), should be prioritized instead.

4.3 Lake Ontario High Water Level

The evaluation and function of the existing recipient channel, storm sewer system and ditches along Water Street are dependent upon Lake Ontario water levels. Establishment of the water levels for this evaluation and design is a key component to the modeling (pre-development condition, existing conveyance system and post-development modeling with the proposed SWM system).

Related background information and recently completed nearby project reports were reviewed to establish the appropriate lake level for downstream boundary conditions. A summary of Lake Ontario levels from various sources is listed in **Table 4-3**. All values are reported in CGVD 2013.

Table 4-3: Background Review of Lake Ontario Levels

Source	Author	Year	Lake Level	Proposed Lake Level Applied to Study
Pringle Creek Bridge Crossing at Brock Street	SCS	2020	100-Year High = 74.8 m	100-Year Lake Level=75.99m

Source	Author	Year	Lake Level	Proposed Lake Level Applied to Study
Hydraulic Assessment Technical Memo				Sensitivity Analysis at 99% Confidence Interval=76.31m
Lake Ontario Shoreline Management Plan for Central Lake Ontario Conservation Authority	CLOCA / Zuzek Inc	2021	100-Year flood level with static lake level and storm surge 75.55 m (CGVD 2013)	
Rowe Channel Improvement Feasibility Study	Town of Whitby/ Resilient	2020	Low Lake Level=74.5 m Average High Lake Level=75.2 m Extreme High Lake Level=75.97 m	
Fisheries and Ocean Canada	https://www.tides.gc.ca/C&A/network_means-eng.html	2021	Monthly Average=75.1 m Monthly High=75.45 m	
Stormwater Management Design Guideline	City of Pickering	2019	100-Year Lake Level=75.7 m	
Design Water Level Review for Whitby Waterfront Memo	Shoreplan	2021	100-Year Lake Level=75.99 m	

Design water levels were reviewed for the Whitby Waterfront in 2021 by Shoreplan. Based on that analysis, the 100-year lake level is 75.99 m. This level is the most conservative (i.e. the highest water level) of all the studies. Due to the sensitivity of the future Region's Energy Centre and the potential impact of the drainage plan on the site, a conservative Lake Ontario design water level of 75.99 m has been applied for this study.

A sensitivity analysis is to be completed at the detail design for post development conditions to account for climate change and to test compliance with the overall WSP Expansion Project's adoption of a Future Climate Design proposed within the project area.

5. Hydraulic Analysis (PCSWMM)

A modeling exercise was completed to assess the existing flooding issues on Water Street and to investigate SWM solution for the preferred Road Modification Plan. A PCSWMM model was created using a terrain created from existing survey to determine overland flow paths. Four sources of data were merged to build the existing terrain:

- Survey by J.D. Barnes June 15, 2021 – the survey extends approximately 270 m along Water Street extending down to Lake Ontario. And is bounded by the adjacent parks to the east and west. The survey focused on Water Street and the boardwalk but did not include the interior section covering the WSP Plant;
- Survey by J.D. Barnes January 14, 2019 – the survey extends is focused on Water Street from east, from S Blair St to Brock St;
- Survey by AECOM in 2016 – this survey is south of Water Street and included the WSP plant; and,
- LiDAR data from CLOCA 2018 – this is a raster dataset representing bare-earth terrain. It was used for all areas not covered by the survey data.

In evaluating the existing conditions, the stormwater system was modeled using a 2D approach since most runoff across the site is released on the surface, and the stormwater management system primarily operates overland. The goal was to assess the extent and severity of overtopping in a 2D context.

For the proposed condition, we transitioned to a 1D model. This change was made due to the implementation of a distinct major and minor drainage system, and because the 1D model offers more efficient run times.

6. Existing Stormwater Management System

6.1 Existing Flow Pattern

To determine the flow patterns, the existing surface topography in combination with google images were reviewed. Under the existing conditions, runoff drains through a series of ditches, sewers and culverts toward Lake Ontario. **Figure 6-1** demonstrate overall flows direction in the site. The stormwater system collects runoff both from the road and external areas as explained below.



Figure 6-1: Existing Stormwater Management System

6.1.1 Road Runoff

The road runoff flow patterns under the existing conditions are as follows:

6.1.1.1 Water Street West

From the west, road runoff is routed through a series of ditches and three small culverts along the north of the road before entering an underground sewer (0.375-meter diameter) at the catch basin "WestCrossingMH." This sewer runs beneath Water Street and discharges at Outfall "J9," directing the flow toward Lake Ontario.

Runoff from the south side of the road either drains overland toward Outfall "J9" or flows directly into the lake.

6.1.1.2 Water Street East

On the north, stormwater is collected and conveyed for approximately 200 meters from the South Blair Street intersection via ditches and three small culverts until it reaches a culvert located at the southeast corner of the Canada Christian College property at 300 Water Street. This culvert, extending around 175 meters with a diameter ranging from 0.375 to 0.75 meters, carries flow to the "EastCrossingMH," where the water passes beneath Water Street toward Outfall "J9" in the south, eventually discharging into Lake Ontario. Road runoff along this 175-meter stretch is collected through a series of catch basins and overland flow paths, discharging through a 500 mm culvert into the "EastCrossingMH".

Road runoff on the south, from the South Blair Street intersection to the Whitby WSP, is conveyed through a network of ditches and small culverts, which direct the water across the WSP property toward Lake Ontario. Beyond this section, runoff from the south side of the road either drains overland toward Outfall "J9" or flows directly into the lake.

6.1.2 External Runoff

The ditches and culverts along the north side of the road collect stormwater from various external sources, including wetlands, development lots, parking areas, woodlands, and vacant land. On the south side, stormwater primarily flows away from the road, moving southward. Detailed catchment characteristics for both the road and surrounding external areas are provided in **Appendix C**.

6.2 Pre-Development Peak Flow Analysis and Flooding Conditions

The PCSWMM 2D simulation results showing the flooding condition is illustrated in **Figure 6-2**. Under the existing condition, Water Street is overtopped by 100-year storm events at multiple locations. Overtopping occurs (less than 5 cm) on the east segment of the road taking place at southeast and southwest corner of 300 Water Street. Overtopping is prevalent on the west segment of the road stretching from Brock Street to the "WestCrossingMH", with flow moving from north to south, as indicated by 2D modeling results. This overtopping is primarily due to the road's relatively flat and low surface elevation in that area, which makes it more susceptible to overflow during storm events.

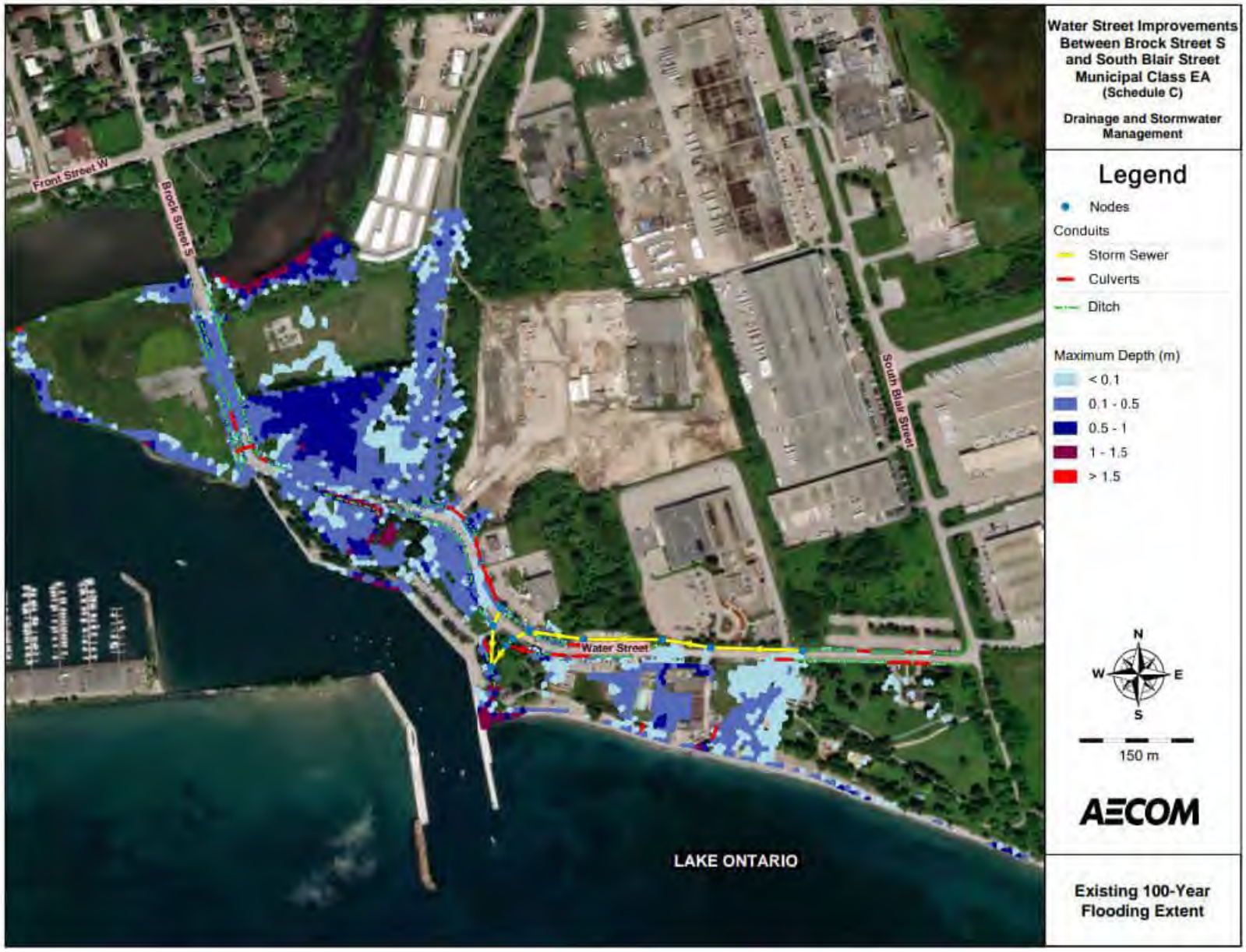


Figure 6-2: Flooding Condition under the Existing Condition

Flow analysis for the 175 m culvert (north of Water Street) and the two Water Street crossings under the existing condition are presented in **Table 6-1**.

Table 6-1: Existing Condition Peak Flow (cms) Summary for the 175 m Culvert (North of Water Street) and the Road Crossings

Return Period		5-year	100-year
Culvert/Conduit	**Size (m)**		
175 m Culvert [(1)]	0.750	0.89	0.90
Water Street East Crossing	0.750	0.98	0.97
Water Street West Crossing	0.375	0.19	0.19

[(1)] Culvert is at full capacity for 5-year and 100-year events

7. Proposed Stormwater Management System

As outlined in **Section 2**, the purpose of the Stormwater Management (SWM) Study and Report is to support the preferred Road Modification Plan in **Section 3**. The design accounts for the full buildout of the WSP expansion, the construction of the Energy Centre, and future developments at 220 Water Street (Husson 2022).

7.1 The Whitby WSP Expansion Stormwater Management Plan

Based on the Whitby WSP Expansion Stormwater Management Plan, the stormwater infrastructure north of Water Street is currently proposed to be developed in two phases, Phase 1 and Phase 2.

We understand that Phase 1 is part of the Whitby WSP Expansion Contract 3A, scheduled for construction from July 2027 to February 2030. Earlier in Phase 1, in 2008, the existing 175 m culvert north of Water Street extending from the southwest corner of the Canada Christian College property at 300 Water Street to the outfall will be upgraded to a twin box culvert (1.8 m span × 0.9 m rise) to convey stormwater to Lake Ontario. Phase 2, representing the ultimate build-out involves upsizing the remaining of the existing 175 m culvert north of Water Street to a 0.75 m sewer extending from the southeast to the southwest corner of the Canada Christian College property. As part of the WSP Expansion Phase 2 plan, a 0.45 m sewer is also proposed to be installed further east, extending from the southeast corner of the Canada Christian College property to the South Blair Street intersection. The approach of construction of the stormwater infrastructure as part of WSP Expansion project is under development and further coordination will be required through detailed design.

At the time of completing this report and the WSP expansion study, the allowable release rate for the Canada Christian College property at 300 Water Street was unknown. As a result, it has been assumed that overland flow from subcatchment E107_1 is not contained on-site but instead discharges onto the road and is collected by the twin box culvert. This assumption is conservative. Revisiting or refining this assumption could potentially reduce the size of the proposed facility

7.2 Water Street Proposed Stormwater System

The proposed site plan, road profile and typical cross sections are provided in **Appendix A**. In summary, under proposed conditions, road runoff will be collected in gutters and directed to road storm sewers through catchbasins for the 5-year storm event. Some roadside ditches will be maintained or reconstructed to address external flows. The proposed stormwater system layout is presented in **Figure 7-1**. Details are provided below:

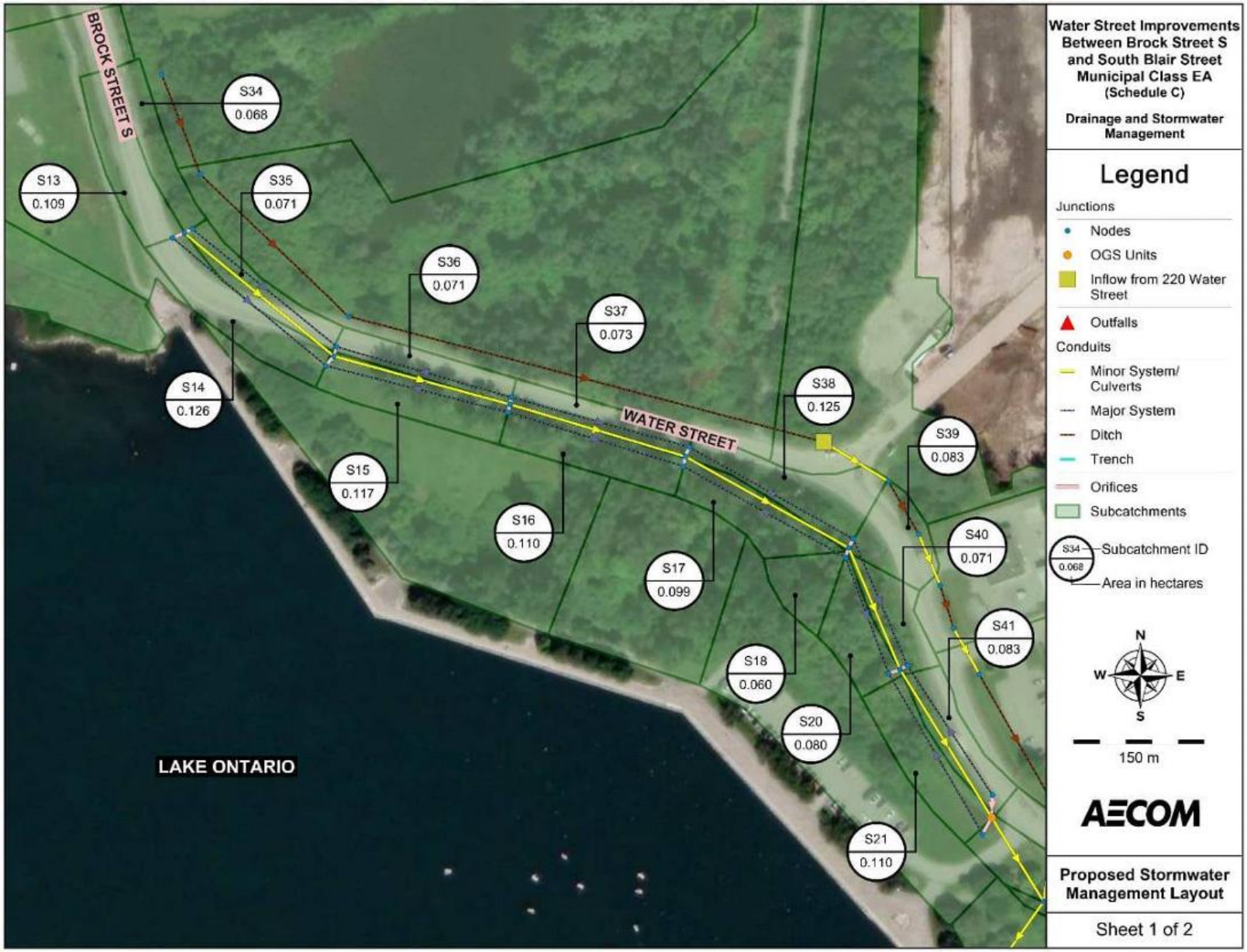


Figure 7-1: Proposed Stormwater Management System (1 of 2)

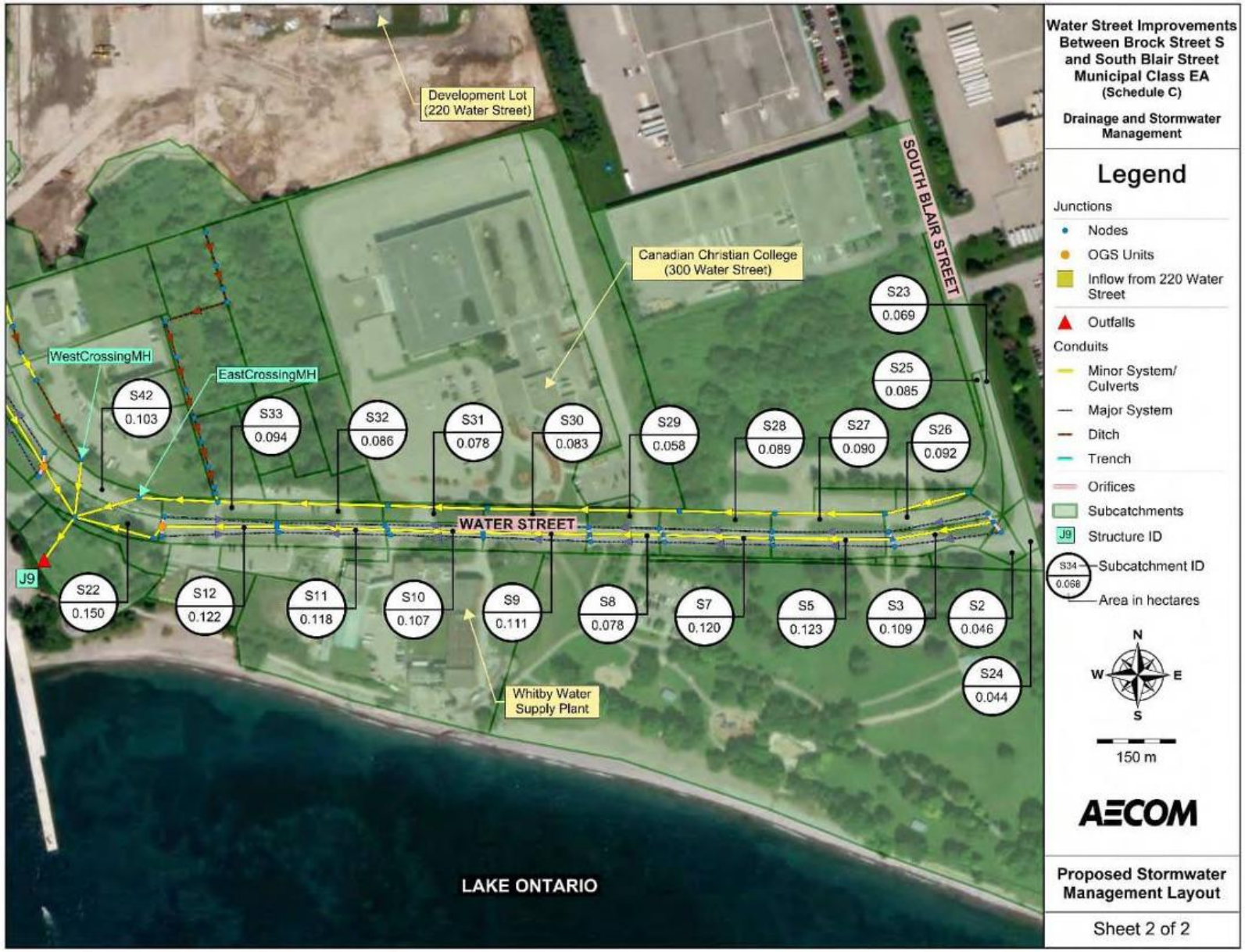


Figure 7-1: Proposed Stormwater Management System (2 of 2)

7.2.1 North of Water Street Drainage

Under the proposed Road Plan, the ditches on the north side of Water Street, from the South Blair Street intersection to the southeast corner of the Canada Christian College property at 300 Water Street, will be removed to accommodate road widening. In its place, 0.45 sewer will be installed along the new property line, to capture external runoff. This design complies with the proposed WSP Expansion Plan. A ditch inlet will be placed at the southeast corner of the Canada Christian College property to collect stormwater from external area. The 0.45 m sewer will discharge into a 0.75 m sewer, which will then connect to a twin culvert (1.8 m span x 0.9 m rise) crossing under the road, conveying stormwater to the outfall on the south side. This design aligns with the WSP Expansion Plan.

The road modifications on the west segment will not affect the existing ditches, which will be retained in their current state to manage external flows from the north of the site.

7.2.2 South of Water Street Drainage

According to the Road Modification Plans, the road widening will primarily occur toward the southern side, resulting in the burial of existing ditches and small culverts along that section. External flow into the road area is expected to be minimal, as it will originate from approximately 0.61 hectares of mostly pervious land. The road's drainage system will be designed to collect and convey this runoff. As per existing conditions, most of the runoff from the south side will be discharged into the lake, maintaining the current drainage patterns.

7.2.3 Road Drainage and Flooding Conditions

The proposed road drainage system is designed to collect and convey road runoff via a minor system capable of handling a 5-year storm event, while the major system is engineered to manage runoff from both the road and surrounding external areas during a 100-year storm event.

To assess the proposed conditions, the existing subcatchment areas were adjusted to reflect the Road Modification Plan. Considering the proposed road slope, which ranges from 0.48% to 4%, catch basins are planned to be installed every 60 to 70 meters along both sides of the road and will serve as outlets for the road's subcatchments. On the north side, 20 new subcatchments covering a total of 1.72 hectares were introduced, while the south side includes 19 subcatchments spanning 1.94 hectares. Detailed characteristics of the proposed subcatchments, including both road and external areas, are provided in **Appendix C.**

As outlined in **Section 1.3**, two property developments are situated within the project area. The first, the Brookfield development (SCS Consulting, 2017), represented by subcatchments b-1 to b-5, is not expected to impact stormwater flows on Water Street. Stormwater from this development will be retained on-site or diverted away, and the existing runoff from these lands was accounted for in the analysis. The second development, located at 220 Water Street (HUSSON, 2022), spans 9.87 hectares. According to the stormwater management report, the maximum stormwater release rate from this site is 1.27 m^3/s. To ensure compliance, a baseline flow rate at 1.27 m^3/s is applied to node J56 to control inflow from the development area. Stormwater release rate from the WSP development site is equivalent to the predevelopment condition.

The road's major and minor drainage systems were modeled along the road. Based on the proposed road profile (**Appendix A**), road runoff will be contained within gutters on each side, directing flow to the road drainage sewers via catch basins. For a 5-year storm event, the runoff will be conveyed through the sewers, while in a 100-year storm event, the gutters will handle the excess flow beyond the capacity of the 5-year event. The catch basins were modeled as orifices, following OPSD 400.020 standards. Sewers were sized to eliminate flooding within the minor system during a 5-year storm. The road gutter and curb design follow OPSD 600.010. The major system was designed to prevent flow spread beyond the gutter, with a maximum allowable flow depth of 15 cm.

To accommodate the placement of the sewer system relative to the road subgrade, a 0.8 m vertical clearance has been included beneath the road elevation. In shallow conditions, to maintain positive drainage and the required clearance to the top of the road, shallow box culverts will be used for the minor system to convey flow underground.

To evaluate the potential for road overtopping from the northwest of Water Street under the proposed conditions using PCSWMM 1D, the ditches in this area were modeled in segments, with each segment's transects reflecting the corresponding surface elevations. These details are provided in **Appendix D**. The road elevation was adjusted in the transects to account for the raised surface, increasing by 1.5 meters between road alignment 1+870 and 1+930, and by 1 meter from 1+930 to the Water Street West crossing. The capacity of the ditches was analyzed to ensure they can accommodate flow without overtopping the road. Additionally, the capacity of three existing culverts was increased to mitigate flooding. A flow analysis was conducted for the twin culvert (north of Water Street) and the two crossings under post-development conditions using PCSWMM, with peak flows presented in **Table 7-1**.

Table 7-1: Proposed Condition Peak Flow (cms) Summary for the Main Culvert (North of Water Street) and the Road Crossings

Return Period		5-year	100-year
Culvert/Conduit	**Size (m)**		
Twin Culvert (west of 300 Water Street)	Twin 0.9 x 1.8 m	1.876	3.128
Water Street East Crossing	Twin 0.9 x 1.8 m	1.875	3.127
Water Street West Crossing	0.90 m	1.479	1.548

7.2.4 Road Runoff Treatment

At locations where the roadway drainage area is less than 2.0 ha, oil-grit separator units can be used for water quality control. To achieve an Enhanced Level of Protection (80% TSS removal) for water quality, the use of OGSs alone will need to be supplemented with grassed swales or vegetated buffer strips. Given the limited available land, the precise location and design of these additional measures will be confirmed during the detailed design stage. Other additional mitigation measures such as catchbasin inserts (e.g. CB Shield) can be considered in series with each OGS to achieve the Enhanced Level of water quality target. The final number of OGS units and specifications depend on flow rates and the type of OGS selected. The configuration will be finalized during the detailed design phase.

7.3 Climate Change to Impact

Extreme weather events resulting from Climate Change can overwhelm the stormwater management infrastructure and lead to flooding. As part of this project the drainage infrastructure within the corridor will be improved and reconstructed to address flooding concerns in the area. The system resiliency to climate change as outlined in the criteria is to be completed during the detail design.

8. Proposed Stormwater Management Plan

The post-development plan for the site will include additional impervious area that results in more site runoff compared to pre-development. This impacts the quality and quantity of stormwater runoff from the site into the downstream system. Therefore, the following stormwater management strategy is proposed to mitigate the potential impacts of development of the site.

8.1 Water Quantity

Quantity control is not required due to the proximity of Lake Ontario. Runoff will drain uncontrolled to the proposed infrastructure. With the implementation of the proposed storm sewer, no flooding is expected on Water Street.

8.2 Water Quality

The water quality target for the project is the long-term average removal of 80% Total Suspended Solids (TSS) on an annual loading basis from runoff leaving the site. This will be achieved through a "treatment train" approach such as enhanced grassed swales and vegetated buffer strips, where feasible, and by using standalone measures such as OGS unit combined with pre-treatment measures. However, due to identified soil and groundwater contamination on-site, promotion of infiltration is not recommended as part of a treatment train approach for the site. One OGS unit is proposed for each segment of the road before discharging to the twin box culvert. The detailed assessment of the proposed facilities is to be completed as part of the detail design for site plan development.

8.3 Water Balance

Water balance is generally achieved by constructing LID facilities for infiltration, where practical. As described in **Section 4.2**, infiltration is not recommended for the site due to the pre-development condition of existing soil and groundwater contamination. It is understood that contaminated groundwater is from an unconfirmed upgradient property, and as such cannot be remediated on this property alone. Therefore, LID features that reintroduce precipitation into the groundwater system or promote water balance are not recommended for the site as they could worsen existing conditions.

9. Conclusions and Recommendations

The findings of the analysis are summarized as follows:

- The applicable stormwater design criteria from stakeholders (Town of Whitby, Region of Durham, and CLOCA) was reviewed and proposed standards to be used for this study, were established;
- As flooding within the Region's proposed Energy Centre building can be considered to have a "high" consequence level, a Lake Ontario design HWL of 75.99 m was selected. A sensitivity analysis of the Lake water elevation is to be completed during the detail design;
- Further studies required to determine if incorporating LIDs or other measures to encourage infiltration is feasible due to soil and groundwater contamination potentials;
- The proposed twin box culvert originated from the WSP Expansion Project, along with upsized sewers/culverts and the raised road surface elevation, effectively eliminates the risk of spillovers on Water Street; and
- The road runoff is effectively managed within the minor and major drainage systems designed in this Report, adhering to the established criteria.

Sara Esmaeili, PhD, PEng

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Appendix E

Stage 1 Archaeological Assessment

This document is not an accessible document. Please contact Engineering@whitby.ca for assistance with any accessibility issues.

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Sep 22, 2025

Sherri Pearce (P316)
AECOM
410 - 250 York London ON N6A 6K2

RE: Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Stage 1 Archaeological Assessment Water Street Improvements between Brock Street South and South Blair Street, Municipal Class Environmental Assessment (MCEA) Part of Lots 25, 26, and 27, Broken Front Concession, Geographic Township of Whitby, Ontario County, now the Corporation of Whitby, Regional Municipality of Durham, Ontario ", Dated Aug 19, 2025, Filed with MCM on Aug 28, 2025, MCM Project Information Form Number P316-0533-2023, MCM File Number 0009941

Dear Sherri Pearce (P316):

This office has reviewed the above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18.[1] This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 *Standards and Guidelines for Consultant Archaeologists* set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.

The report documents the assessment of the study area as depicted in Figure 2: Study Area in Detail and Figure 8: Results of the Stage 1 Archaeological Assessment of the above titled report and recommends the following:

AECOM's Stage 1 background study and subsequent field review for the Water Street MCEA study area has determined that the potential for the recovery of pre- and post-contact Indigenous and 19th century Euro-Canadian archaeological resources within the study area is high, within areas not subject to previous disturbance. Based on these findings, the following recommendations are made:

A Stage 2 archaeological assessment is recommended for all areas of potentially undisturbed land within the study area limits addressed within the scope of this report.

The Stage 2 archaeological assessment for areas retaining archaeological potential must be conducted by a licensed archaeologist and must follow the requirements set out in the Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011). Based on current conditions within the study

area, the Stage 2 assessment should consist of:
A standard test pit survey at 5 m intervals is to be conducted in all areas that will be impacted by the project where ploughing is not feasible (e.g., woodlots, overgrown areas, manicured lawns).

Areas of previous disturbance (e.g., roadways, parking lots, and building footprints) are considered to possess low to no archaeological potential. These areas have been photo documented and are not recommended for further assessment.

Areas that have been photo documented as low lying and wet are not recommended for further assessment.

For the areas within the study area subject to previous archaeological assessments that have been cleared of archaeological concern, as these assessments meet current MCM Standards and Guidelines, no further assessment of these areas are recommended.

The MCM is asked to accept this report into the Ontario Public Register of Archaeological Reports thereby concurring with the recommendations presented herein. As further archaeological assessment is required, archaeological concerns for the Water Street MCEA Study Area, as Part of Lots 25, 26, and 27, Broken Front Concession, Geographic Township of Whitby, Ontario County, now the Corporation of Whitby, Regional Municipality of Durham (Durham Region), Ontario, have not been fully addressed.

Please note that this archaeological assessment report has been written to meet the requirements of the MCM's Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011); however, properties that are subject to archaeological assessment are not considered cleared for ground disturbance activities until the associated report has been reviewed and accepted by the MCM. In order to maintain compliance with the MCM and the Ontario Heritage Act (1990), no ground disturbing activities are to occur until the proponent and approval authority receive a formal letter from the MCM stating that the recommendations provided herein are compliant and that the report has been accepted into the MCM register of archaeological reports.

Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment are consistent with the ministry's 2011 *Standards and Guidelines for Consultant Archaeologists* and the terms and conditions for archaeological licences. This report has been entered into the Ontario Public Register of Archaeological Reports. Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require any further information regarding this matter, please feel free to contact me.

Sincerely,

Nicole Brandon
Archaeology Review Officer

cc. Archaeology Licensing Officer
Horace Look,Town of Whitby
TBD TBD,Ministry of the Environment and Climate Change

[1] *In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate,*

incomplete, misleading or fraudulent.

AECOM

Stage 1 Archaeological Assessment

Water Street Improvements between Brock Street South and South Blair Street, Municipal Class Environmental Assessment (MCEA)
Part of Lots 25, 26, and 27, Broken Front Concession, Geographic Township of Whitby, Ontario County, now the Corporation of Whitby, Regional Municipality of Durham, Ontario

Corporation of the Town of Whitby

Licensee: Sherri Pearce, MA
License: P316
PIF Number: P316-0533-2023
Project number: 60591304

August 19, 2025

Delivering a better world

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The information, data, recommendations and conclusions contained in the Report (collectively, the “Information”):

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- represents AECOM’s professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to AECOM which has not been independently verified;
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- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement; and
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Quality information

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Revision	Revision date	Details	Authorized	Name	Position

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Executive Summary

AECOM Canada ULC (AECOM) was retained by the Town of Whitby to conduct a Stage 1 archaeological assessment as part of the Municipal Class Environmental Assessment (MCEA) for the road modifications and improvements along Water Street between Brock Street South and South Blair Street. The MCEA study is being undertaken to identify opportunities to enhance the corridor experience along the Whitby Waterfront, accommodate future parking, active transportation, and travel demands within the area, and address road alignment and drainage deficiencies. The study area is located within what is historically known as Part of Lots 25, 26, and 27, Broken Front Concession, Geographic Township of Whitby, Ontario County, now the Corporation of Whitby, Regional Municipality of Durham (Durham Region), Ontario (**Figure 1** and **Figure 2**).

The Stage 1 archaeological assessment was conducted in support of the Schedule 'C' Water Street MCEA and was triggered by the requirements of the *Environmental Assessment Act* in accordance with subsection 11(1) (Government of Ontario 1990a). This project is subject to the requirements of the *Ontario Heritage Act* (Government of Ontario 1990b) and the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

All archaeological consulting activities were conducted under PIF number P316-0533-2023, issued to Professional Archaeologist Sherri Pearce, MA (P316) in accordance with the Ministry of Citizenship and Multiculturalism's (MCM) *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

AECOM's Stage 1 background study and subsequent field review for the Water Street Improvements MCEA study area has determined that the potential for the recovery of pre- and post-contact Indigenous and 19th century Euro-Canadian archaeological resources within the study area is high, within areas not subject to previous disturbance. **Based on these findings, the following recommendations are made:**

A Stage 2 archaeological assessment is recommended for all areas of potentially undisturbed land within the study area limits addressed within the scope of this report (**Figure 8**).

The Stage 2 archaeological assessment for areas retaining archaeological potential must be conducted by a licensed archaeologist and must follow the requirements set out in the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Based on current conditions within the study area, the Stage 2 assessment should consist of:

A standard test pit survey at 5 m intervals is to be conducted in all areas that will be impacted by the project where ploughing is not feasible (e.g., woodlots, overgrown areas, manicured lawns).

Areas of previous disturbance (e.g., roadways, parking lots, and building footprints) are considered to possess low to no archaeological potential. These areas have been photo documented and are not recommended for further assessment.

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For the areas within the study area subject to previous archaeological assessments that have been cleared of archaeological concern, as these assessments meet current MCM Standards and Guidelines, no further assessment of these areas are recommended (**Figure 8**).

The MCM is asked to accept this report into the Ontario Public Register of Archaeological Reports thereby concurring with the recommendations presented herein. **As further archaeological assessment is required, archaeological concerns for Water Street Improvements MCEA Study Area, as Part of Lots 25, 26, and 27, Broken Front Concession, Geographic Township of Whitby, Ontario County, now the Corporation of Whitby, Regional Municipality of Durham (Durham Region), Ontario, have not been fully addressed.**

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1. Project Context

1.1 Development Context

AECOM Canada ULC (AECOM) was retained by the Town of Whitby to conduct a Stage 1 archaeological assessment as part of the Schedule C Municipal Class Environmental Assessment (MCEA) for the road modifications and improvements along Water Street between Brock Street South and South Blair Street. The MCEA study is being undertaken to identify opportunities to enhance the corridor experience along the Whitby Waterfront, accommodate future parking, active transportation, and travel demands within the area, and address road alignment and drainage deficiencies. The study area is located within what is historically known as Part of Lots 25, 26, and 27, Broken Front Concession, Geographic Township of Whitby, Ontario County, now the Corporation of Whitby, Regional Municipality of Durham (Durham Region), Ontario (**Figure 1** and **Figure 2**).

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All archaeological consulting activities were conducted under PIF number P316-0533-2023, issued to Professional Archaeologist Sherri Pearce, MA (P316) in accordance with the Ministry of Citizenship and Multiculturalism's (MCM) *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

1.1.1 Objectives

The objective of the Stage 1 background study is to document the archaeological and land use history and present conditions within the study area. This information will be used to evaluate in detail the study area's archaeological potential, which will support recommendations for the Stage 2 survey for all parts of the study area, as well as recommending appropriate Stage 2 survey strategies. The results of the Stage 1 archaeological assessment presented in this report are drawn in part from:

- The MCM's Archaeological Sites Database (ASDB) for a listing of registered archaeological sites within a 1 km radius of the study area;
- Reports of previous archaeological assessments within 50 m of the study area;
- Recent and historical maps of the study area;
- Archaeological management plans or other archaeological potential mapping where available;
- Municipal Registers of listed heritage properties and properties designated under the *Ontario Heritage Act* (Government of Ontario 1990b), commemorative plaques, and monuments identified in or near the study area; and,
- An optional property inspection of the study area.

This Stage 1 archaeological assessment has been conducted to meet the requirements of the MCM's *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

1.2 Historical Context

Years of archaeological research and assessments in southern Ontario have resulted in a well-developed understanding of the historic land use in the Town of Whitby from the earliest Indigenous peoples to the more recent Euro-Canadian settlers and farmers. **Table 1** provides a breakdown of the cultural and temporal history of past occupations in the Town of Whitby.

Table 1: Cultural Chronology for the Town of Whitby

Archaeological Period	Time Period	Characteristics
Early Paleo	9000-8400 BC	Fluted points Arctic tundra and spruce parkland environment caribou hunters Gainey, Barnes, Crowfield
Late Paleo	8400-8000 BC	Holcombe, Hi-Lo and Lanceolate points Slight reduction in territory size
Early Archaic	8000-6000 BC	Notched and bifurcate base points Growing populations Nettling
Middle Archaic	6000-2500 BC	Stemmed and Brewerton Points Laurentian Development, Otter Creek, Stanley/Neville Increasing regionalization
Late Archaic	2000-1800 BC	Narrow Point Environment similar to present Lamoka
	1800-1500 BC	Broad Point Large lithic tools Genesee, Adder Orchard, Perkiomen
	1500-1100 BC	Small Point Introduction of bow Crawford Knoll
Terminal Archaic	1100-950 BC	Hind Points, Glacial Kame Complex Earliest true cemeteries
Early Woodland	950-400 BC	Meadowood Points Introduction of pottery
Middle Woodland	400 BC – AD 500	Point Peninsula Long distance trade networks Increased sedentism
	AD 550-900	Princess Point Cord wrapped stick pottery Introduction of corn horticulture
Late Woodland	AD 900-1300	Agricultural villages Glen Meyer
	AD 1300-1400	Increased longhouse sizes Uren, Middleport
	AD 1400-1650	Territoriality Neutral Iroquois/Wendat
Contact Period Indigenous	AD 1600-present	Mixture of Indigenous and European goods Early written records and treaties Ojibwa, Odawa, Mississisaugas, Six Nations
Contact Period Settler	AD 1600-present	Early written records and treaties European goods and colonial settlement

Notes: Taken from Ellis and Ferris (1990)

The following sections provide a detailed summary of the archaeological cultures that have settled in the vicinity of the study area. As Chapman and Putnam (1984) illustrate, the modern physiography of southern Ontario is largely a product of events of the last major glacial stage and the landscape is a complex mosaic of features and deposits produced during the last series of glacial retreats and advances prior to the withdrawal of the continental glaciers from the area. Southwestern Ontario was finally ice free by 12,500 years ago. With continuing ice retreat and lake regressions the land area of southern Ontario progressively increased while barriers to the influx of plants, animals, and people steadily diminished (Karrow and Warner 1990). The land within Ontario County has been extensively utilized by pre-contact Indigenous people who began occupying southwestern Ontario as the glaciers receded from the land, as early as 11,000 YA.

1.2.1 Pre-Contact Indigenous Settlement

The Paleo Period

In this area the first human settlement can be traced back to 11,000 YA; these earliest well-documented groups are referred to as Paleo which literally means old or ancient. During the Paleo period people were non-agriculturalists who depended on hunting and gathering of wild food, they moved their encampments on a regular basis to be in the locations where these resources naturally became available, and the size of the groups occupying any particular location would vary depending on the nature and size of the available food resources (Ellis and Deller 1990). The picture that has emerged for the early and late Paleo is of groups at low population densities who were residentially mobile and made use of large territories during annual cycles of resource exploitation.

The Archaic Period

The next major cultural period following the Paleo is termed the Archaic, which is broken temporally into the Early, Middle, and Late Archaic periods. There is much debate on how the term Archaic is employed; general practice bases the designation off assemblage content as there are marked differences in artifact suites from the preceding Paleo and subsequent Woodland periods. As Ellis *et al.* (1990) note, from an artifact and site characteristic perspective the Archaic is simply used to refer to non-Paleo manifestations that pre-date the introduction of ceramics. Ellis *et al.* (1990) stress that Archaic groups can be distinguished from earlier groups based on site characteristics and artifact content.

Early Archaic sites have been reported throughout much of southwestern Ontario and extend as far north as the Lake Huron Basin region and as far east as Rice Lake (Deller *et al.* 1986). A lack of excavated assemblages from southern Ontario has limited understandings and inferences regarding the nature of stone tool kits in the Early Archaic and tool forms other than points are poorly known in Ontario; however, at least three major temporal horizons can be recognized and can be distinguished based on projectile point form (Ellis *et al.* 1990). These horizons are referred to as Side-Notched (*ca.* 8,000-7,700 BC), Corner-Notched (*ca.* 7,700-6,900 BC), and Bifurcated (*ca.* 6,900-6,000 BC) (Ellis *et al.* 1990). Additional details on each of these horizons and the temporal changes to tool types can be found in Ellis *et al*. (1990).

The Middle Archaic period (6,000-2,500 BC), like the Early Archaic, is relatively unknown in southern Ontario. Ellis *et al.* (1990) suggest that artifact traits that have come to be considered as characteristic of the Archaic period as a whole, first appear in the Middle Archaic. These traits include fully ground and polished stone tools, specific tool types including banner stones and net-sinkers, and the use of local and/or non-chert type materials for lithic tool manufacture (Ellis *et al.* 1990).

The Late Archaic begins around approximately 2,000 BC and ends with the beginning of ceramics and the Meadowood Phase at roughly 950 BC. Much more is known about this period than the Early and Middle Archaic and a number of Late Archaic sites are known. Sites appear to be more common than earlier periods, suggesting some degree of population increase. True cemeteries appear and have allowed for the analysis of band size, biological relationships, social organization, and health. Narrow and Small point traditions appear as well as tool recycling wherein points were modified into drills, knives, end scrapers, and other tools (Ellis *et al.* 1990). Other tools including serrated flakes used for sawing or shredding, spokeshaves, and retouched flakes manufactured into perforators, gravers, micro-perforators, or piercers. Tools on coarse-grained rocks such as sandstone and quartz become common and include hammerstones, net-sinkers, anvils, and cobble spalls. Depending on preservation, several Late Archaic sites include bone and/or antler artifacts, which likely represent fishing toolkits and ornamentation. These artifacts include bone harpoons, barbs or

hooks, notched projectile points, and awls. Bone ornaments recovered have included tubular bone beads and drilled mammal canine pendants (Ellis *et al.* 1990).

Throughout the Early to Late Archaic periods the natural environment warmed, and vegetation changed from closed conifer-dominated vegetation cover, to the mixed coniferous and deciduous forest in the north and deciduous vegetation in the south that we see in Ontario today (Ellis *et al.* 1900). During the Archaic period there are indications of increasing populations and decreasing size of territories exploited during annual rounds, fewer moves of residential camps throughout the year and longer occupations at seasonal campsites, continuous use of certain locations on a seasonal basis over many years, increasing attention to ritual associated with the deceased, and long range exchange and trade systems for the purpose of obtaining valued and geographically localized resources (Ellis *et al.* 1990).

The Woodland Period

The Early Woodland period is distinguished from the Late Archaic period primarily by the addition of ceramic technology, which provides a useful demarcation point for archaeologists but is expected to have made less difference in the lives of the Early Woodland peoples. The settlement and subsistence patterns of Early Woodland people shows much continuity with the earlier Archaic with seasonal camps occupied to exploit specific natural resources (Spence *et al.* 1990). During the Middle Woodland well-defined territories containing several key environmental zones were exploited over the yearly subsistence cycle. Large sites with structures and substantial middens appear in the Middle Woodland associated with spring macro-band occupations focussed on utilizing fish resources and created by consistent returns to the same site (Spence *et al.* 1990). Groups would come together into large macro-bands during the spring-summer at lakeshore or marshland areas to take advantage of spawning fish; in the fall inland sand plains and river valleys were occupied for deer and nut harvesting and groups split into small micro-bands for winter survival (Spence *et al.* 1990). This is a departure from earlier Woodland times when macro-band aggregation is thought to have taken place in the winter (Ellis *et al.* 1988; Granger 1978).

The period between the Middle and Late Woodland period was both technically and socially transitional for the ethnically diverse populations of southern Ontario and these developments laid the basis for the emergence of settled villages and agriculturally based lifestyles (Fox 1990). The Late Woodland period began with some groups shifting settlement and subsistence patterns, involving an increasing reliance on corn horticulture. Corn may have been introduced into southwestern Ontario from the American Midwest as early as 600 AD. However, it did not become a dietary staple until at least three to four hundred years later. The first agricultural villages in southwestern Ontario date to the 10th century A.D. Unlike the riverine base camps of the Middle Woodland period, Late Woodland sites are located in the uplands, on well-drained sandy soils.

In the Late Woodland period, between 900-1300 AD, villages tended to be small settlements with nearby camps and hamlets that served as temporary spaces for hunting game and gathering resources outside of the villages. At this time, small village sites were characterized by the presence of longhouses with villages being occupied considerably longer than later in the Woodland period. Villages tended to be moved when nearby soils had been depleted by farming and conveniently collected firewood grew scarce. The Jesuits reported that the Wendat moved their villages once every 10-15 years as they relied less heavily on corn than did later groups, and since their villages were much smaller, there was less demand on nearby resources. Small amounts of corn appear to have been a dietary component at this time; however, archaeological evidence suggests that its role was not as a dietary staple at this time but was possibly supplemental in nature.

Between 1300 and 1400 AD, village sizes grew significantly, resulting in the development of complex community political systems. This period also marks the emergence of fully developed horticulture, including the cultivation of corn, beans, and squash. Additionally, changes in ceramic styles may reflect increasing levels of inter-community communication and integration. Iroquoian groups lived side by side with the more nomadic Algonquin speakers, notably the Odawa (or "Ottawa") and Ojibway in southwestern Ontario. Because Iroquoian and Algonquin groups interacted frequently it can be difficult to differentiate them archaeologically. Circa 1650, following the immense impacts of European diseases and associated warfare Petun, Wendat and Neutral populations were driven out of their historic homelands by the movement of the Five Nations Iroquois.

By the beginning of the fourteenth century, larger fortified village sites were often cleared to accommodate the cultivation of corn, beans, and squash as a result of an increasing reliance on horticulture. Longhouses also

continued to grow in size until 1450 AD when a decrease in house length is observed. This decrease in house length may be partially attributed to large scale drops in population size associated with the introduction of European diseases.

1.2.2 Post-Contact Period Settlement

The post-contact Indigenous occupation of southern Ontario was heavily influenced by the dispersal of Iroquoian speaking peoples, including the Six Nations of the Iroquois – Mohawk, Cayuga, Oneida, Seneca, Onondaga, and Tuscarora. This was followed by the return of Algonkian speaking groups from northern Ontario, who had temporarily retreated to their wintering grounds in the mid-1600s to avoid warfare and disease as a result of colonial settlement. Algonkian speaking Ojibway (Chippewa), Odawa (Ottawa), and Pottawatomi, known as the Three Fires Confederacy, remained in their traditional territory that covered a vast area of southern Ontario as well as eastern Michigan.

As European settlers encroached on their territory the nature of Indigenous population distribution, settlement size and material culture changed. Despite these changes it is possible to correlate historically recorded villages with archaeological manifestations and the similarity of those sites to more ancient sites reveals an antiquity to documented cultural expressions that confirms a long historical continuity to systems of Indigenous ideology and thought (Ferris 2009).

It is important to note that, when discussing the historical documentation of the movement of Indigenous people, what has been documented by early European explorers and settlers represents only a very small snap-shot in time. Documentation of where Indigenous groups were residing during European exploration and settlement is restricted to only a very short period of time and does not reflect previous and subsequent movements of these groups. This brief history does not reflect the full picture of the pre- or post-contact period occupation of Indigenous groups or cultures. As such, relying on historic documentation in regard to Indigenous occupation and movement across the landscape can lead to misinterpretation. For example, noting the movement of Indigenous groups into an area may incorrectly suggest to the reader that these groups had not occupied the area previously; however, this is not the case. It is clear from Indigenous oral histories and the archaeological record that pre-contact Indigenous populations were extremely mobile and not tied to any one specific area. Over the vast period of time prior to the arrival of Europeans, Indigenous groups, language families, and cultures were fluid across the landscape.

The study area falls within the limits of the original Johnson-Butler Purchase (“Gunshot Treaty”), entered into in 1788 by the Crown and the Anishinaabe. The treaty begins on the east side of the Toronto Purchase and continues eastward along the north shore of Ontario where it meets with the Crawford Purchase at the Bay of Quinte. The north side is bordered by the southern edge of Treaty No. 20 (Rice Lake Purchase). This treaty was sometimes referred to as the “Gunshot Treaty” because it covered the land as far back from the lake as a person could hear a gunshot. By way of treaties, the Crown had gained title to most of Ontario by the end of the 20th century; however, land in the Ottawa area and Muskoka regions had not been surrendered. The lack of a treaty for this land meant that the Chippewa and Mississauga inhabiting these areas were not receiving anything in exchange for the use of their lands from European settlers who had already moved into the area (Surtees 1986). As a result, the Chippewa and Mississauga called for an investigation by the federal government regarding compensation and land rights.

In 1916, investigations into the question of land rights resulted in the finding that not all lands had been fully ceded through previous treaty allotments and that new treaties were required to broker the lands in question. Two new treaties, known as the Williams Treaties, were signed in 1923. The first Williams treaty was signed between the Crown and Chippewa (Chippewa of Rama, Christian Island, and Georgina Island) between October 31 and November 7 and the second was signed with the Mississauga (Mississauga of Alderville, Scugog Lake, Mud Lake, and Rice Lake) between November 15 and 21 1923. The territory covered by the Williams Treaties stretches from the northern shore of Lake Ontario to Lake Nipissing and overlaps with several previous treaties including the original Johnson-Butler Purchase (1788) (CINAC 2023) (**Figure 3**).

The full text of the Williams Treaties is included below:

> ARTICLES OF A TREATY made and concluded on the thirty-first day of October, in the year of Our Lord One thousand nine hundred and twenty-three, between His Most Gracious Majesty, George the Fifth, of the United Kingdom of Great Britain and Ireland, King, Defender of the Faith, Emperor of India, by His Commissioners: Angus Seymour Williams,

of the City of Ottawa, in the Province of Ontario, Esquire, Barrister-at-law, and Departmental Solicitor of the Department of Indian Affairs; Robert Victor Sinclair, of the said City of Ottawa, Esquire, One of His Majesty's Counsel, learned in the law, and Uriah McFadden, of the City of Sault Sainte Marie, in the said Province, Esquire, one of His Majesty's Counsel learned in the law; the said Angus Seymour Williams, Chairman of the said Commission, representing the Dominion of Canada, and the said Robert Victor Sinclair and Uriah McFadden, representing the Province of Ontario, of the One Part; and the Members of the Chippewa Tribe, inhabiting, as members of Bands thereof, reserves at Christian Island, Georgina Island and Rama, all in the Province of Ontario, by their Chiefs and Headmen, of the Other Part.

WHEREAS, the Chippewa Tribe above described, having claimed to be entitled to certain interests in the lands in the Province of Ontario, hereinafter described, such interests being the Indian title of the said tribe to fishing, hunting and trapping rights over the said lands, of which said rights His Majesty through His said Commissioners, is desirous of obtaining a surrender, and for such purpose has appointed the said Commissioners, with power on behalf of His said Majesty, to enquire into the validity of the claims of the said tribe, and, in the event of the said Commissioners determining in favour of the validity thereof, to negotiate a treaty with the said tribe for the surrender of the said rights upon the payment of such compensation therefor as may seem to the said Commissioners to be just and proper:

AND WHEREAS the said Commissioners, having duly made the said enquiry, have determined in favour of the validity of the said rights.

AND WHEREAS the Indians belonging to the said tribe, having been duly convened in council, at the respective places named hereunder, and having been requested by the said Commissioners to name certain chiefs and headmen to be authorized on their behalf to conduct negotiations with the said Commissioners for a surrender of the said rights and to sign a treaty in respect thereof and to become responsible to His Majesty for the faithful performance by the said tribe and by the respective bands thereof inhabiting the said reserves, of such obligations as shall be assumed by them under such treaty, the said Indians have therefore appointed for the purpose aforesaid the several chiefs and headmen who have subscribed to this treaty:

AND WHEREAS the said Commissioners, acting under the powers in them reposed as aforesaid, have negotiated the present treaty with the said tribe:

NOW THEREFORE THIS TREATY WITNESSETH that the said tribe and the Indians composing the same, occupying as members of bands the said reserves, by their chiefs and headmen, duly authorized thereunto, as aforesaid, do hereby cede, release, surrender and yield up to the government of the Dominion of Canada for His Majesty the King and His Successors forever, all their right, title, interest, claim, demand and privileges whatsoever, in, to, upon, or in respect of the lands and premises described as follows, that is to say:

FIRSTLY: All that parcel of land situate in the Province of Ontario and described as commencing on the northeasterly shore of Georgian Bay at that mouth of the French River which forms the boundary between the District of Parry Sound and the District of Sudbury; thence southerly and easterly along the shores of Georgian Bay to that point on Matchedash Bay where the land included in the surrender of the eighteenth day of November, 1815, of record in Book of Surrenders, Volume I, is reached, and including all the islands in the Georgian Bay waters in which the Indians making this treaty have any interest; thence along the easterly limit of the said lands purchased in 1815 to the Narrows between Lake Couchiching and Lake Simcoe; thence due east across the said Narrows; thence southerly and easterly following the east side of the Narrows and the north shore of Lake Simcoe to the foot of McPhee Bay off the northerly part of Lake Simcoe; thence by a straight line easterly to a point thirty-three miles north of the northwest corner of the Township of Rawdon measured along the division line between the Counties of Hastings and Peterborough, which point is the most western northwest corner of the parcel surrendered on the twenty-eight day of November, 1822 (noted in Volume I of the Book of Surrenders as number twenty-seven and one-quarter, 27¼); thence following the north and west boundaries of the last mentioned parcel to the Ottawa River; thence westerly along the interprovincial boundary to the mouth of the Mattawa River; thence westerly by the waters of Mattawa River, Talon Chute and Talon Lake, Turtle Lake, and Trout Lake to the westerly point of Trout Lake; thence to the shore of Lake Nipissing at North Bay; thence by the north shore of Lake Nipissing to the French River; thence by those waters along the division line between the Districts of Parry Sound and Sudbury to the place of commencement: Excepting thereout and therefrom those lands which have already been set aside as Indian Reserves. The parcel hereby surrendered contains seventeen thousand, six hundred square miles, more or less.

SECONDLY: All that parcel of land situate in the Province of Ontario and described as parts of the Counties of Northumberland, Durham, Ontario and York, commencing at the point where the easterly limit of that portion of the lands said to have been ceded in 1787, which was confirmed on the first day of August, 1805, of record as number thirteen in Volume I of the Book of Surrenders, intersects the northerly shore of Lake Ontario; thence northerly along the said easterly and northerly limits of the confirmed tract to the Holland River; thence northerly along the Holland River and along the westerly shore of Lake Simcoe and Kempenfelt Bay to the Narrows between Lake Couchiching and Lake Simcoe; thence southeasterly along the shores of Lake Simcoe to the Talbot River; thence easterly along the Talbot River to the boundary between the Townships of Victoria and Ontario; thence southerly along that boundary to the northwest angle of the Township of Darlington; thence along the northerly boundary line of the Townships of Darlington, Clarke, Hope and Hamilton to Rice Lake; thence along the southern shore of said lake to River Trent along the River Trent to the Bay of Quinte; thence westerly and southerly along the shore of the Bay of Quinte to the road leading to Carrying Place and Wellers Bay; thence westerly along the northern shore of Lake Ontario to the place of beginning; excepting thereout and therefrom those lands which have already been set aside as Indian reserves. The land hereby conveyed contains two thousand, five hundred square miles more or less.

AND ALSO all the right, title, interest, claim, demand and privileges whatsoever of the said Indians, in, to, upon or in respect of all other lands, situate in the Province of Ontario to which they ever had, now have, or now claim to have any right, title, interest, claim, demand or privileges, except such reserves as have heretofore been set apart for them by His Majesty the King.

TO HAVE AND TO HOLD the same to His Majesty the King and His Successors forever:

AND THIS TREATY FURTHER WITNESSETH that in consideration of the aforesaid surrender, His Majesty, through His said Commissioners, hereby agrees, upon the execution of a treaty similar to this treaty by the Mississauga tribe inhabiting as members of bands, reserves at Rice Lake, Mud Lake, Scugog Lake and Alderville, in the Province of Ontario, to pay to each member of the said Chippewa tribe, being also a member of one of the said bands, the sum of twenty-five dollars, to be paid through the Indian agents for the respective bands, within a reasonable time after the execution of the said treaties, and a further sum of -233,375.00 dollars - to be administered for the said tribe by His Majesty's Department of Indian Affairs under and pursuant to the provisions of the Indian Act, Revised Statutes of Canada, 1906, Chapter 43 and its amendments: Making together the sum of two hundred and fifty thousand dollars.

AND THE UNDERSIGNED chiefs and headmen, on their own behalf and on behalf of all the Indians whom they represent, do hereby solemnly covenant, promise and agree to strictly observe this treaty in all respects and that they will not, nor will any of them, nor will any of the Indians whom they represent, molest or interfere with the person or property of anyone who now inhabits or shall hereafter inhabit any portion of the lands covered by this treaty, or interfere with, trouble, or molest any person passing or travelling through the said lands or any part thereof, and that they will assist the officers of His Majesty in bringing to justice and punishment any Indian, party to this treaty, who may hereafter offend against the stipulations hereof or infringe the laws in force in the lands covered hereby:

AND IT IS FURTHER UNDERSTOOD that this treaty is subject to an agreement dated the day of April, A.D. 1923, made between the Dominion of Canada and the Province of Ontario, a copy of which is hereto attached.

IN WITNESS WHEREOF, His Majesty's said Commissioners and the said chiefs and headmen have hereunto set their hands and seals at the places and times hereinafter set forth, in the year herein first above written.

SIGNED AND SEALED at Georgina Island on the thirty-first day of October, A.D. 1923, by His Majesty's Commissioners and the undersigned chiefs and headmen in the presence of the undersigned witnesses, after first having been interpreted and explained.

Witness:	A.S. Williams, Chairman
	R.V. Sinclair.
Kathleen Moodie	Uriam McFadden.
W.J. Kay.	Charles Big Canoe
	J. Sam York
	Thos. Big Canoe

Enoch Big Canoe.

SIGNED AND SEALED at Christian Island on the third day of November, A.D. 1923, by His Majesty's Commissioners and the undersigned chiefs and headmen in the presence of the undersigned witnesses, after first having been interpreted and explained.

Witness:	A.S. Williams, Chairman
	R.V. Sinclair.
Kathleen Moodie	Uriam McFadden.
C.J. Picotte.	Henry Jackson
	Frank Copegog.
	Albert Monague.
	John S. Hawk.
	Edward W. King.
	Robert Marsden. Jerry D. Monague.
	Walter Simons.
	Solomon Mark
	William Phillip Assance

SIGNED AND SEALED at Rama on the seventh day of November, A.D. 1923, by His Majesty's Commissioners and the undersigned chiefs and headmen in the presence of the undersigned witnesses, after first having been interpreted and explained.

Witness:	A.S. Williams, Chairman
	R.V. Sinclair.
Kathleen Moodie	Uriam McFadden.
C.J. Picotte.	Henry Jackson
	Frank Copegog.
	Albert Monague.
	John S. Hawk.
	Edward W. King.
	Robert Marsden. Jerry D. Monague.
	Walter Simons.
	Solomon Mark
	William Phillip Assance

SIGNED AND SEALED at Rama on the seventh day of November, A.D. 1923, by His Majesty's Commissioners and the undersigned chiefs and headmen in the presence of the undersigned witnesses, after first having been interpreted and explained.

Witness:	A.S. Williams, Chairman
	R.V. Sinclair.
Kathleen Moodie	Uriam McFadden.
J. Anderson	Alder York Chief
	J.P. Stinson.
	David Simcoe.
	Samuel Snake.
	Edward W. King.
	Alfred Williams.
	John Bigwin.

MEMORANDUM OF AGREEMENT made this - of April, 1923,

BETWEEN:
The Government of the Dominion of Canada, acting herein by the Honourable Charles Stewart, Superintendent General of Indian Affairs,

of the first part,

AND

The Government of the Province of Ontario, acting herein by the Honourable Beniah Bowman, Minister of Lands and Forests for the said Province,

of the other part

WHEREAS certain Indians of the Chippewa and Mississauga tribes claim that the said tribes were and are entitled to a certain interest in lands in the Province of Ontario to which the Indian title has never been extinguished by surrender or otherwise, the said lands being described as parts of the counties of Renfrew, Hastings, Haliburton, Muskoka, Parry Sound and Nipissing, and being bounded on the south and east by the lands included in the surrenders of the Indian title made on the 18th of November, 1815, the 5th of November, 1818, and November, 1822; on the north by the Ottawa and Mattawa Rivers and Lake Nipissing, and on the west by the lands included in the surrender of the Indian title made in 1850, known as the Robinson-Huron surrender, and by the Georgian Bay, the area in question including about 10,719 square miles.

AND WHEREAS a departmental enquiry made by the Department of Indian Affairs indicates that the said claim has such probable validity as to justify and require further investigation, and if found valid to be satisfied on such just and fair terms as may be settled by a treaty of surrender.

NOW THEREFORE THIS AGREEMENT made in pursuance of certian statutes of Canada and of the Province of Ontario, both intituled "an Act for the settlement of certain questions between the Governments of Canada and Ontario respecting Indian Lands," the Statute of Canada having been passed in the 54th and 55th years of the reign of Her Majesty Queen Victoria and chaptered 5, and the statute of Ontario in the 54th year of Her Majesty's said reign and chaptered 3.

WITNESSETH THAT the Governments of Canada and of the Province of Ontario have agreed as follows:

1. The Government of Canada will, pursuant to Part I of the Enquiries Act, R.S.C., 1906, c. 104, and amendments, appoint three persons as commissioners to enquire into the validity of the claim of the Chippewa and Mississauga Indians aforesaid, and will empower the said commissioners, in the event of their determining in favour of the validity of the said claim, to negotiate a treaty with the said Indians for the surrender of the said lands upon payment of such compensation as may be fixed by such treaty.

2. Of the three commissioners so named, one shall be selected by the Government of Canada, who shall be Chairman of the Commission, and the remaining two shall be selected by the Minister of Lands and Forests for the Province of Ontario and notified to the Superintendent General of Indian Affairs.

3. The question of the validity of said claim may be determined by any two of the said Commissioners and it shall be necessary that at least two of them of whom the chairman shall be one shall concur in any treaty which may be negotiated.

4. The expenses of the said commission, including the remuneration and expenses of the commissioners and any expenses incurred for securing the attendance of witnesses or otherwise, shall be payable by the Government of Canada, but the rates of remuneration of each of the commissioners selected by the Minister of Lands and Forests for the Province of Ontario shall be agreed upon between him and the Superintendent General of Indian Affairs before the Constitution of the Commission.

5. In the event of the commissioners negotiating a treaty with the Indians the compensation to be paid to such Indians shall be payable to the Dominion of Canada by the Province of Ontario from time to time in accordance with the terms of the treaty of surrender, and shall be applied by the Dominion of Canada in accordance with the said terms.

6. In the event of provision being made by such treaty of surrender for the setting apart of reserves for the Indians, the Dominion of Canada will bear the expense to be incurred in the location and survey thereof, and the Province of Ontario will concur in the setting apart of such reserves.

7. All such reserves shall be administered by the Dominion of Canada for the benefit of the band or bands of Indians to which each may be allotted; portions thereof may, upon their surrender for the purpose by the said band or bands, be sold, leased or otherwise disposed of by letters patent under the Great Seal of Canada, and the proceeds of such sale, lease or other disposition applied for the benefit of such band or bands, provided, however, that in the event of the band or bands to which any such reserve has been allotted becoming extinct, or if for any other reason such reserve or such portion thereof as remains undisposed of is declared by the Superintendent General of Indian Affairs to be no longer required for the benefit of the said band or bands, the same shall thereafter be administered by and for the benefit of the Province of Ontario, and any balance of the proceeds of the sale or other disposition of any portion thereof then remaining under the control of the Dominion of Canada shall, so far as the same is not still required to be applied for the benefit of the said band or bands of Indians, be paid to the Province of Ontario, together with accrued unexpended simple interest thereon.

IN WITNESS WHEREOF these presents have been signed by the parties thereto.

Signed and Delivered on behalf of the Government of Canada by the Honourable Charles Stewart, Superintendant General of Indian Affairs, in the presence of (Sgd.) W.J. Pratt.

(Sgd) Chas. Stewart

(Sgd) Beniah Bowman

Signed and Delivered on behalf of the Government of the Province of Ontario by the Honourable Benish Bowman, Minister of Lands and Forest for the said Province, in the presence of (Sgd.) W.C. Cain

During the signing of the treaties, the seven Anishinaabe Nations involved did not have legal representation and the details of the Williams Treaties were dictated by the Government of Ontario rather than negotiated. Not only were large tracts of land ceded to the Crown, the treaties also surrendered hunting and fishing rights in Anishinaabe traditional territory and restricted these rights to on-reserve lands only (Surtees 1986). The signatories of the Williams Treaties had not realized they would be relinquishing their rights to hunting and fishing territories as this had never been part of the historic treaties, nor was it included in the written texts. As a result, rights to land use in traditional territory that is covered by the Williams treaties have been the subject of ongoing legal disputes between Chippewa and Mississauga descendants of the signatories and the federal and provincial governments. In 2018, a proposed settlement was reached between the seven Anishinaabe Nations and the government to resolve the long standing treaty dispute. Ontario and Canada proposed to provide $1.1 billion in compensation to the seven nations, recognize hunting and fishing rights, and grant new land to the communities (CIRNAC 2018).

1.2.3 19th Century and Municipal Settlement

Ontario County

The original County of Ontario was formed in 1792 as part of the Eastern District and included the island on the St. Lawrence River. In 1800, this county was dissolved and the islands were re-assigned to the nearest mainland counties. The second Ontario County was created in 1851 from the eastern portion of York County (Armstrong 2004). Ontario County originally housed nine townships – Brock, Mara, Rama, Pickering, Reach, Scott, Thorah, Uxbridge, and Whitby (J.H. Beers and Co. 1877). A number of villages were also incorporated as separate municipalities in the County after its formation, including Port Perry in 1871, Uxbridge in 1872, Cannington in 1878, and Beaverton in 1884. The Village of Pickering was incorporated as a Village in 1953. In 1973, the area of Ontario County south of the Trent Severn Waterway, along with half of adjacent Durham County to the east, was amalgamated into what is now the Regional

Municipality of Durham. The remaining portion of Ontario County to the north was transferred to Simcoe County and Ontario County was dissolved (Armstrong 2004).

Geographic Township of Whitby and the Town of Whitby

Whitby Township was surveyed in 1792 and was originally known as Township No.8 of the Lake Shore Townships until it was re-named the Township of Whitby after a small English seaport town in North Yorkshire (Gardiner 1899). Surveyors utilized the single-front system of lot and concession organization, where long, thin lots measuring 200 acres in size were arranged in single tiers between concession-line roads (Harris and Warkentin 2000, p.123). The Township of Whitby East was later separated from Whitby proper in 1857 and was dissolved in 1974 when it was amalgamated with the City of Oshawa, becoming part of the present-day Regional Municipality of Durham.

The initial settlement of Whitby Township began at the end of the 18th century with the first recorded settlers arriving sometime between 1788 and 1794. The historic road network involved a grid pattern of concession roads and side roads. The main east-west road running through the township was Dundas Street, which was first opened in 1799 as part of the Danforth Road that connected Toronto to the lower Trent River. The main north-south street was Brock Street, which connected Whitby to Port Perry and the northern townships of Ontario County (D.R. Poulton 2015).

By 1805, Whitby had a population of 104; however, population growth had stagnated as much of the lands were included in large grants of 1000 or more acres that were granted to absentee landowners. Almost all of the settlers in the township at this time were located within the first three surveyed concessions. It was not until after the War of 1812 that Whitby experienced a significant increase in population (D.R. Poulton 2015). Average farm sizes were decreased as it became more and more common to subdivide existing farms rather than clear new lands for the influx of settlers (D.R. Poulton 2015).

In the early 19th century, John Scadding, a friend of Lieutenant Governor John Graves Simcoe, founded Port Windsor, a settlement in the harbour of Windsor Bay (Whitby Harbour), one of the best natural harbours along Lake Ontario. This early settlement, now known as Port Whitby, became an important port for shipping lumber and grains across Canada and into the United States and Britain. Shipping exports were transported to Port Whitby using Centre Road (now Brock Street). Centre Road was originally made of wooden planks and intersected Kingston Road to the north, a main 19th century transportation route between Toronto and Kingston.

19th Century Land Use and Settlement of the Study Area

The study area falls on Lots 25, 26, and 27, Broken Front Concession along the east site of Whitby Harbour (Windsor Bay). The 1860 Tremaine map (**Figure 4**) and 1877 J.H. Beers historic atlas map (**Figure 5**) of Whitby Township were reviewed to determine the presence of 19th century settlement features within the study area as the presence of historic features elevates the potential for the recovery of 19th century archaeological resources.

By 1860, Port Whitby was a well-developed settlement stretching south of Dundas Street to the harbour. Present-day roads that were in use by 1860 include Victoria Street East, Watson Street, Dufferin Street, Front Street, Charles Street, Brock Street South, and Water Street. The study area falls along historic Water Street (formerly Centre Road). Not only was Brock Street used to transport exports to Whitby Harbour in the 19th century, it was also a main artery connecting Port Whitby to the developing Town of Whitby to the north. The Grand Trunk Railway had also been constructed through the south end of Whitby Township, north of the study area. By 1877, the Whitby, Port Perry & Lindsay Railway had been constructed to accommodate the growing shipping industry. With the exception of historic transportation routes, no structures are illustrated immediately adjacent to, or within, the study area boundaries in either the 1860 or 1877 maps. J.B. Warren and L. Hayden are named in the southern half of Lot 25 on the 1860 map, falling within the eastern portion of the study area (**Figure 4**). The 1860 map also depicts an area of marsh lands falling within the southwestern portion of the study area south of Water Street. No one is named in any of the lots in the 1877 J.H. Beers map (**Figure 5**).

Whitby harbor was created by the construction of a riprap breakwater stretching across the bay. Construction of the breakwater began in 1843 and concluded in 1846 and resulted in the construction of a basin between two piers approximately 250 feet apart (76 m) and a depth of 14 feet (4.5 m) (Mansfield 1899). The first lighthouse was constructed in 1844 on the west pier but it was soon replaced by a larger octagonal lighthouse in 1857. This wooden lighthouse would remain in use on the west pier for 101 years before it was removed in 1958 and taken to a nearby

farm. Following the removal of the wooden lighthouse, metal structures were built as a replacement on the east pier and a signal light has remained there in some form since (Anderson 2021).

During the mid-20th century Whitby Harbour was the home of an Imperial Oil Terminal, located directly inside the mouth of the harbour. The location of the Terminal roughly corresponds to the area of marsh depicted in the 1860 Tremaine map (**Figure 4**). Images 1-3 in **Table 2** below show the changes to the harbour infrastructure and heavy development within the study area boundaries. Image 1 shows the harbour as of 1920; the original stone pumphouse is present as of this date, located south of Water Street. To the north of Water Street, the image shows that the area was open water at that time. Image 2 dates to 1954 and is an aerial photo of the harbour; the Imperial Oil Terminal, located on the south side of Water Street, is present as of this date. A 1959 aerial provides a closer look at the extent of the Terminal and existing conditions at that time; the area to the north of Water Street still appears to be comprised of somewhat low and wet/marsh land.

Table 2: Whitby Harbour Aerial Photography

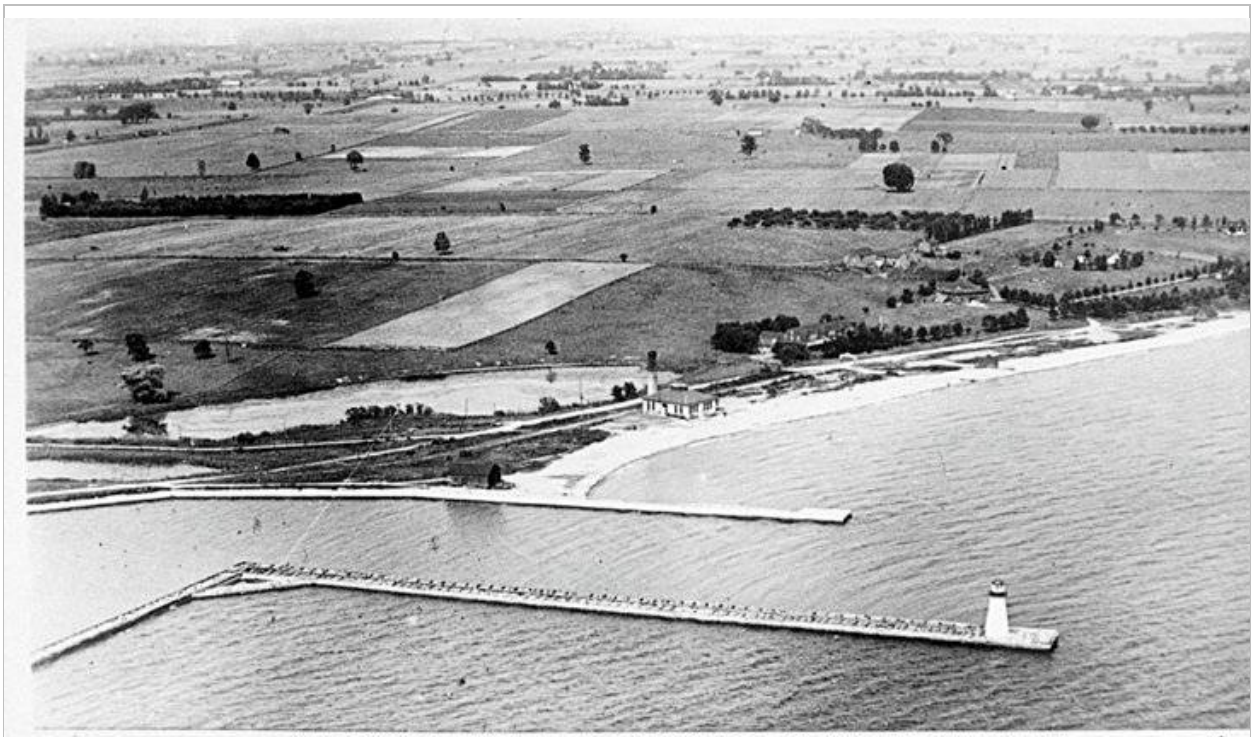


Image 1: 1920 Aerial photograph of Whitby Harbour showing study area (Whitby Archives 1920)

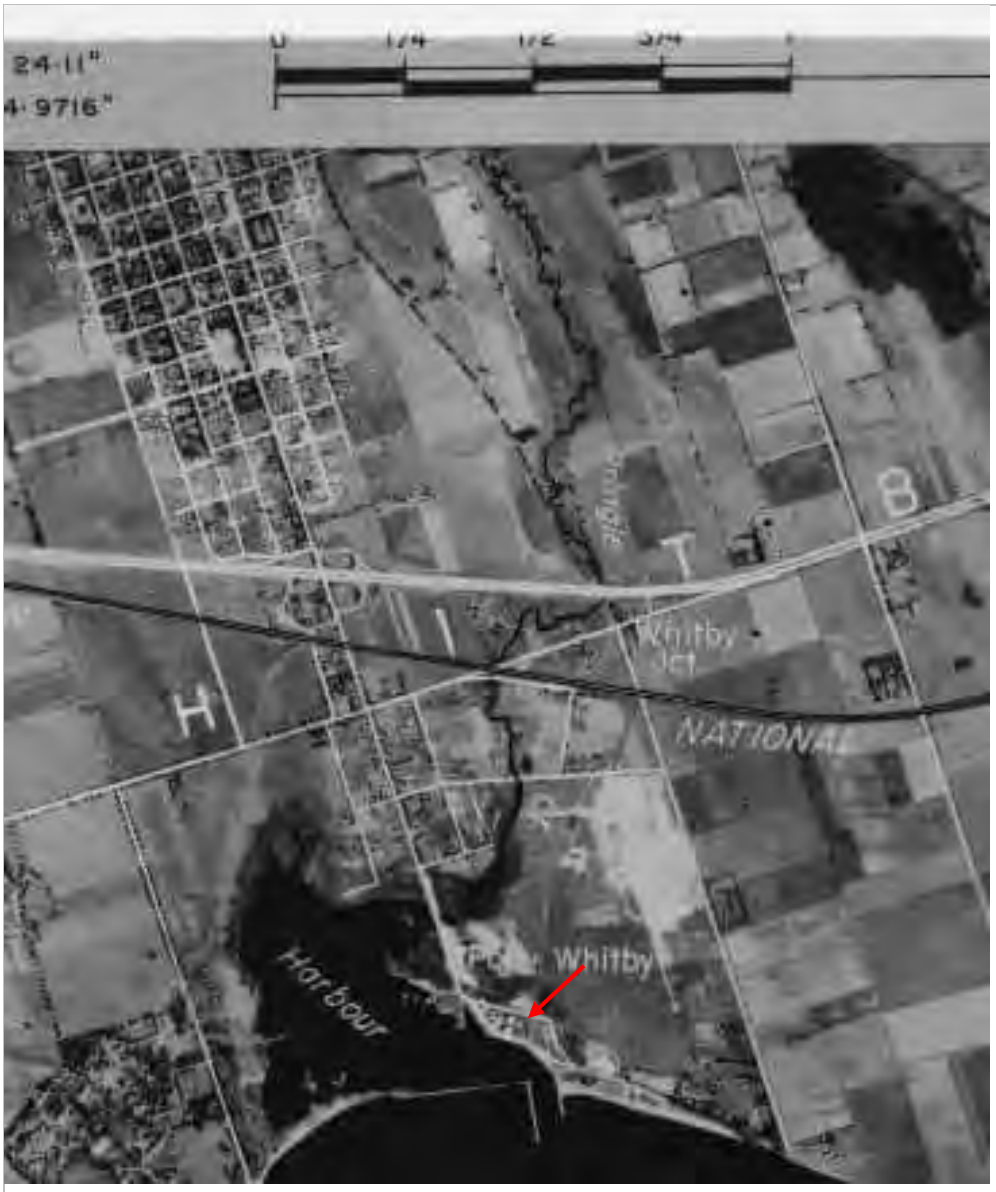


Image 2: 1954 Aerial photograph of Whitby Harbour showing Imperial Oil terminal within study area as indicated by red arrow (University of Toronto Libraries 1954)



Image 3: 1959 Aerial photograph of Whitby Harbour showing Imperial Oil terminal within study area (Whitby Archives 1959)

It should be noted that not all features of interest, particularly farmhouses and smaller homesteads, were mapped systematically as this would have been beyond the intended scope of the Ontario historical atlas series. In addition, given that atlases were funded by subscription, preference with regard to the level of detail included was given to subscribers. As such, the absence of structures or other features on historic atlas maps does not preclude the presence of historic features at the time the area was surveyed.

Heritage Properties

The presence of listed heritage properties within and in close proximity to the study area indicates elevated potential for the presence of 19th century archaeological resources. A review of the Town of Whitby Designated Heritage Properties Register was completed to determine the presence of any heritage properties or historically significant sites within or in close proximity to the study area. This search resulted in the identification of one registered heritage property, the Waterworks Pump House located at 269 Water Street. The Waterworks Pump House, built in 1904 and operational until 1978, remains as a roofless structure now housing a beer garden for a local brewery. The Ontario Heritage Trust online Plaques Guide did not return any results for the presence of heritage plaques in the general area (i.e., Whitby, Port Whitby, Water Street).

1.2.4 Natural Environment

The modern physiography of Southern Ontario is largely a product of events of the last major glacial stage, the Wisconsin and Late Wisconsin stages (ca. 25,000-10,000 BC). The landscape of Ontario County is made up of a complex arrangement of features and deposits produced during the last series of glacial advances and retreats by the Simcoe Lobe and Ontario Lobe of the North American Laurentide ice sheets prior to the withdrawal of the glacier from Southern Ontario (Ellis and Ferris 1990). Those features and deposits that were formed by glacial action are represented by till plains, end moraines, and drumlins.

The study area is located within the Iroquois Plain physiographic region of southern Ontario (Chapman and Putnam 1984:190) (**Figure 6**). This region is a lowland bordering Lake Ontario which extends around the western part of Lake Ontario, from the Niagara River to the Trent River (Chapman and Putnam 1984:190). Approximately 13,000 years ago, at the end of the last ice age, the St. Lawrence River was blocked by an ice sheet, resulting in the formation of Glacial Lake Iroquois, an enlargement of present-day Lake Ontario. The melting of the ice sheet resulted in the significant lowering of the Lake to its present level (Larson and Schaetzl 2001). The study area would have been inundated by Glacial Lake Iroquois until the lake levels receded. There are two main soil types identified within the study area: Bondhead loam in the eastern portion; and Schomberg clay loam in the western portion.

The single most important environmental feature necessary for extended human occupation is natural water sources. As such, proximity to water is regarded as a useful index for the determination of potential for the presence of archaeological resources. Water Street runs immediately adjacent to Lake Ontario, which served as an important pre- and post-contact transportation route as well as sources of potable water and natural resources. These natural environmental characteristics would have provided an ideal environment for both temporary and permanent settlement throughout the pre-and post-contact periods.

Given the overall drainage of the area, and the proximity to the watercourses, these environmental characteristics would have provided an ideal environment for both temporary and permanent settlement throughout the pre-and post-contact periods. These water sources would have served as important pre- and post-contact transportation routes as well as sources of potable water and riverine resources. During the 19th and 20th centuries, rapid deforestation resulted in significant land clearance and over time, the once diverse forest life and wide range of tree species and natural resources would have also been depleted as agricultural and modern residential and commercial development continued. Over the course of the 19th century, the study area would have been made up of agricultural land just outside of the rapidly expanding municipality along historically surveyed road allowances. As a result of continuing development, this portion of southern Ontario is almost completely deforested today.

1.2.5 Previous Archaeological Work

To inform the current Stage 1 archaeological assessment and further establish the archaeological context of the study area, a search of the MCM's Past Portal was conducted by AECOM to determine if any previous archeological work had been completed within the current study area, within 50 m of the study area boundaries, and/or relevant to the study area. These reports are detailed below in **Table 3** and illustrated in **Figure 7** and **Figure 8**. **Figure 7** shows the location of the previous assessments relative to the current study area. Where the previous assessments overlap the current study area, the relevant recommendations from the assessments are indicated in **Figure 8**.

Table 3: Archaeological Reports within, within 50 m, and/or relevant to the Study Area

Year	Title	Author	PIF # or License #
2003	*The Stage 1 Archaeological Assessment of the Potential Expansion Areas at the Whitby Water Supply Plant Site, Town of Whitby, Durham Region*	Archaeological Assessments Limited (AAL)	P013-026-2003
2004	*The Stage 2 Archaeological Assessment of the Proposed Expansion Areas at the Whitby Water Supply Plant Site, Town of Whitby, Durham Region*	AAL	P013-058-2004

2007	*Revised: Stage 1 Archaeological Assessment of the Brookfield Home's Whitby Harbour Lands, within Part of Lots 26&27, Broken Front Concession & Part of the Road Allowance between Lots 26&27, Broken Front Concession, Town of Whitby, Regional Municipality of Durham, Ontario*	Archaeological Services Inc. (ASI)	P049-227-2007
2017	*Report on the Stage 1-2 Archaeological Assessment on Part of Lots 26 and 27, Broken Front, Town of Whitby, Regional Municipality of Durham, Historic County of Durham, Geographic Township of Whitby, Ontario*	This Land Archaeology Inc. (TLAI)	P379-0145-2017 P379-0148-2017
2018	*Report on the Stage 2 Archaeological Assessment On Part of Lots 26 and 27, Broken Front, Town of Whitby, Regional Municipality of Durham, Historic County of Durham, Geographic Township of Whitby, Ontario*	TLAI	P379-0202-2018
2023	*Stage 1 & 2 Archaeological Assessment Whitby Small Craft Harbour Proposed Sediment Remediation Project, Gordon Street, Part of Lots 26, 27, and 28, Broken Front Concession, Town of Whitby, Regional Municipality of Durham, Ontario*	Archaeological Consultants Canada	P1208-0039-2021

In 2003, Archaeological Assessments Limited (AAL) conducted a Stage 1 assessment of a roughly four hectare (ha) property that may be subject to impacts by the proposed expansion of the Town of Whitby's Water Supply Plant. The subject property was located on both sides of Water Street between Brock Street South and South Blair Street, along the north shore of Lake Ontario east of the Port Whitby Harbour, in the Town of Whitby, Ontario. The Stage 1 assessment determined that much of the property had been previously disturbed, mainly relating to the existing water supply plant and parking lot; however, it also determined that approximately 55%, or 2.2 ha of the property consisted of relatively undisturbed lands and retained archaeological potential. As such, a Stage 2 assessment was recommended for the undisturbed portion of the subject property (AAL 2003). The Stage 1 assessment area lies immediately adjacent and overlaps a portion of the current assessment area.

In 2004, AAL conducted the follow up Stage 2 assessment for the proposed expansion of the Town of Whitby's Water Supply Plant. The Stage 2 assessment involved a test pit survey of the undisturbed lands at a 5 m interval. The test pit survey did not result in the discovery of any archaeological locations or sites and no further archaeological assessment was recommended (AAL 2004). The Stage 2 assessment area lies immediately adjacent and overlaps a portion of the current assessment area.

In 2007, Archaeological Services Inc. (ASI) conducted a Stage 1 archaeological assessment for a proposed residential development within the Town of Whitby, Ontario. The assessment area included two parcels of land on either side of Brock Street South around Pringle Creek Bridge. The west parcel was roughly 6.35 ha in size, while the east parcel measured roughly 2.67 ha, for a total area of 9.02 ha. The results of the assessment determined that the eastern parcel was formerly marsh land, and also, that it had been subject to significant previous disturbance and did not retain archaeological potential; the east parcel was not recommended for further assessment and was subsequently cleared of archaeological concerns. The west parcel was also determined to have been previously disturbed; however, there remained potential for the discovery of historic structures related to early 19th century cribwork forming the foundations of the retaining structures for the harbour. As such, the implementation of archaeological monitoring during redevelopment of the west parcel was recommended (ASI 2007). It should be noted that, This Land Archaeology Inc. (TLAI) later confirmed that sometime between 2009 and 2013, the area assessed by ASI (2007) was subject to extensive environmental remediation. At the time of the remediation, the proponent was unaware of previous recommendations and did not conduct archaeological monitoring. As such, this area has since been significantly disturbed without an archaeological monitor present (TLAI 2018). The Stage 1 ASI assessment area lies adjacent and overlaps a portion of the current assessment area.

In 2017, TLAI conducted a Stage 1-2 archaeological assessment as part of the Pringle Creek Bridge improvements Environmental Assessment (EA), located in part of Lots 26 and 27, Broken Front Concession in the Town of Whitby, Ontario. The study area extended from Front Street in the north to south of the Pringle Creek Bridge. The Stage 1 background research determined that the area had high potential for the presence of archaeological resources;

however, at the completion of the Stage 2 field survey, consisting of a test pit survey at 5 and 10 m intervals, no archaeological material or sites were identified. Based on these finding, no further work was recommended (TLAI 2017). The Stage 1 and 2 assessment area lies north of the current assessment area.

In 2018, TLAI conducted a Stage 2 archaeological assessment of a parcel of land previously subject to Stage 1 assessment by ASI in 2007, which was recommended for archaeological monitoring during redevelopment of the property (ASI 2007); the parcel is located on the west side of Brock Street South, in part of Lots 26 and 27, Broken Front Concession in the Town of Whitby, Ontario. As noted above, subsequent to the ASI Stage 1 assessment, it was determined that the parcel required extensive environmental remediation, which was conducted sometime between 2009 and 2013; the proponent conducting the remediation was unaware of the ASI Stage 1 report and recommendations and no archaeological monitoring was conducted for the remediation activities. The Stage 2 assessment by TLAI involved a test pit survey at 10 m intervals focused on portions of the property that appeared to contain undisturbed soils, as well as the documentation of areas that were previously disturbed. No archaeological resources were found during the field survey and TLAI determined that there were no further archaeological concerns for the assessed area and no further assessment was recommended (TLAI 2018). The Stage 2 assessment area lies adjacent and overlaps a portion of the current assessment area.

In 2021 and 2022 Archaeological Consultants CANADA (ACC) conducted a Stage 1-2 archaeological assessment in advance of a proposed sediment remediation project at the Whitby Small Craft Harbour, located within portions of Lots 26, 27, and 28 Broken Front Concession in the Town of Whitby, Ontario. The subject area was roughly 49.7 ha in size and consisted of waterfront lands, parking lots, walking trails, soccer fields, and parklands. The Stage 1 background research determined that portions of the subject area were previously disturbed (31.8 ha), while the remainder of the subject area retained archaeological potential and these areas were recommended for Stage 2 assessment. The Stage 2 assessment area was scoped to include only the portions of the subject area that may be impacted by the remediation activities; this involved a roughly 1 ha area subject to test pit survey at 5 m intervals, and a roughly 8.5 ha area subject to test pit survey at 10 m intervals. The Stage 2 field survey did not result in the identification of any archaeological resources and no further assessment was recommended for those portions of the subject area. The remaining 17.9 ha of the subject area was recommended for Stage 2 assessment (ACC 2023). Portions of the ACC assessment area overlap part of the current assessment area.

To the best of our knowledge, there are no other reports concerning archaeological work conducted within or in close proximity (i.e., within 50 m) of the study area; however, it should be noted that the MCM does not maintain a database of all properties that have had past archaeological investigations and searches of the MCM public register do not always result in a complete listing of all archaeological work conducted in a given area. Consequently, in some cases the only way a consulting archaeologist will know that a past assessment has been conducted in a given area is if they have personal knowledge of it, or if the assessment resulted in the discovery and registration of one or more archaeological sites.

1.2.6 Known Archaeological Sites

AECOM conducted a site data search of the MCM's ASDB to determine if any registered archaeological sites are located within the study area, as well as within 1 km of the study area boundaries. This search resulted in the identification of three registered archaeological sites, as detailed below in **Table 4**. All three sites relate to the 19th century settlement of the area. None of the registered sites are located within 300 m of the study area.

Table 4: Registered Archaeological Sites within 1 km of the Study Area

Borden #	Site Name	Cultural Affiliation	Site Type	Development Status
AlGr-111	Maple Grove	Post-Contact	Homestead	No Further CHVI
AlGr-454	Castle Fox Site	Post-Contact	Homestead	No Further CHVI
AlGr-455	William Gordon Site	Post-Contact	Homestead	Further CHVI

*CHVI = Cultural Heritage Value or Interest

Information concerning specific site locations is protected by provincial policy and is not fully subject to the *Freedom of Information and Protection of Privacy Act* (FIPPA). The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to all media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MCM will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

1.2.7 Existing Conditions

The study area is located in the southern portion of the Town of Whitby on the east side of Whitby Harbour, adjacent Lake Ontario. The area subject to assessment in this report is irregular in shape and includes Water Street between Brock Street South and South Blair Street. South Blair Street, Water Street and Brock Street are all paved two-lane roads with wide gravel shoulders, and concrete curbs. The ROWs contain buried and above ground utilities, and other infrastructure including street lighting, hydro, telecommunications, sewer, drainage, and fire hydrants, in addition to paved sidewalks and multiuse trails. The study area also includes areas of manicured lawn, treed areas, overgrown grassed areas with scrub vegetation, several parks and parkettes, and commercial and industrial developments and paved parking lots.

2. Field Methods

In order to gain first-hand knowledge to evaluate if modern disturbances may have occurred, and to confirm whether or not features of archaeological potential that may not be visible on existing mapping were present within the study area boundaries, AECOM conducted a Stage 1 field review on August 8, 2023, under PIF P316-0533-2023 issued to licensed archaeologist Sherri Pearce, MA (P316), with Joshua Keddy, MA (P484) acting as field director.

The field review was carried out as outlined in Section 1.2 of *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Weather conditions during this time were described as overcast, with an average temperature of 25° Celsius. Visibility was not impaired at any time. The study area was photo-documented from publicly accessible lands (ROWs and other municipal lands), as permission to enter private properties was not required or pursued. The ability to assess potential for archaeological resources was not impacted. The inspection commenced at Brock Street South, continuing south and east along Water Street toward South Blair Street where the study area ends, inspecting all ROWs and immediately adjacent lands that fell within the study area, in order to assess features of archaeological potential. As per *Standards and Guidelines for Consultant Archaeologists* (Section 7.7.5, Standard 1, Government of Ontario 2011), photographs 1 to 20 document the current conditions within the study area during the Stage 1 field review. **Table 5** provides an inventory of the documentary records generated by the Stage 1 field review and indicates the location of each document type.

Table 5: Inventory of Documentary Record

Document Type	Quantity	Location	Additional Comments
Field Notes	1	AECOM London Office	Stored digitally in project file
Hand Drawn Maps	1	AECOM London Office	In original field folder and stored digitally in project file
Proponent Maps	1	AECOM London Office	Digital copy in project file
Digital Photographs	25	AECOM London Office	Stored digitally in project file

As previously mentioned, South Blair Street, Water Street and Brock Street are all paved two-lane roads with wide gravel shoulders, and concrete curbs. The ROWs contain buried and above ground utilities, and other infrastructure including street lighting, hydro, telecommunications, sewer, drainage, ditches and culverts, and fire hydrants, in addition to paved sidewalks and multiuse trails. The study area also includes areas of manicured lawn, most of which have undergone grading and/or landscaping with some exhibiting artificial berms, as well as treed areas, overgrown grassed areas with scrub vegetation, several parks and parkettes, and commercial and industrial developments and paved parking lots. One of the built structures includes the existing pumphouse. Many of the paved parking lots also include underground utilities related to overhead lighting. Another built disturbance includes the boardwalk area adjacent the harbour. Finally, a number of areas were identified as permanently low and wet with standing water present, cattails and other swamp like vegetation; these areas were mostly confined to within Whitby Lions Promenade Park, on both the north and south side of Water Street, in the western portion of the study area.

3. Analysis and Conclusions

3.1 Determination of Archaeological Potential

Archaeological potential is established by determining the likelihood that archaeological resources may be present in a subject property. Criteria commonly used by the MCM to determine areas of archaeological potential are listed in Section 1.3.1 of *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

Distance to modern or ancient water sources is generally accepted as the most important element for past human settlement patterns, and when considered alone may result in a determination of archaeological potential. In addition, any combination of two or more of the listed criteria indicates archaeological potential.

Based on a review of the historical, environmental, and archaeological context of the study area, **AECOM's Stage 1 background study and subsequent field review have determined that the potential for the recovery of pre- and post-contact Indigenous and 19th century Euro-Canadian archaeological resources within the study area is high, based on the presence of the following features:**

- Distance to various types of water sources (Lake Ontario, Pringle Creek);
- Areas of early Euro-Canadian settlement (Port Whitby); and,
- Early transportation routes (Brock Street South, Water Street, South Blair Street, and the Whitby, Port Perry & Lindsay Railway).

It should be noted that certain features indicate that archaeological potential has been removed, such as lands that have been subject to extensive and intensive deep land alterations that have severely damaged the integrity of any archaeological resources. This includes landscaping that involves grading below the topsoil level, building footprints, quarrying, and sewage and infrastructure development (Government of Ontario 2011). Furthermore, extensive and intensive modern disturbance associated with road ROWs, commercial and residential development, and infrastructure improvements, including grading, cutting and filling, additional drainage ditching, watercourse alteration or channelization, servicing, removals, intensive landscaping and heavy construction traffic, will have significantly impacted the potential for the survival of any deposits or features of archaeological potential, thereby negating archaeological potential. Areas where archaeological potential has been removed includes the roadways, the ROWs containing above and below ground utilities and infrastructure, existing built structures and associated parking lots, and the former Imperial Oil lands along the south side of Water Street.

3.2 Conclusions

AECOM's Stage 1 background study and subsequent field review for the Water Street MCEA study area determined that the potential for the recovery of pre- and post-contact Indigenous and 19th century Euro-Canadian archaeological resources within the study area is high within areas not subject to previous disturbance. Areas where archaeological potential has been removed include areas identified as low lying and wet, as well as where there are extensive and deep land alterations that have significantly compromised the recovery of archaeological materials, such as constructed roadways, parking lots, building footprints, former building footprints documented through historical aerial photography, buried and above ground utilities and infrastructure, and sidewalks. Additionally, areas that have been subject to previous assessments and cleared of archaeological concern are determined not to require further work. However, Stage 2 archaeological assessment is recommended for all areas identified as retaining archaeological potential addressed within the scope of this report, and as illustrated in **Figure 8**.

4. Recommendations

AECOM's Stage 1 background study and subsequent field review for the Water Street MCEA study area has determined that the potential for the recovery of pre- and post-contact Indigenous and 19th century Euro-Canadian archaeological resources within the study area is high, within areas not subject to previous disturbance. **Based on these findings, the following recommendations are made:**

A Stage 2 archaeological assessment is recommended for all areas of potentially undisturbed land within the study area limits addressed within the scope of this report (**Figure 8**).

The Stage 2 archaeological assessment for areas retaining archaeological potential must be conducted by a licensed archaeologist and must follow the requirements set out in the *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Based on current conditions within the study area, the Stage 2 assessment should consist of:

A standard test pit survey at 5 m intervals is to be conducted in all areas that will be impacted by the project where ploughing is not feasible (e.g., woodlots, overgrown areas, manicured lawns).

Areas of previous disturbance (e.g., roadways, parking lots, and building footprints) are considered to possess low to no archaeological potential. These areas have been photo documented and are not recommended for further assessment.

Areas that have been photo documented as low lying and wet are not recommended for further assessment.

For the areas within the study area subject to previous archaeological assessments that have been cleared of archaeological concern, as these assessments meet current MCM Standards and Guidelines, no further assessment of these areas are recommended (**Figure 8**).

The MCM is asked to accept this report into the Ontario Public Register of Archaeological Reports thereby concurring with the recommendations presented herein. **As further archaeological assessment is required, archaeological concerns for the Water Street MCEA Study Area, as Part of Lots 25, 26, and 27, Broken Front Concession, Geographic Township of Whitby, Ontario County, now the Corporation of Whitby, Regional Municipality of Durham (Durham Region), Ontario, have not been fully addressed.**

Please note that this archaeological assessment report has been written to meet the requirements of the MCM's *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011); however, properties that are subject to archaeological assessment are not considered cleared for ground disturbance activities until the associated report has been reviewed and accepted by the MCM. In order to maintain compliance with the MCM and the *Ontario Heritage Act* (1990), no ground disturbing activities are to occur until the proponent and approval authority receive a formal letter from the MCM stating that the recommendations provided herein are compliant and that the report has been accepted into the MCM register of archaeological reports.

5. Advice on Compliance with Legislation

This report is submitted to the Ontario Ministry of Citizenship and Multiculturalism as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report is reviewed to ensure that it complies with Standards and Guidelines that are issued by the Ministry, and that the archaeological fieldwork and report recommendations ensure the conservation, protection, and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Citizenship and Multiculturalism, a letter will be issued by the Ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Ministry stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to section 48 (1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological license.
The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force in 2012) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ontario Ministry of Government and Consumer Services.

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7. Images



Photo 1: Underground utilities along Water Street (view east)



Photo 2: Low and wet area with cattails present north of Whitby Lions Promenade Park (view northwest)



Photo 3: ROW disturbance and cattails at entrance to industrial park along Water Street (view east)



Photo 4: ROW graded for parking and above ground utilities (view southeast)



Photo 5: Ditched ROW with above and below ground utilities, paved parking lot and building (view southeast)



Photo 6: Pumping station, ditched ROW, underground utilities (view north)



Photo 7: Landscaped berm, paved parking, built structure, sewer infrastructure, and ditches (view southeast)



Photo 8: Ditched ROW, above and below ground utilities, gravel shoulder (view west)



Photo 9: Ditched ROW, above and below ground utilities, paved roadways (South Blair St. and Water St.) (view north)



Photo 10: Graded ROW with sewer infrastructure, above and below ground utilities, and fire hydrant at intersection of South Blair St. and Water St. (view north)



Photo 11: Disturbed parking lot in study area with archaeological potential remaining in greenspace beyond (view west)



Photo 12: Parking lot and building footprint in study area (view west)



Photo 13: Artificial berm and landscaping, building footprint (view west)



Photo 14: Artificial berm and landscaping, above and below ground utilities, paved roadway (view east)



Photo 15: Parking lot and building footprint with underground utilities in study area (view north)



Photo 16: Parking lot in study area (view west)

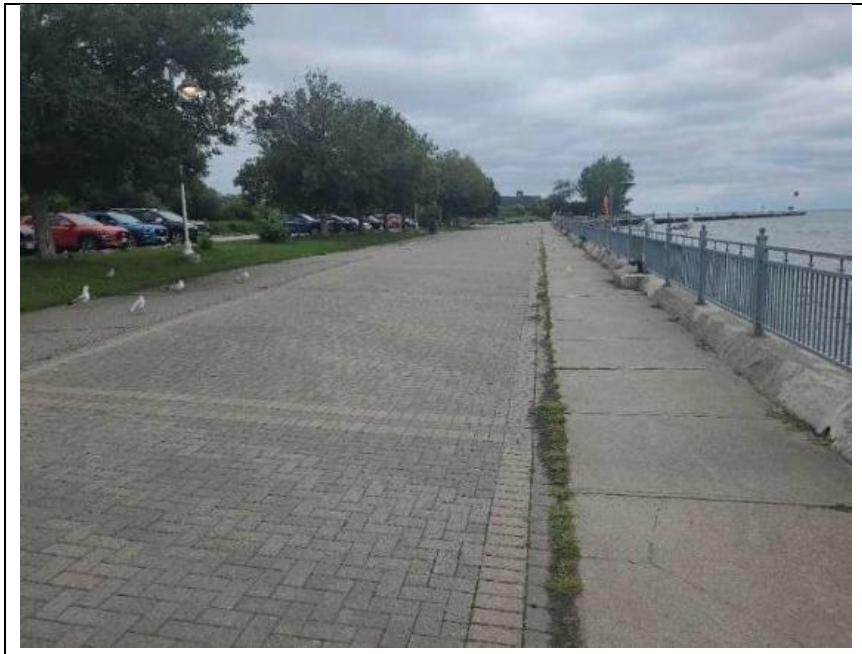


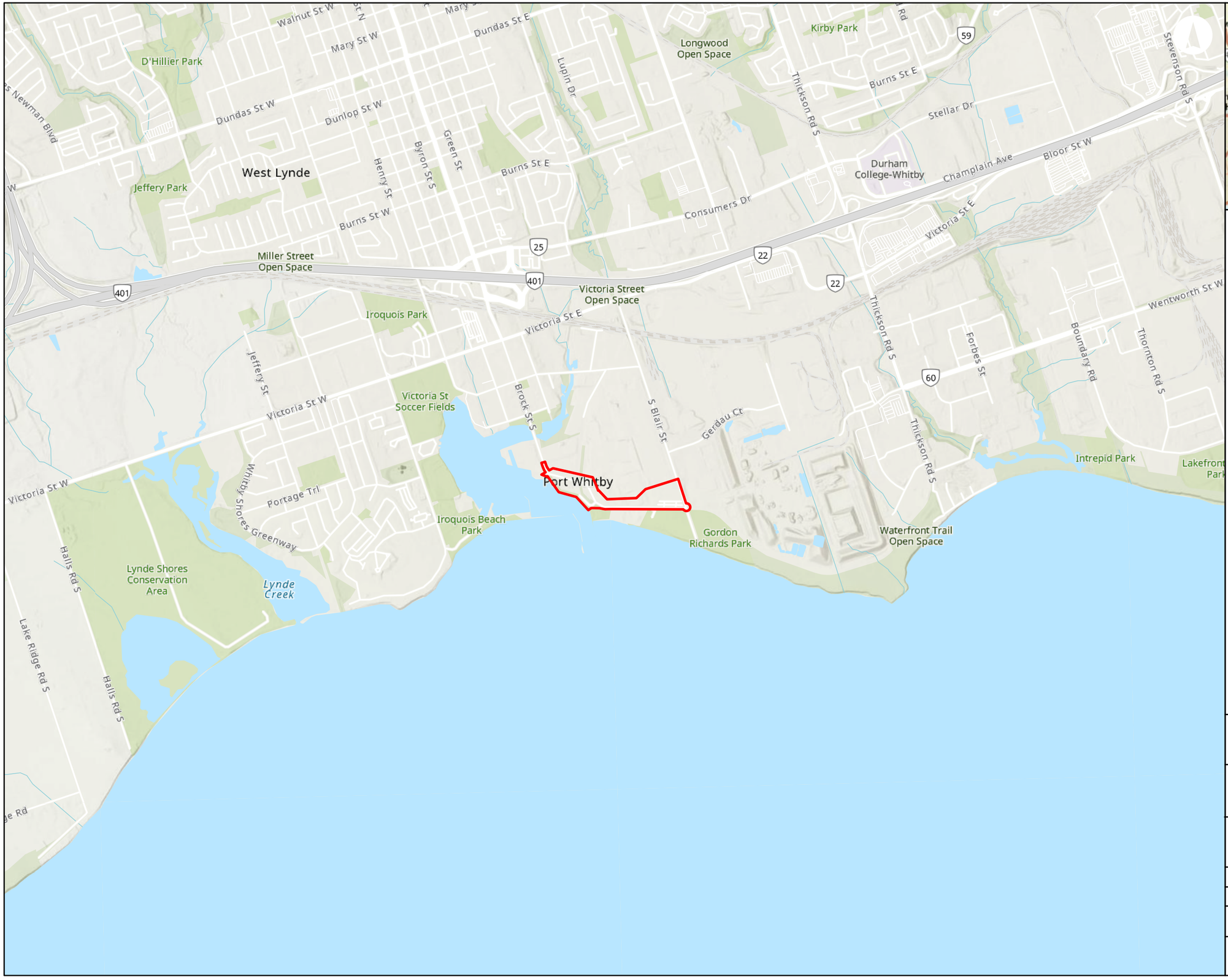
Photo 17: Boardwalk in study area (view southeast)



Photo 18: Standing water within Whitby Lions Promenade Park (view north)

8. Figures

All figures pertaining to the Stage 1 archaeological assessment are provided within the following pages.



Legend

Study Area

Stage 1 Archaeological Assessment
Water Street Improvements between Brock Street South and South Blaire Street (MCEA)
Whitby, Ontario

Location of the Study Area

0 250 500 1,000
Meters
DATUM: NAD 1983 UTM Zone 17N

September 2023	1:25,000 * when printed 11"x17"	Source: MNRF 2020 Image: World Street Map: Esri, HERE, Garmin, NGA, USGS, NPS
P#: 60591304	V#:	World Topographic Map: Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc,
AECOM		Figure 1

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Legend

Study Area

Stage 1 Archaeological Assessment
Water Street Improvements between Brock Street South and South Blaire Street (MCEA)
Whitby, Ontario

Study Area in Detail

0 50 100 200
Meters
DATUM: NAD 1983 UTM Zone 17N

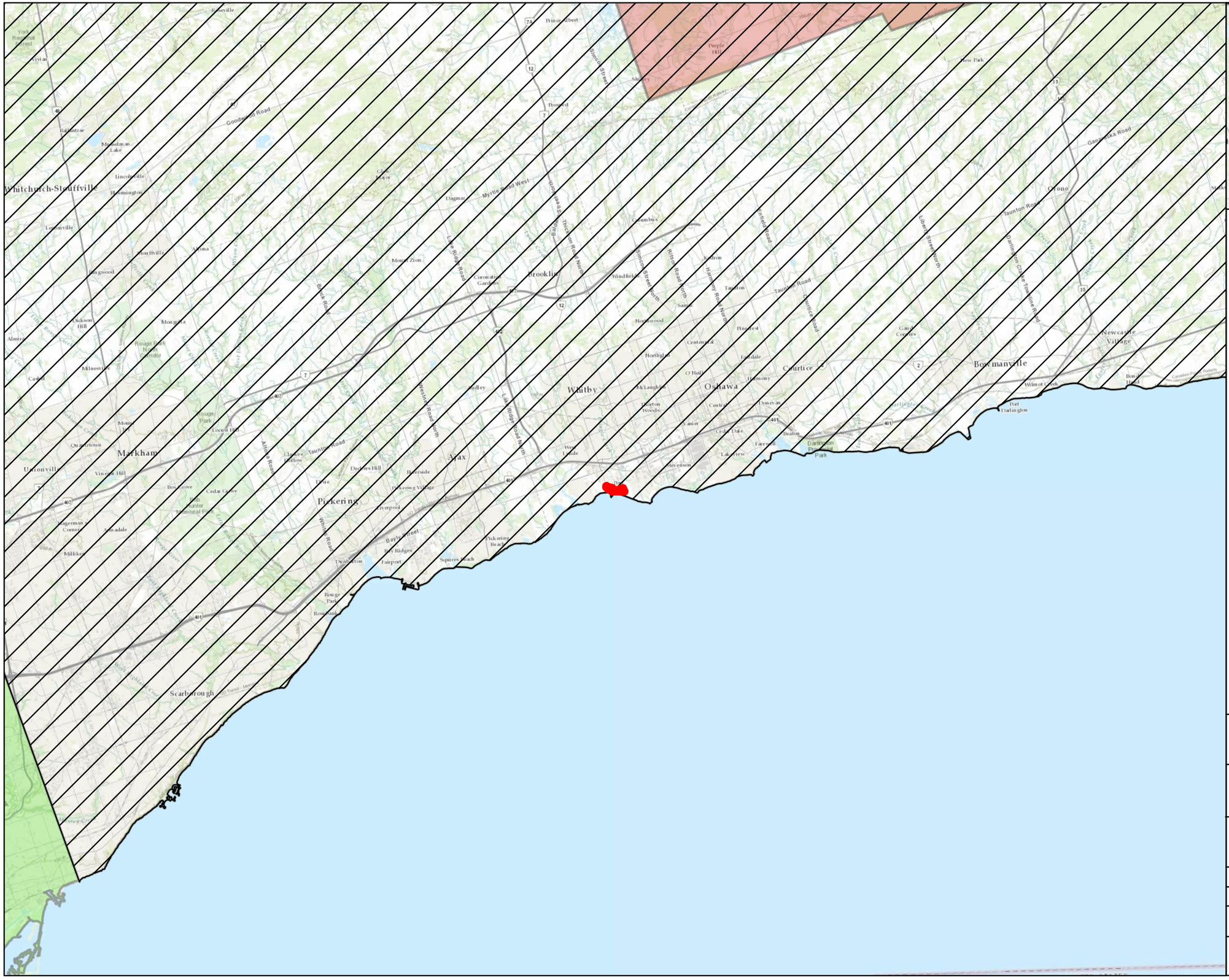
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Figure 2

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- Study Area
- First Nations Reserve Land

Treaty

- Rice Lake Purchase, Treaty 20, November 5,1818
- Toronto Purchase, Treaty 13, August 1,1805
- **Williams Treaties, Signed: October 31, 1923 and November 15, 1923**

Stage 1 Archaeological Assessment
Water Street Improvements between Brock Street South and South Blaire Street (MCEA)
Whitby, Ontario

Ontario Treaties Map

0 1 2 4 6 8 10 12 14
Kilometers
DATUM: NAD 1983 UTM Zone 17N

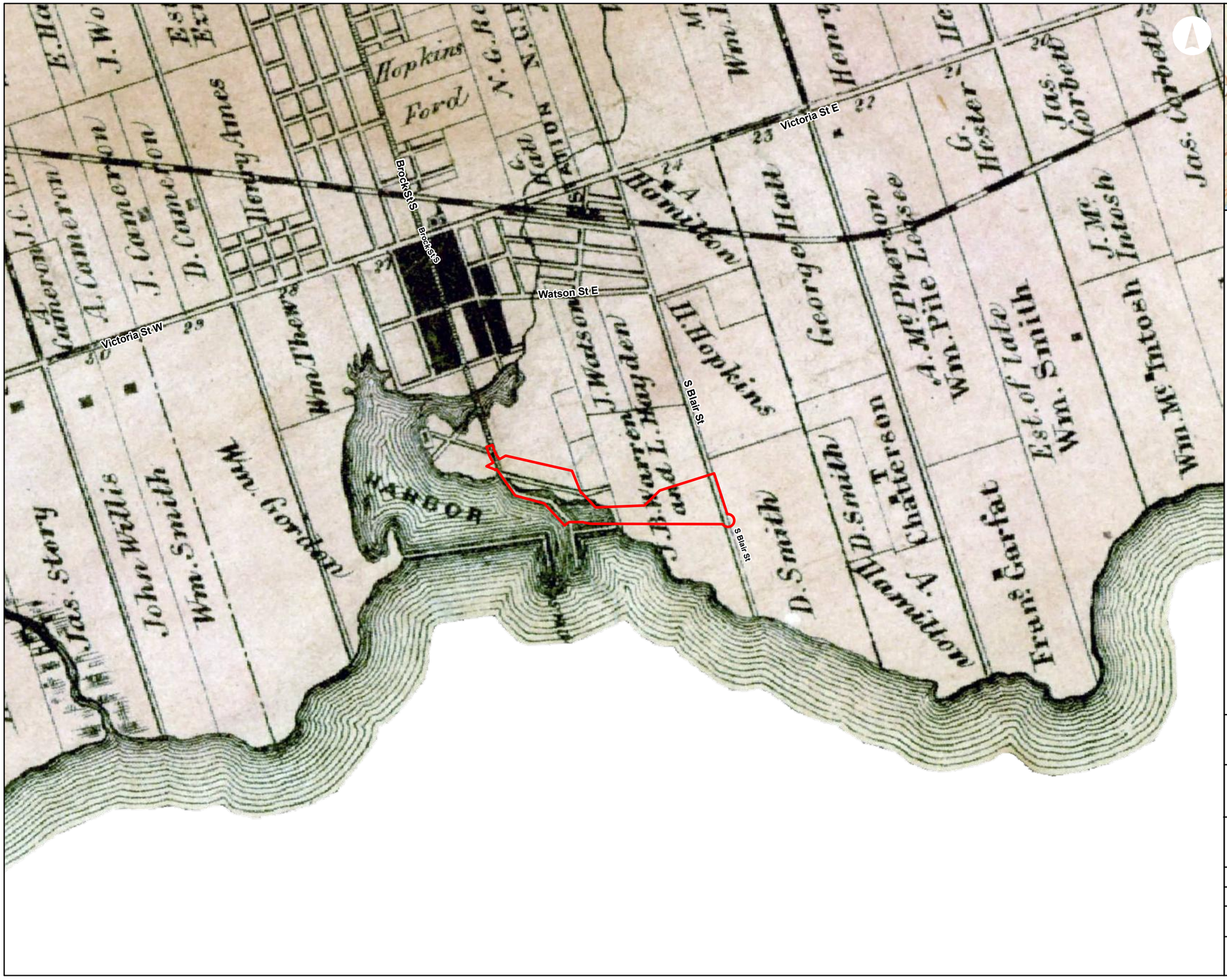
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Figure 3

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Study Area

Stage 1 Archaeological Assessment
Water Street Improvements between Brock Street South and South Blaire Street (MCEA)
Whitby, Ontario

Portion of Tremaine's Map of Ontario County, Whitby Township (1860)

0 250 500 1,000
Meters
DATUM: NAD 1983 UTM Zone 17N

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Study Area

Stage 1 Archaeological Assessment
Water Street Improvements between Brock Street South and South Blaire Street (MCEA)
Whitby, Ontario

Portion of J.H. Beers' Map of Ontario County, Whitby Township (1877)

0 250 500 1,000
Meters
DATUM: NAD 1983 UTM Zone 17N

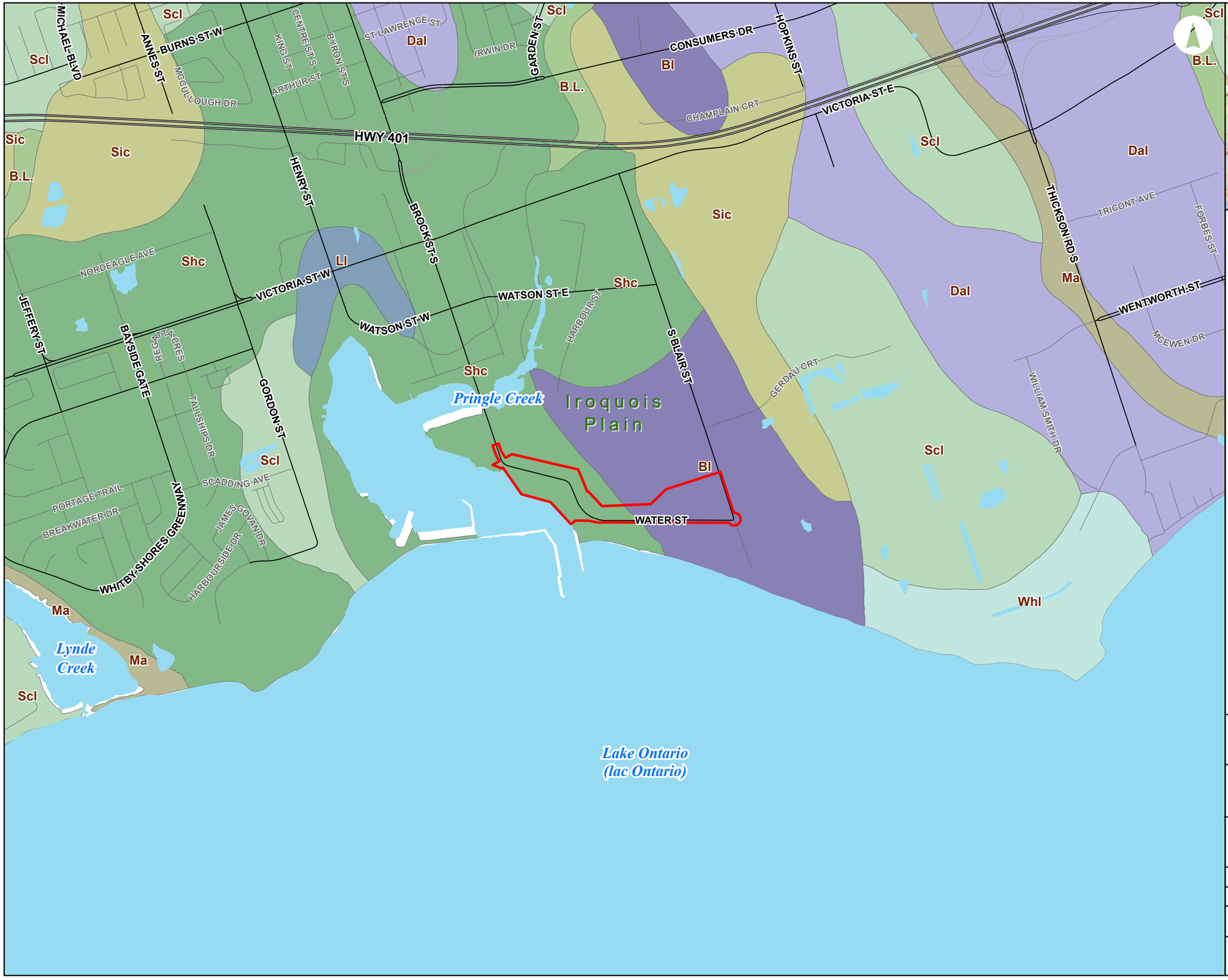
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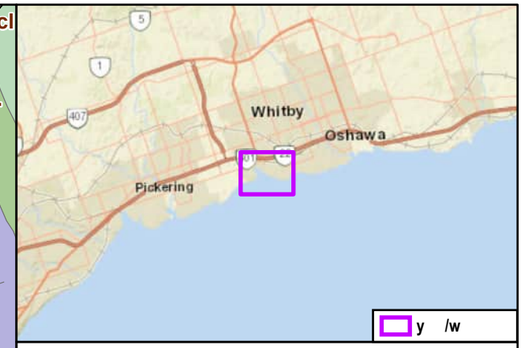
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Legend

- Waterbody
- Study Area
- Physiographic Region

Soils

- B.L. - Unclassified
- Bl - Bondhead, Loam
- Dal - Darlington, Loam
- Ll - Lyons, Loam
- Ma - Marsh, Organic
- Scl - Smithfield, Clay Loam
- Shc - Schomberg, Clay Loam
- Sic - Simcoe, Clay Loam
- Whl - Whitby, Loam

Stage 1 Archaeological Assessment
Water Street Improvements between Brock Street South and South Blaire Street (MCEA)
Whitby, Ontario

Physiography and Soil Types within the Study Area

0 250 500 1,000
Meters
DATUM: NAD 1983 UTM Zone 17N

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Legend

- Study Area
- Stage 1-2 Complete - Further Work Required
- Stage 1-2 Complete - No Further Work Required

Stage 1 Archaeological Assessment
Water Street Improvements between Brock Street South and South Blaire Street (MCEA)
Whitby, Ontario

Previous Archaeological Assessments

0 50 100 200
Meters
DATUM: NAD 1983 UTM Zone 17N

September 2023	1:3,500 * when printed 11"x17"	Source: MNRF 2020 Image: World Street Map: Esri, HERE, Garmin, NGA, USGS, NPS, NRCan World Imagery: Maxar
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Figure 7

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Legend

- Photo Location and Direction
- Study Area
- Test Pit Survey Required
- Previously Assessed - Cleared of Archaeological Concerns
- Previously Disturbed - Former Imperial Oil Terminal
- Visually Confirmed Disturbance
- Wet and Low-lying

Stage 1 Archaeological Assessment
Water Street Improvements between Brock Street South and South Blaire Street (MCEA)
Whitby, Ontario

Stage 1 Archaeological Assessment Results

0 15 30 60 90 120 150 180 210
Meters
DATUM: NAD 1983 UTM Zone 17N

September 2023	1:3,500 * when printed 11"x17"	Source: MNRF 2020 Image: World Street Map: Esri, HERE, Garmin, NGA, USGS, NPS, NRCan World Imagery: Maxar
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Figure 8

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Appendix F

Cultural Heritage Screening Report

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Cultural Heritage Screening Report

Water Street Improvements between Brock Street South and South Blair Street – Municipal Class Environmental Assessment Study

Town of Whitby

60591304

May 2023

Delivering a better world

Statement of Qualifications and Limitations

The attached Report (the "Report") has been prepared by AECOM Canada Ltd. ("AECOM") for the benefit of the Client ("Client") in accordance with the agreement between AECOM and Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations");
- represents AECOM's professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to AECOM which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement; and
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Quality Information

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Reviewed by:



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Revision History

Rev #	Revision Date	Revised By:	Revision Description
0	April 19, 2023	Liam Smythe	Draft Report
1	May, 2023	Liam Smythe	Draft Report

Distribution List

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Appendices

Appendix A. CHSR Mapping
Appendix B. Application of the MCM Criteria Checklist

1. Introduction

AECOM Canada Ltd. (AECOM) was retained by the Town of Whitby (the Town) to conduct a Cultural Heritage Screening Report (CHSR), in support of a Schedule 'C' Municipal Class Environmental Assessment (MCEA) to provide improvements to Water Street between Brock Street South and South Blair Street. This project is being undertaken to identify opportunities to enhance the corridor experience along the Whitby Waterfront, accommodate future parking, active transportation and travel demands within the area, and address road alignment and drainage deficiencies as well as enhancement of the streetscape through the addition of a Multi-Use Path, cycle track, landscaping, etc. Also proposed is a new roundabout at the intersection of Water Street and South Blair Street to improve operations at this location.

This CHSR was prepared in support of the MCEA and consists of a desktop study that identifies built heritage resources (BHRs) and cultural heritage landscapes (CHLs) within and/or adjacent to the study area. The Ministry of Citizenship and Multiculturalism (MCM) *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* (hereafter 'MCM Criteria Checklist', 2016) was used to complete this CHSR to help determine whether the proposed Water Street improvements may impact BHRs and CHLs.

1.1 Study Area and Project Undertaking

As illustrated in **Figure 1**, the study area includes Water Street between Brock Street South and South Blair Street in the Town of Whitby within the Regional Municipality of Durham.

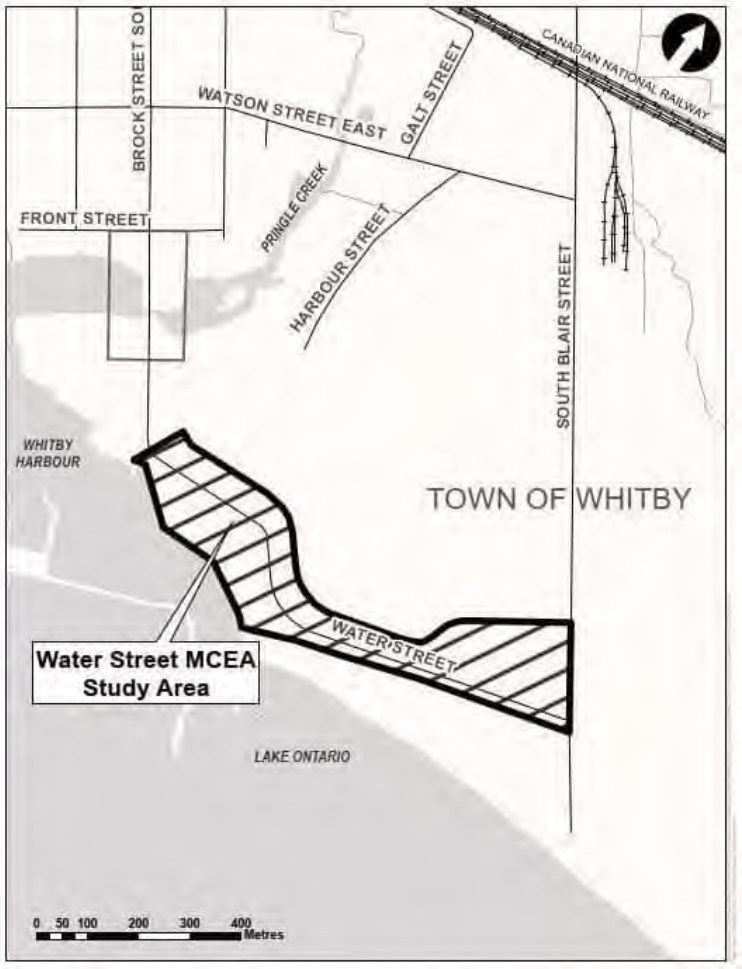
As part of Phase 3 of the MCEA process, three Road Alignment Concepts for Water Street were developed to implement the Preferred Solution. These are outlined below and shown in **Appendix A, Figure 2**.

- Road Alignment 1: Existing Condition with Curve Corrections (Increase Curve Radius).
- Road Alignment 2: Curve Correction with Minor Road Realignment to the Southwest.
- Road Alignment 3: Hybrid of Alternatives 1 and 2.

The above three concepts roughly follow the existing route of Water Street, southeast from Brock Street South, then east to South Blair Street. Each of the three concepts propose a different road realignment and / or curve correction for Water Street as well as a roundabout at Blair Street. For this CHSR, a 50-metre (m) buffer has been added to each of the three alternatives to address potential indirect impacts on cultural heritage resources due to vibration resulting from construction activities.[1]

[1] Although the effect of traffic and construction vibration is not fully understood, vibrations may be detectible in buildings with setbacks of less than 40 m from a curbside (Crispino and D'Apuzzo 2001; Ellis 1987; Rainer 1982; Wiss 1981). For the purposes of this study, a 50 m buffer is used to represent a conservative approach to delineate the potential effects related to vibration.

Figure 1: MCEA Study Area



2. Methodology

Following the process for the identification of above-ground BHRs and CHLs outlined in the MCM Criteria Checklist, the following steps were taken for this CHSR:

- A review of municipal, provincial, and federal heritage registers and inventories including:
  - The Town of Whitby Municipal Heritage Register.

- A review of available online historic mapping:
  - The 1877 *Illustrated Historical Atlas of the County of Ontario, Ont.,* published by J.H. Beers & Co. (**Appendix A, Figure 3**).

- A review of several online resources including:
  - Ontario Heritage Trust Conservation Easements;
  - Ontario Heritage Trust's Places of Worship Inventory;
  - Ontario Heritage Trust's Provincial Plaque Program;
  - Ontario Heritage Trust's Ontario Heritage Act Register;
  - Ontario Historical Society's Ontario Heritage Directory and Map;

  - Ontario Genealogical Society's Ontario Cemetery Index;
  - Parks Canada's National Historic Sites;
  - Parks Canada's The Canadian Register of Historic Places on *Canada's Historic Places* website;
  - Parks Canada's Directory of Federal Heritage Designations*;*
  - Canadian Heritage River System website; and,
  - United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites.

- A review of secondary sources including:
  - Port Whitby: Self-guided Walking Tour (2016).

- Completion of the MCM Criteria Checklist (see **Appendix B**).

- Email consultation with the Town of Whitby, Ontario Heritage Trust, and MCM (see **Section 2.1**)

In this CHSR, built heritage resources and cultural heritage landscapes were defined according to the Provincial Policy Statement (2020):

- **Built Heritage Resource (BHR)** – means a building, structure, monument, installation or any manufactured or constructed part or remnant that contributes to a property's cultural heritage value or interest as identified by a community, including an Indigenous community. Built heritage resources are located on property that may be designated under Parts IV or V of the *Ontario Heritage Act*, or that may be included on local, provincial, federal and/or international registers.

- **Cultural Heritage Landscape (CHL)** – means a defined geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest by a community, including an Indigenous community. The area may include features such as buildings, structures, spaces, views, archaeological sites or natural elements that are valued together for their interrelationship, meaning or association. Cultural heritage landscapes may be properties that have been determined to have cultural heritage value or interest under the *Ontario Heritage Act* or have been included on federal and/or international registers, and/or protected through official plan, zoning by-law, or other land use planning mechanisms.

For the purposes of this study, the BHRs and CHLs are categorized as either:

- **Known BHR or CHL** – consisting of municipally, provincially, or federally designated or listed properties that have an existing level of heritage protection, designation, or recognition; or

- **Potential BHR or CHL** – properties identified during the desktop screening exercise that includes a building or structure appearing to be older than 40 years of age, that, informed by the MCM Criteria Checklist, have been determined in this study to have potential cultural heritage value or interest.

Several investigative criteria were utilized during the desktop review to appropriately identify potential built heritage resources and cultural heritage landscapes. Use of a 40-year-old threshold is an indicator that a property may be of cultural heritage value or interest. While identification of a built heritage resource and cultural heritage landscape that is 40 years old or older does not confer outright heritage significance, this threshold provides a means to collect information about resources that may retain cultural heritage value or interest. Similarly, if a built heritage resource and cultural heritage landscape is less than 40 years old, this does not preclude the resource from retaining cultural heritage value or interest. In addition to the 40-year rule, professional knowledge, expertise and the MCM Criteria Checklist were also applied in this CHSR to screen for potential built heritage resources and cultural heritage landscapes within and adjacent to the potential sites.

This CHSR was completed by a team of AECOM's Cultural Resource Management staff including Liam Smythe, B. URPl (Cultural Heritage Specialist), and Tara Jenkins, MA, CAHP (Cultural Heritage Specialist, Lead).

2.1 Stakeholder Consultation

As part of the stakeholder consultation process for this report, AECOM consulted with the Town of Whitby, the Ontario Heritage Trust, and MCM. The results of the consultation efforts are identified below in **Table 1**.

Table 1: Stakeholder Consultation

Contact	Contact Information	Date	Comments
Karla Barboza, MCM, Team Lead, Heritage	Karla.Barboza@ontario.ca	2023-04-05	Karla Barboza was contacted to review and confirm that there are no known Provincial Heritage Properties, and/or Heritage Properties of Provincial Significance within or adjacent to the study area.
		2023-04-11	Karla confirmed that there are no known Provincial Heritage Properties, and/or Heritage Properties of Provincial Significance within or adjacent to the study area.
Jamie Joudrey / Ontario Heritage Trust (OHT) / Manager, Acquisition and Conservation Services	Jamie.Joudrey@heritagetrust.on.ca	2023-04-05	Jamie Joudrey was contacted to review and confirm that there are no properties of interest to the OHT within the study area. J. Joudrey forwarded AECOM's query onto Kevin Baksh, Provincial Heritage Registrar.
Kevin Baksh / Ontario Heritage Trust / Provincial Heritage Registrar	Kevin.Baksh@heritagetrust.on.ca	2023-04-13	Kevin Baksh responded to AECOM's request and confirmed that the OHT does not have any conservation easements or Trust-owned properties within or adjacent to the study area.
Dave Johnson / Town of Whitby / Planner II – Heritage Planning and Development	johnsond@whitby.ca	2023-03-14	Dave Johnson was contacted to obtain a copy of the Town of Whitby's Municipal Heritage Register and confirm that the Town does not intend to designate or list any properties within or adjacent to the study area.
		2023-04-05	Dave Johnson supplied AECOM with a PDF copy of the Town's Combined Municipal Heritage Register

Contact	Contact Information	Date	Comments
		2023-04-13	Dave Johnson noted that there is community interest in the “Nip & Tuck” (Port Perry & Port Whitby Railway) The Town of Whitby recommends a CHER be completed for this project due to the impacts of the alternatives on the former railway corridor.
Lori Tesolin / Town of Whitby / Principal Planner	tesolinl@whitby.ca	2023-04-10	AECOM sent a follow-up email to enquire about the existing conditions of the former Port Whitby & Port Perry railway corridor, and to confirm if any railway tracks remained at this location. Lori Tesolin, Principal Planner with the Town of Whitby, confirmed that based on consultation with transportation planning staff, a multi-use trail is being established at this location, and the Town of Whitby staff would be available to conduct a field review in the upcoming weeks. However, at the time of this draft submission a field review has not yet been completed.

3. Historic Overview

The study area is located in the Town of Whitby, in the Regional Municipality of Durham, historically in the Town of Whitby, Ontario County.

3.1 Ontario County

The front townships of the historic Ontario County were surveyed from 1790 to 1800 and opened for settlement at this relatively early date. Communication and transportation were most common by boat before the Danforth Road was built (completed in 1800), but the road was crude and travel by steamer was generally faster and more comfortable until the railways were constructed. The land in the lower concessions was quickly taken up and cleared for agriculture. Farmers cleared their land and transported the wood to the lake front, where they traded it for imported, manufactured goods at wood depots that fuelled the steamers before coal was adopted as the primary fuel. Goods came up from Quebec or across the lake from the U.S., requiring the establishment of Custom Houses. As a result, a series of small port towns grew up along the shore at regular intervals (URS 2013).

3.2 Town of Whitby

Present-day Downtown Whitby is the old town centre which encompasses much of the original Town of Whitby and includes Perry’s Corners, the early 19th century nucleus of the town at Dundas and Brock Streets. The original town plan was commissioned by Peter Perry, a founder of Whitby, in 1846. Perry’s L-shaped plan north of Dundas Street contained 24 blocks. In 1854, Asa Werden had his lands south of Dundas Street laid out a grid of 64 blocks and another eight half blocks.

Whitby was designated as a County Town in 1852. This sparked population growth along with the anticipation of the Grand Trunk Railway connection from Montreal to Toronto. Plans of subdivision were registered for lands east, west, and north of Perry's Plan and south of Werden's Plan, so far south that the subdivided lots reached Port Whitby on Lake Ontario, near where the study area is located (see **Section 3.3.3**). This fostered a linear pattern of development along Brock Street.

The boom of Whitby ended in 1857 when development stalled due to a worldwide economic crisis. Many of the subdivided lots remained vacant. There was a small commercial core at Dundas and Brock Streets - the Four Corners. Although development was scattered throughout the town, there was a greater concentration west of Brock Street where the County of Ontario buildings were located.

Until the mid-20th century, Whitby was a stable small town reliant on commercial services and its administration function. The imposing Greek Revival courthouse, the registry office, the well-built houses of lawyers, judges and other professionals and the substantial brick churches were all evidence of the importance of the County Town.

After the mid- 20th century, Whitby expanded considerably. The old town centre changed in the face of rapid urbanization. Lots that had never been developed were infilled, leaving the buildings of the 19th and early 20th century amid the bungalows of the mid-20th century. Walk-up apartments were placed next door to historic houses. Commercial plazas with front-yard parking lots were built on Brock Street, south of Colborne Street. Taller and larger buildings along Dundas Street emphasized the divide between the street and block patterns of Perry's Plan north of Dundas and Werden's Plan south of Dundas.

3.2.1 Port Whitby

The community of Port Whitby is located on lands originally awarded to John Scadding in 1819. It is one of three original communities comprising the Town of Whitby. The area was originally known as Port Windsor, and extended from the mouth of the natural harbour, north to present-day Victoria Street. It was officially renamed as Port Whitby in 1847. The harbour was used to ship grain, lumber, and farm produce to places across Canada and the United States. Farmers would transport their produce to the harbour along the plank toll road, now Brock Street, and later by means of the Port Whitby, Port Perry, and Lindsay Railway which was constructed in 1871. Between the 1840s and the 1870s. the harbour prospered, and improvements were made to the surrounding roads and infrastructure. Various hotels, taverns, shops, and breweries flourished in the area. In 1904, the Town of Whitby constructed a pumping station on the shore of Lake Ontario to supply the new municipal waterworks system. The pumping station was expanded in 1959 and continues to operate today. The 1904 structure was closed in 1978 and was partially demolished (Town of Whitby, Planning & Development Department, LACAC Heritage Whitby, Whitby Public Library).

3.3 Historic Mapping Overview

The *Illustrated Historical Atlas of Ontario County, Ont.* published by J.H. Beers in 1877 (hereafter the 1877 *Illustrated Historical Atlas*) was examined for the presence of 19th century structures or features within the study area (**Appendix A, Figure 2**). The 1877 *Illustrated Historical Atlas* shows Brock Street South following roughly the same alignment as it does today, however Water Street did not extend east to South Blair Street at this time. The surveyed lots are illustrated north of Water Street and east of Brock Street South. Details of structures are not included on this map. A branch of the Port Whitby and Port Perry Railway, commonly known as the "Nip and Tuck" (CHL 1) is shown extending northeast from the shore of Lake Ontario, crossing over Water Street. This railway line is no longer extant, although the former right-of-way is visible on the north side of Water Street today and is used as a hydro corridor. In addition, partial remnants of the tracks are visible from Google Maps near Harbour Street crossing the entrance laneway to the manufacturing plant at 1707 Harbour Street. A lighthouse is

shown on the western side of the gap at the mouth of Whitby Harbour. This lighthouse is also no longer extant, although a modern lighthouse has since been installed on a pedestrian pier on the east side of the gap.

The 1968 National Topographic Series Map (**Appendix A, Figure 3**) shows a number of features in the vicinity of the study area. Brock Street South and Water Street had assumed their present alignments by this time. South Blair Street is labelled as “Dunlop Street”. The Dunlop Rubber Plant is shown on the west side of South Blair Street, north of Water Street. The water filtration plant is shown on the south side of Water Street. To the east of this is a park, presumed to be Heydenshore Park, although it is shown to be smaller than its current size. Towards the western end of the study area, a seawall and a series of gas and oil tanks are labelled. Two lighthouses are labelled, one in the location of the present lighthouse at the extreme southern end of the pier, and another just south of Water Street. The Port Whitby and Port Perry Railway corridor is shown and was presumably still active at this time. It is labelled on this map as part of the Canadian National (CN) railway, and a spur line is shown extending southeast to an industrial building north of Water Street, likely associated with the Rubber Plant.

4. Existing Context

Between Brock Street South and South Blair Street, Water Street is a paved two-lane road with narrow gravel shoulders and ditches on both sides. Water Street extends southeast from Brock Street South, following an S-shaped curve which roughly parallels the shoreline of Lake Ontario and Whitby Harbour. It then extends east to the intersection with South Blair Street.

The south side of Water Street is occupied by a mixture of large undeveloped lots and open parklands. At the western end of the study area is an open lot, with a chain-link fence and rows of mature trees around the perimeter. To the east of this property is the Whitby Lion’s Promenade and Rotary-Sunrise Lake Park, a large park and beach area with associated parking lots and a section of the Waterfront Trail. Kiwanis-Haydenshore Park is a large park with associated trails, playgrounds and parking lots located at the east end of the study area and includes the Haydenshore Pavilion community centre. Located between Rotary-Sunrise Park and Kiwanis-Haydenshore Park is the Whitby Water Supply Plant and Facilities Management Office, operated by the Regional Municipality of Durham.

The north side of Water Street is characterized primarily by commercial and light industrial land uses, including warehouses and low-rise office complexes situated on large lots set well back from the road. The western end of the study area includes a large undeveloped wooded lot and the remnants of a former railway corridor on the north side of Water Street. The northwest corner of the Water Street and South Blair Street intersection is a large, undeveloped lot with mature trees and a gravelled parking area which serves as overflow parking for Kiwanis-Haydenshore Park.

5. Desktop Data Collection and Preliminary Impacts

Based on review of the 1877 *Illustrated Historical Atlas,* current aerial photography, Google Street View, a review of municipal, provincial, and federal heritage registers and inventories, completion of the MCM Criteria Checklist (**Appendix B**), the use of the 40-year threshold, and professional judgement and expertise one known BHR and one potential CHL have been identified within the study area.

BHR 1, the former Waterworks Pump House at 269 Water Street, is listed on the Town of Whitby’s Municipal Heritage Register. Although BHR 1 is located within the study area, it is located outside of the right-of-way for all three road alignment concepts. BHR 1 will therefore not be directly impacted by any of the three road alignment

concepts. BHR 1 is; however, located within 50 m of the proposed road modification work, and therefore has the potential to be indirectly impacted by vibration resulting from construction activities.

CHL 1, the former Port Whitby and Port Perry Railway corridor, was identified as a potential cultural heritage landscape. CHL 1 is anticipated to be directly impacted by all three road alignment concepts. As CHL 1 crosses Water Street towards the western end of the study area, all three road alignment concepts transect the former railway corridor south of the present alignment of Water Street and would require acquisition of this section of the former corridor. This section of the corridor presently consists of undeveloped land, sparsely covered with mature trees.

BHR 1 and CHL 1 are illustrated in **Appendix A, Figure 2**, and brief descriptions are provided in **Table 2** below.

Table 2: Summary of BHRs within the Cultural Heritage Study Area

Feature IDs	Municipal Address/Name	Resource Type	Municipal Heritage Recognition	Description	Road Alignment Concept 1	Road Alignment Concept 2	Road Alignment Concept 3
BHR 1	269 Water Street Former Waterworks Pumphouse	Infrastructure	Listed on Municipal Heritage Register	▪ Remains of c.1904 Waterworks Pumphouse. ▪ Four original exterior walls of former pumphouse structure, constructed of buff brick. Structure has decorative brick details including three voussoir-arched window and door openings, corbelled brickwork and recessed bays separated by pilasters. ▪ Operated until 1978, when the equipment and roof were removed, and the original chimney demolished.	▪ No direct adverse impacts. ▪ Potential for indirect impacts due to vibration.	▪ No direct adverse impacts. ▪ Potential for indirect impacts due to vibration.	▪ No direct adverse impacts. ▪ Potential for indirect impacts due to vibration.
CHL 1	Former Port Whitby & Port Perry Railway (PW&PP) Corridor	Railway	None	▪ Former right-of-way for the Port Whitby and Port Perry Railway (PW&PP), later the Port Whitby, Port Perry and Lindsay Railway (WPP&L), colloquially known as the “Nip and Tuck” railway. ▪ Constructed in 1871 and originally used to transport produce and lumber to Port Whitby for shipment. Tracks were still extant as late as 1968. ▪ Former corridor still visible extending northeast from Water Street. Now used as a hydro corridor.	▪ Direct Impacts (south side Water St). ▪ No indirect impacts anticipated.	▪ Direct Impacts (south side Water St). ▪ No indirect impacts anticipated .	▪ Direct Impacts (south side Water Street). ▪ No indirect impacts anticipated.

6. Conclusion and Recommendations

6.1 Conclusion

This CHSR was prepared to screen for known and/or potential BHRs or CHLs within the study area. In total one known BHR (BHR 1) at 269 Water Street was identified within the study area that is listed on the Town of Whitby's Municipal Heritage Register. One potential CHL (CHL 1), the former Port Whitby and Port Perry Railway corridor was identified within the study area.

BHR 1 is not anticipated to be directly impacted by Road Alignment Concepts 1, 2 or 3. BHR 1 is however located within 50 m of the proposed road modification work and has the potential to be indirectly impacted by vibration resulting from construction activities.

CHL 1 is anticipated to be directly impacted, as Road Alignment Concepts 1, 2, and 3 will all require acquisition of the vacant land comprising part of the former railway corridor on the south side of Water Street. The alignments are quite similar and therefore, the direct impacts for all three road alignment concepts are equated to be relatively the same.

6.2 Recommendations

The following recommendations have been developed based on the results of the completion of the MCM Criteria Checklist, the historical map review, and the preliminary impact assessment undertaken for this Report:

1. Since CHL 1 will be directly impacted by all three road alignment concepts and given the community interest in the former railway corridor, a CHER is recommended to evaluate the CHVI of the corridor.

2. BHR 1 will not be directly impacted by the project. Therefore, no further cultural heritage reporting is required for this resource.

3. BHR 1 is located within 50 m of the proposed road modification work and has the potential to be indirectly impacted by vibration resulting from construction activities. Vibration monitoring should be undertaken pre, during and post construction to confirm no vibration impacts are incurred during construction.

4. Should there be any alternate road alignments proposed or changes to Road Alignment Concepts 1, 2, or 3 within the study area, the potential built heritage resource (BHR 1) identified in this CHSR should be reviewed for impacts and further work may be required.

7. Sources

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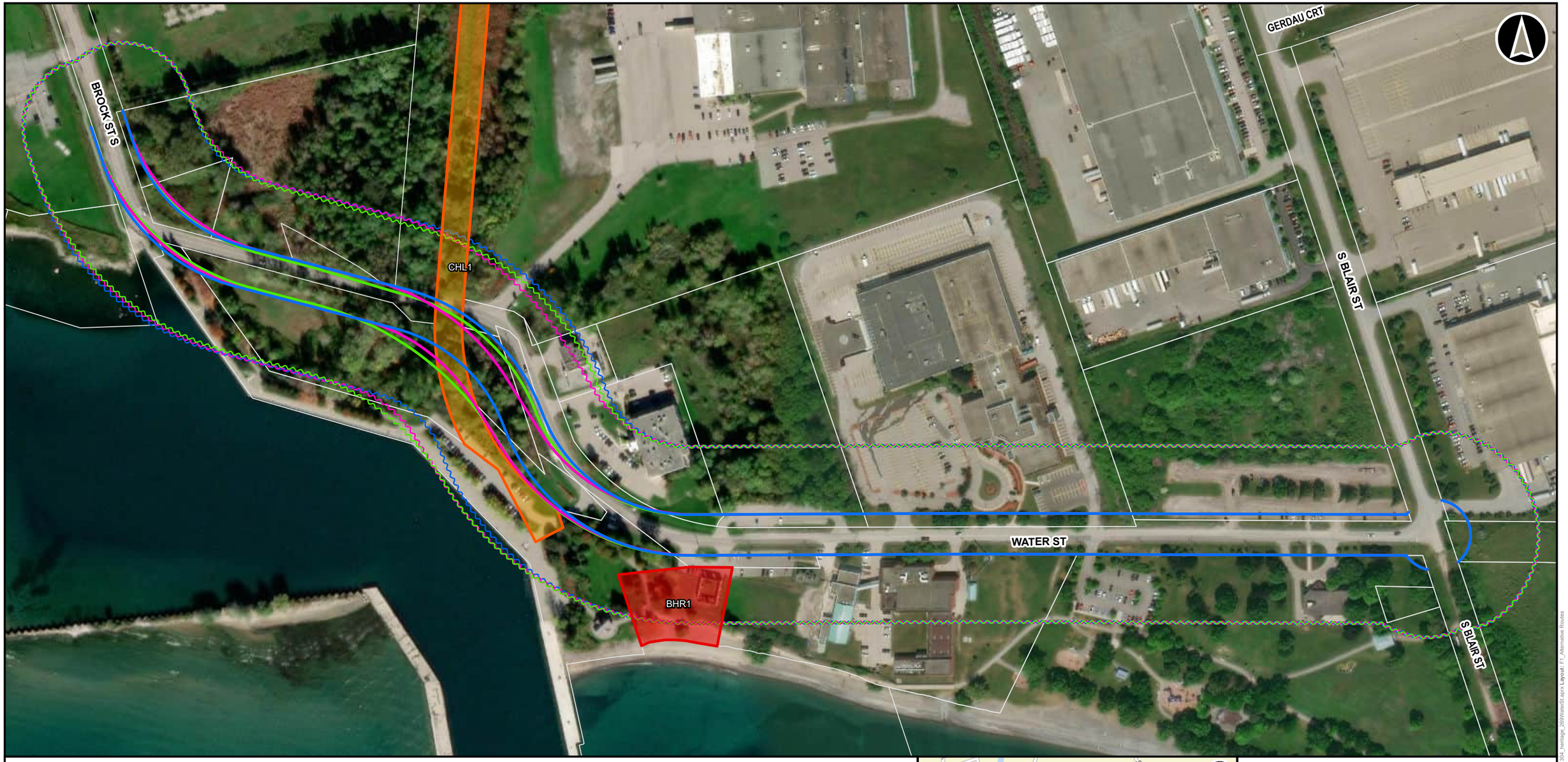
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Parks Canada
n.d. Canadian Register of Historic Places. https://www.historicplaces.ca/en/home-accueil.aspx.

Parks Canada
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Appendix A

CHSR Mapping



Legend

Cultural Heritage Porperty Status (Town of Whitby)

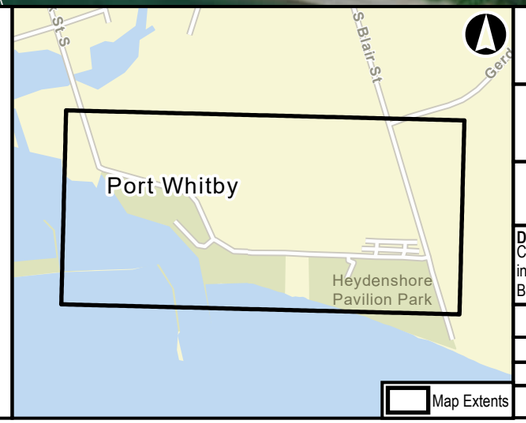
- Known Built Heritage Resource (BHR1)
- Potential Cultural Heritage Landscape (CHL 1)

Road Alignment Concepts - Right of Way

- Alignment 1
- Alignment 2
- Alignment 3

Buffer Area (50 m)

- Alignment 1
- Alignment 2
- Alignment 3
- Property Boundary



Cultural Screening Report for Water Street MCEA in the Town of Whitby

Alternative Routes

0 50 100 200 M

NAD 1983 UTM Zone 17N

Data Sources:
Contains Information licensed under the Open Government License Ontario & information from the Town of Whitby.
Basemap aerial imagery from 2020.

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P:60591304	
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1:2,800	

AECOM

Figure: 2

Project Location: D:\Projects\60591304\Whitby\S_Water\S_MCEA\60591304_heritage_2699\Water\S\60591304_heritage_2699Water\S.aprx Layout: F1_Alternative Routes
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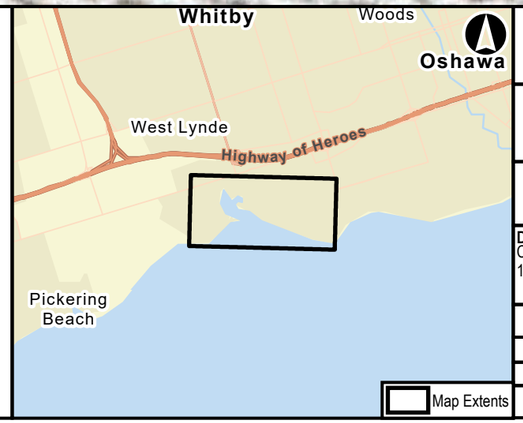


Basemaps provided by: Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada, Maxar

Legend

Road Alignment Concepts - Right of Way

- Alignment 1
- Alignment 2
- Alignment 3



Cultural Screening Report for Water Street MCEA in the Town of Whitby

1877 Illustrated Historical Atlas of the County of Ontario

0 50 100 200 300 400 500 600 700 M

NAD 1983 UTM Zone 17N

Data Sources:
Contains Information licensed under the Open Government License Ontario.
1877 Illustrated Historical Atlas of the County of Ontario

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AECOM

Figure: 3

Project Location: D:\Projects\60591304\Workspace_Workers_MCEA\60591304_heritage_26WorkersS\60591304_heritage_26WorkersS.aprx Layout: P2__1877Historical Figure
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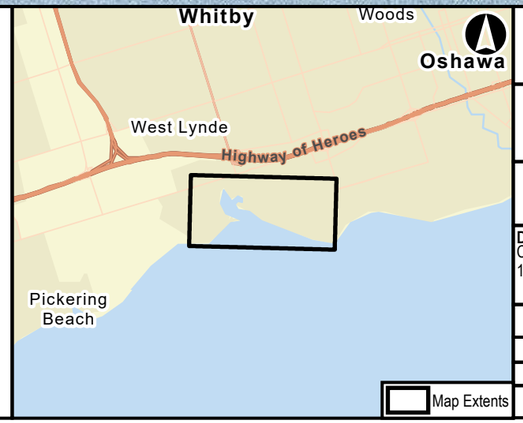


Basemaps provided by: Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, NRCan, Parks Canada, Maxar

Legend

Road Alignment Concepts - Right of Way

- Alignment 1
- Alignment 2
- Alignment 3



Cultural Screening Report for Brock St./Water St. MCEA in the Town of Whitby

1968 NTS Historical Map

0 50 100 200 300 400 500 600 700 M

NAD 1983 UTM Zone 17N

Data Sources:
Contains Information licensed under the Open Government License Ontario.
1877 Illustrated Historical Atlas of the County of Ontario

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AECOM

Figure: 4

Project Location: D:\Projects\60591304 Whitby\5_Work\3_MCEA\Mxds\60591304_Heritage_2399\Mxds\60591304_Heritage_2399Mxds.aprx Layout: F3_1968 Historical Figure
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Appendix B

Application of the MCM Criteria Checklist

Ministry of Tourism, Culture and Sport

Programs & Services Branch
401 Bay Street, Suite 1700
Toronto ON M7A 0A7

Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes

A Checklist for the Non-Specialist

The **purpose of the checklist** is to determine:

- if a property(ies) or project area:
    - is a recognized heritage property
    - may be of cultural heritage value
- it includes all areas that may be impacted by project activities, including – but not limited to:
    - the main project area
    - temporary storage
    - staging and working areas
    - temporary roads and detours

Processes covered under this checklist, such as:

- *Planning Act*
- *Environmental Assessment Act*
- *Aggregates Resources Act*
- *Ontario Heritage Act* – Standards and Guidelines for Conservation of Provincial Heritage Properties

Cultural Heritage Evaluation Report (CHER)

If you are not sure how to answer one or more of the questions on the checklist, you may want to hire a qualified person(s) (see page 5 for definitions) to undertake a cultural heritage evaluation report (CHER).

The CHER will help you:

- identify, evaluate and protect cultural heritage resources on your property or project area
- reduce potential delays and risks to a project

Other checklists

Please use a separate checklist for your project, if:

- you are seeking a Renewable Energy Approval under Ontario Regulation 359/09 – separate checklist
- your Parent Class EA document has an approved screening criteria (as referenced in Question 1)

Please refer to the Instructions pages for more detailed information and when completing this form.

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Project or Property Name

Water Street Improvements from Brock Street South to South Blair Street – Class 'C' MCEA

Project or Property Location (upper and lower or single tier municipality)

Town of Whitby, Durham Region

Proponent Name

Town of Whitby

Proponent Contact Information

Screening Questions

	Yes	No
1. Is there a pre-approved screening checklist, methodology or process in place?	☐	☑

If Yes, please follow the pre-approved screening checklist, methodology or process.

If No, continue to Question 2.

Part A: Screening for known (or recognized) Cultural Heritage Value

	Yes	No
2. Has the property (or project area) been evaluated before and found **not** to be of cultural heritage value?	☐	☑

If Yes, do **not** complete the rest of the checklist.

The proponent, property owner and/or approval authority will:

- summarize the previous evaluation and
- add this checklist to the project file, with the appropriate documents that demonstrate a cultural heritage evaluation was undertaken

The summary and appropriate documentation may be:

- submitted as part of a report requirement
- maintained by the property owner, proponent or approval authority

If No, continue to Question 3.

	Yes	No
3. Is the property (or project area):		
a. identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value?	☐	☑
b. a National Historic Site (or part of)?	☐	☑
c. designated under the *Heritage Railway Stations Protection Act*?	☐	☑
d. designated under the *Heritage Lighthouse Protection Act*?	☐	☑
e. identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office (FHBRO)?	☐	☑
f. located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?	☐	☑

If Yes to any of the above questions, you need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report, if a Statement of Cultural Heritage Value has not previously been prepared or the statement needs to be updated

If a Statement of Cultural Heritage Value has been prepared previously and if alterations or development are proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No, continue to Question 4.

Part B: Screening for Potential Cultural Heritage Value

	Yes	No
4. Does the property (or project area) contain a parcel of land that:		
a. is the subject of a municipal, provincial or federal commemorative or interpretive plaque?	☐	☑
b. has or is adjacent to a known burial site and/or cemetery?	☐	☑
c. is in a Canadian Heritage River watershed?	☐	☑
d. contains buildings or structures that are 40 or more years old?	☑	☐

Part C: Other Considerations

	Yes	No
5. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area):		
a. is considered a landmark in the local community or contains any structures or sites that are important in defining the character of the area?	☐	☑
b. has a special association with a community, person or historical event?	☐	☑
c. contains or is part of a cultural heritage landscape?	☐	☑

If Yes to one or more of the above questions (Part B and C), there is potential for cultural heritage resources on the property or within the project area.

You need to hire a qualified person(s) to undertake:

- a Cultural Heritage Evaluation Report (CHER)

If the property is determined to be of cultural heritage value and alterations or development is proposed, you need to hire a qualified person(s) to undertake:

- a Heritage Impact Assessment (HIA) – the report will assess and avoid, eliminate or mitigate impacts

If No to all of the above questions, there is low potential for built heritage or cultural heritage landscape on the property.

The proponent, property owner and/or approval authority will:

- summarize the conclusion
- add this checklist with the appropriate documentation to the project file

The summary and appropriate documentation may be:

- submitted as part of a report requirement e.g. under the *Environmental Assessment Act, Planning Act* processes
- maintained by the property owner, proponent or approval authority

Instructions

Please have the following available, when requesting information related to the screening questions below:

- a clear map showing the location and boundary of the property or project area
    - large scale and small scale showing nearby township names for context purposes
- the municipal addresses of all properties within the project area
- the lot(s), concession(s), and parcel number(s) of all properties within a project area

For more information, see the Ministry of Tourism, Culture and Sport's Ontario Heritage Toolkit or Standards and Guidelines for Conservation of Provincial Heritage Properties.

In this context, the following definitions apply:

- **qualified person(s)** means individuals – professional engineers, architects, archaeologists, etc. – having relevant, recent experience in the conservation of cultural heritage resources.
- **proponent** means a person, agency, group or organization that carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking.

1. Is there a pre-approved screening checklist, methodology or process in place?

An existing checklist, methodology or process may already be in place for identifying potential cultural heritage resources, including:

- one endorsed by a municipality
- an environmental assessment process e.g. screening checklist for municipal bridges
- one that is approved by the Ministry of Tourism, Culture and Sport (MTCS) under the Ontario government's Standards & Guidelines for Conservation of Provincial Heritage Properties [s.B.2.]

Part A: Screening for known (or recognized) Cultural Heritage Value

2. Has the property (or project area) been evaluated before and found not to be of cultural heritage value?

Respond 'yes' to this question, if all of the following are true:

A property can be considered not to be of cultural heritage value if:

- a Cultural Heritage Evaluation Report (CHER) - or equivalent - has been prepared for the property with the advice of a qualified person and it has been determined not to be of cultural heritage value and/or
- the municipal heritage committee has evaluated the property for its cultural heritage value or interest and determined that the property is not of cultural heritage value or interest

A property may need to be re-evaluated, if:

- there is evidence that its heritage attributes may have changed
- new information is available
- the existing Statement of Cultural Heritage Value does not provide the information necessary to manage the property
- the evaluation took place after 2005 and did not use the criteria in Regulations 9/06 and 10/06

Note: Ontario government ministries and public bodies [prescribed under Regulation 157/10] may continue to use their existing evaluation processes, until the evaluation process required under section B.2 of the Standards & Guidelines for Conservation of Provincial Heritage Properties has been developed and approved by MTCS.

To determine if your property or project area has been evaluated, contact:

- the approval authority
- the proponent
- the Ministry of Tourism, Culture and Sport

3a. Is the property (or project area) identified, designated or otherwise protected under the *Ontario Heritage Act* as being of cultural heritage value e.g.:

i. designated under the *Ontario Heritage Act*

- individual designation (Part IV)
- part of a heritage conservation district (Part V)

Individual Designation – Part IV

A property that is designated:

- by a municipal by-law as being of cultural heritage value or interest [s.29 of the *Ontario Heritage Act*]
- by order of the Minister of Tourism, Culture and Sport as being of cultural heritage value or interest of provincial significance [s.34.5]. **Note**: To date, no properties have been designated by the Minister.

Heritage Conservation District – Part V

A property or project area that is located within an area designated by a municipal by-law as a heritage conservation district [s. 41 of the *Ontario Heritage Act*].

For more information on Parts IV and V, contact:

- municipal clerk
- Ontario Heritage Trust
- local land registry office (for a title search)

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ii. subject of an agreement, covenant or easement entered into under Parts II or IV of the *Ontario Heritage Act*

An agreement, covenant or easement is usually between the owner of a property and a conservation body or level of government. It is usually registered on title.

The primary purpose of the agreement is to:

- preserve, conserve, and maintain a cultural heritage resource
- prevent its destruction, demolition or loss

For more information, contact:

- Ontario Heritage Trust - for an agreement, covenant or easement [clause 10 (1) (c) of the *Ontario Heritage Act*]
- municipal clerk – for a property that is the subject of an easement or a covenant [s.37 of the *Ontario Heritage Act*]
- local land registry office (for a title search)

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iii. listed on a register of heritage properties maintained by the municipality

Municipal registers are the official lists - or record - of cultural heritage properties identified as being important to the community.

Registers include:

- all properties that are designated under the *Ontario Heritage Act* (Part IV or V)
- properties that have not been formally designated, but have been identified as having cultural heritage value or interest to the community

For more information, contact:

- municipal clerk
- municipal heritage planning staff
- municipal heritage committee

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iv. subject to a notice of:

- intention to designate (under Part IV of the *Ontario Heritage Act*)
- a Heritage Conservation District study area bylaw (under Part V of the *Ontario Heritage Act*)

A property that is subject to a **notice of intention to designate** as a property of cultural heritage value or interest and the notice is in accordance with:

- section 29 of the *Ontario Heritage Act*
- section 34.6 of the *Ontario Heritage Act.* **Note**: To date, the only applicable property is Meldrum Bay Inn, Manitoulin Island. [s.34.6]

An area designated by a municipal by-law made under section 40.1 of the *Ontario Heritage Act* as a **heritage conservation district study area**.

For more information, contact:

- municipal clerk – for a property that is the subject of notice of intention [s. 29 and s. 40.1]
- Ontario Heritage Trust

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v. included in the Ministry of Tourism, Culture and Sport's list of provincial heritage properties

Provincial heritage properties are properties the Government of Ontario owns or controls that have cultural heritage value or interest.

The Ministry of Tourism, Culture and Sport (MTCS) maintains a list of all provincial heritage properties based on information provided by ministries and prescribed public bodies. As they are identified, MTCS adds properties to the list of provincial heritage properties.

For more information, contact the MTCS Registrar at registrar@ontario.ca.

3b. Is the property (or project area) a National Historic Site (or part of)?

National Historic Sites are properties or districts of national historic significance that are designated by the Federal Minister of the Environment, under the *Canada National Parks Act*, based on the advice of the Historic Sites and Monuments Board of Canada.

For more information, see the National Historic Sites website.

3c. Is the property (or project area) designated under the *Heritage Railway Stations Protection Act*?

The *Heritage Railway Stations Protection Act* protects heritage railway stations that are owned by a railway company under federal jurisdiction. Designated railway stations that pass from federal ownership may continue to have cultural heritage value.

For more information, see the Directory of Designated Heritage Railway Stations.

3d. Is the property (or project area) designated under the *Heritage Lighthouse Protection Act*?

The *Heritage Lighthouse Protection Act* helps preserve historically significant Canadian lighthouses. The Act sets up a public nomination process and includes heritage building conservation standards for lighthouses which are officially designated.

For more information, see the Heritage Lighthouses of Canada website.

3e. Is the property (or project area) identified as a Federal Heritage Building by the Federal Heritage Buildings Review Office?

The role of the Federal Heritage Buildings Review Office (FHBRO) is to help the federal government protect the heritage buildings it owns. The policy applies to all federal government departments that administer real property, but not to federal Crown Corporations.

For more information, contact the Federal Heritage Buildings Review Office.

See a directory of all federal heritage designations.

3f. Is the property (or project area) located within a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site?

A UNESCO World Heritage Site is a place listed by UNESCO as having outstanding universal value to humanity under the Convention Concerning the Protection of the World Cultural and Natural Heritage. In order to retain the status of a World Heritage Site, each site must maintain its character defining features.

Currently, the Rideau Canal is the only World Heritage Site in Ontario.

For more information, see Parks Canada – World Heritage Site website.

Part B: Screening for potential Cultural Heritage Value

4a. Does the property (or project area) contain a parcel of land that has a municipal, provincial or federal commemorative or interpretive plaque?

Heritage resources are often recognized with formal plaques or markers.

Plaques are prepared by:

- municipalities
- provincial ministries or agencies
- federal ministries or agencies
- local non-government or non-profit organizations

For more information, contact:

- municipal heritage committees or local heritage organizations – for information on the location of plaques in their community
- Ontario Historical Society's Heritage directory – for a list of historical societies and heritage organizations
- Ontario Heritage Trust – for a list of plaques commemorating Ontario's history
- Historic Sites and Monuments Board of Canada – for a list of plaques commemorating Canada's history

4b. Does the property (or project area) contain a parcel of land that has or is adjacent to a known burial site and/or cemetery?

For more information on known cemeteries and/or burial sites, see:

- Cemeteries Regulations, Ontario Ministry of Consumer Services – for a database of registered cemeteries
- Ontario Genealogical Society (OGS) – to locate records of Ontario cemeteries, both currently and no longer in existence; cairns, family plots and burial registers
- Canadian County Atlas Digital Project – to locate early cemeteries

In this context, adjacent means contiguous or as otherwise defined in a municipal official plan.

4c. Does the property (or project area) contain a parcel of land that is in a Canadian Heritage River watershed?

The Canadian Heritage River System is a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage.

Canadian Heritage Rivers must have, and maintain, outstanding natural, cultural and/or recreational values, and a high level of public support.

For more information, contact the Canadian Heritage River System.

If you have questions regarding the boundaries of a watershed, please contact:

- your conservation authority
- municipal staff

4d. Does the property (or project area) contain a parcel of land that contains buildings or structures that are 40 or more years old?

A 40 year 'rule of thumb' is typically used to indicate the potential of a site to be of cultural heritage value. The approximate age of buildings and/or structures may be estimated based on:

- history of the development of the area
- fire insurance maps
- architectural style
- building methods

Property owners may have information on the age of any buildings or structures on their property. The municipality, local land registry office or library may also have background information on the property.

Note: 40+ year old buildings or structure do not necessarily hold cultural heritage value or interest; their age simply indicates a higher potential.

A building or structure can include:

- residential structure
- farm building or outbuilding
- industrial, commercial, or institutional building
- remnant or ruin
- engineering work such as a bridge, canal, dams, etc.

For more information on researching the age of buildings or properties, see the Ontario Heritage Tool Kit Guide Heritage Property Evaluation.

Part C: Other Considerations

5a. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) is considered a landmark in the local community or contains any structures or sites that are important to defining the character of the area?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has potential landmarks or defining structures and sites, for instance:

- buildings or landscape features accessible to the public or readily noticeable and widely known
- complexes of buildings
- monuments
- ruins

5b. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) has a special association with a community, person or historical event?

Local or Aboriginal knowledge may reveal that the project location is situated on a parcel of land that has a special association with a community, person or event of historic interest, for instance:

- Aboriginal sacred site
- traditional-use area
- battlefield
- birthplace of an individual of importance to the community

5c. Is there local or Aboriginal knowledge or accessible documentation suggesting that the property (or project area) contains or is part of a cultural heritage landscape?

Landscapes (which may include a combination of archaeological resources, built heritage resources and landscape elements) may be of cultural heritage value or interest to a community.

For example, an Aboriginal trail, historic road or rail corridor may have been established as a key transportation or trade route and may have been important to the early settlement of an area. Parks, designed gardens or unique landforms such as waterfalls, rock faces, caverns, or mounds are areas that may have connections to a particular event, group or belief.

For more information on Questions 5.a., 5.b. and 5.c., contact:

- Elders in Aboriginal Communities or community researchers who may have information on potential cultural heritage resources. Please note that Aboriginal traditional knowledge may be considered sensitive.
- municipal heritage committees or local heritage organizations
- Ontario Historical Society’s “Heritage Directory” - for a list of historical societies and heritage organizations in the province

An internet search may find helpful resources, including:

- historical maps
- historical walking tours
- municipal heritage management plans
- cultural heritage landscape studies
- municipal cultural plans

Information specific to trails may be obtained through Ontario Trails.

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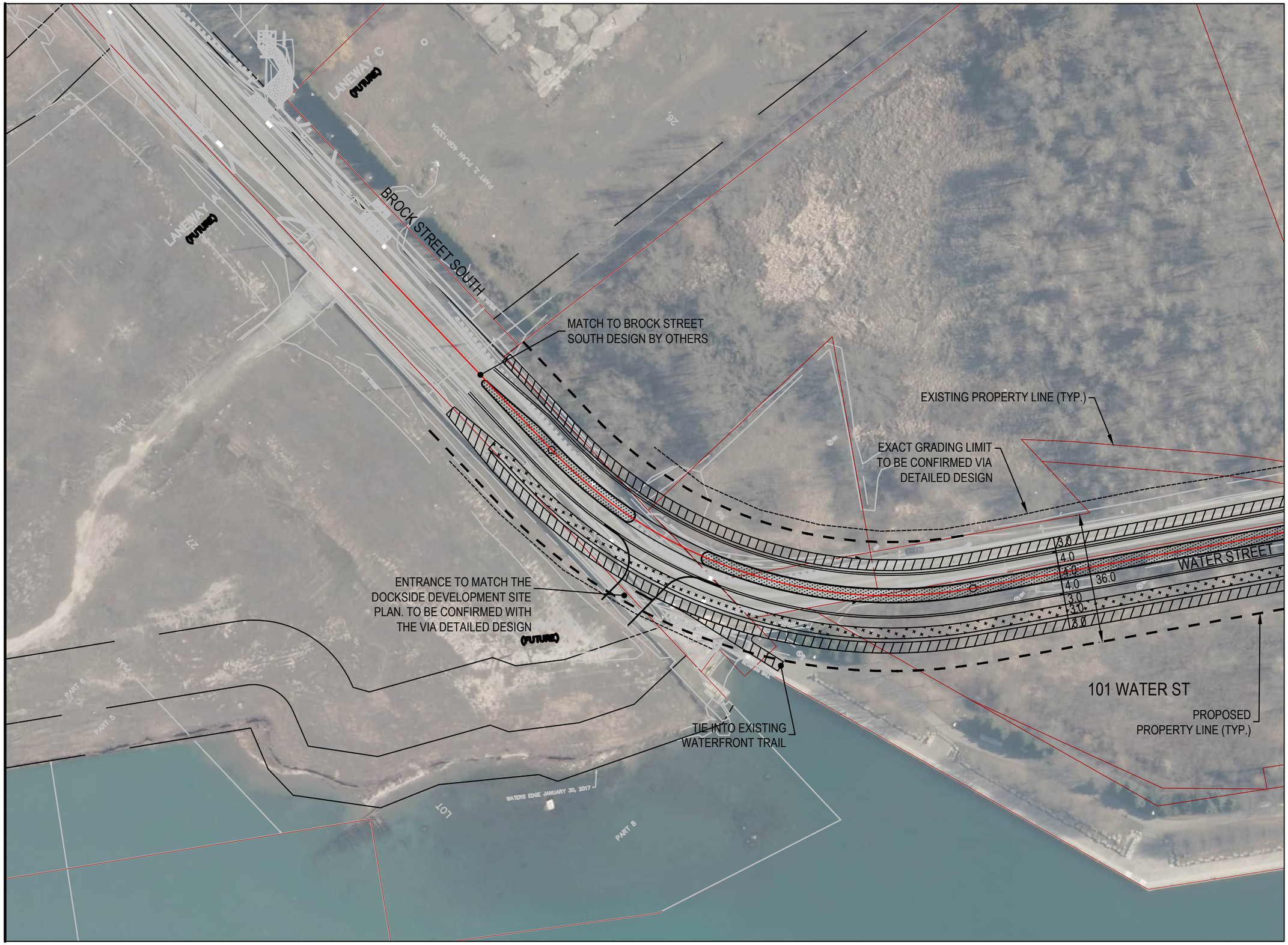
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Appendix G

Preliminary Design

This document is not an accessible document. Please contact Engineering@whitby.ca for assistance with any accessibility issues.



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PROJECT

WATER STREET MCEA

WHITBY, ONTARIO

CLIENT

THE CORPORATION OF THE TOWN OF WHITBY

575 ROSSLAND ROAD EAST
WHITBY ON, L1N 2M8

CONSULTANT

AECOM CANADA LTD.
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LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- PROPOSED GRADING LIMIT
- PROPOSED MULTI-USE PATH
- PROPOSED CYCLE TRACK
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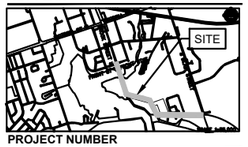
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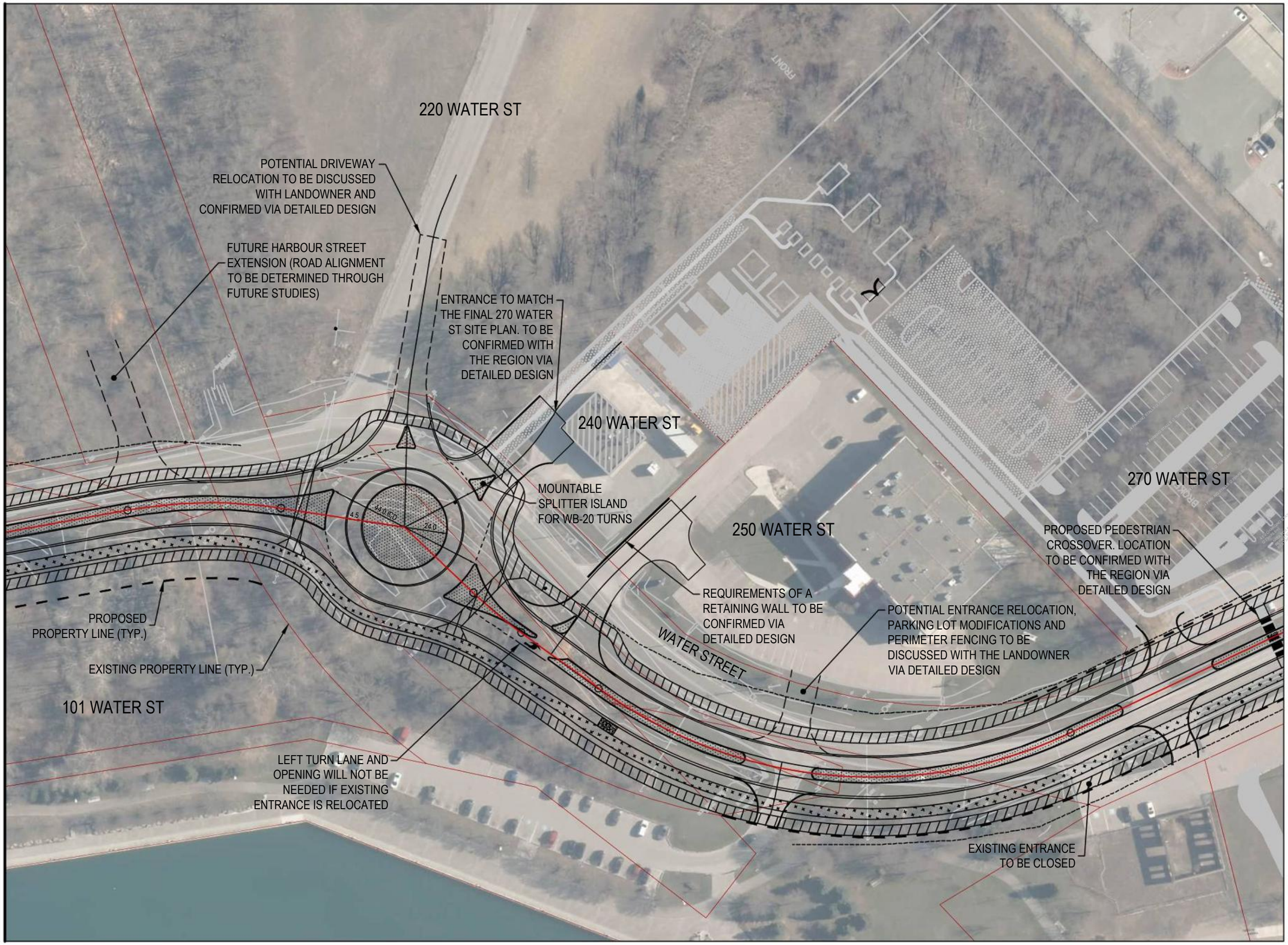
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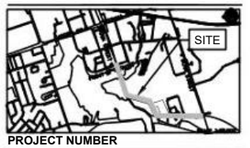
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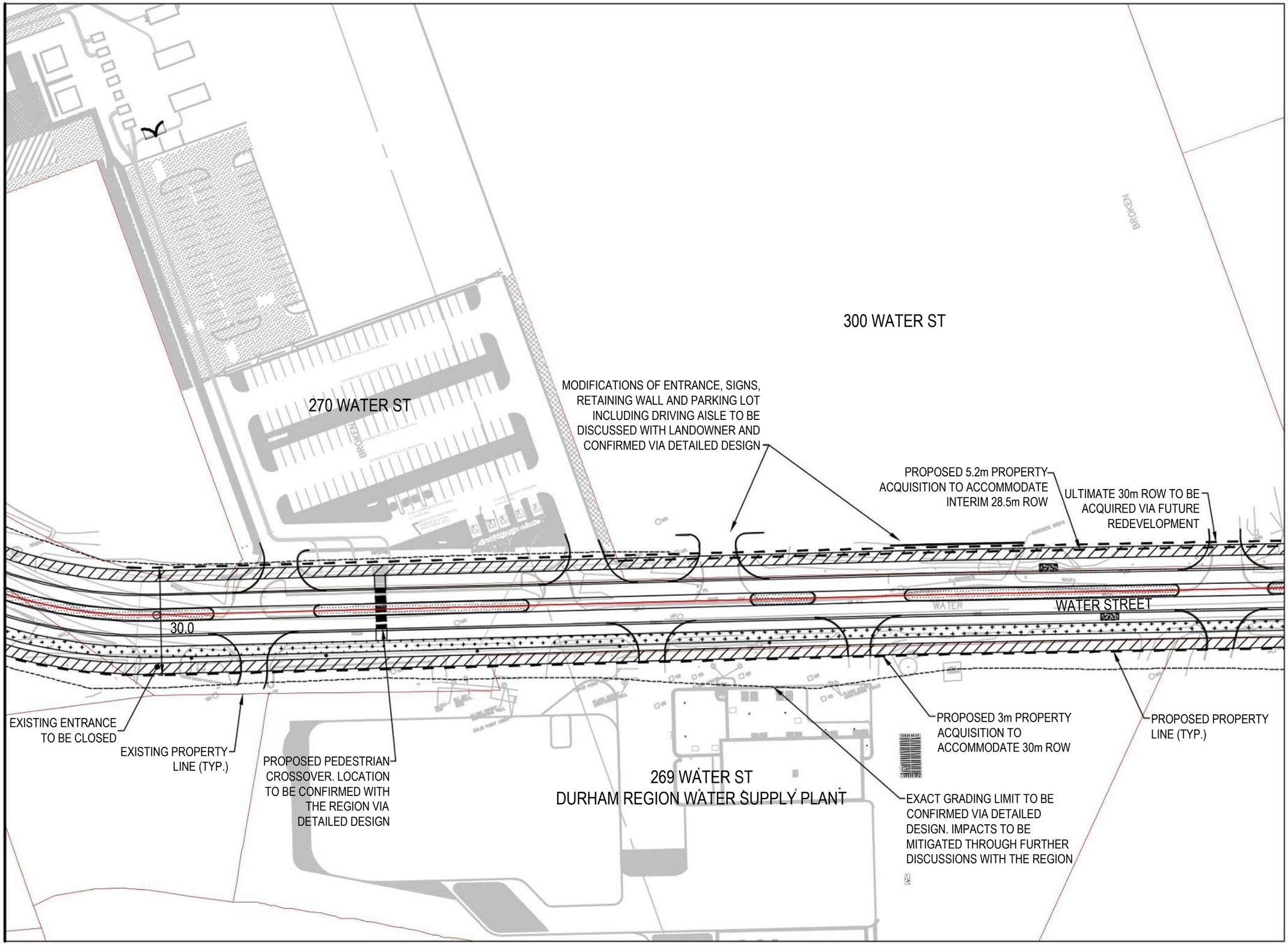
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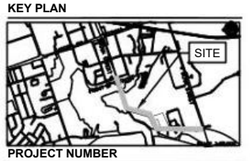
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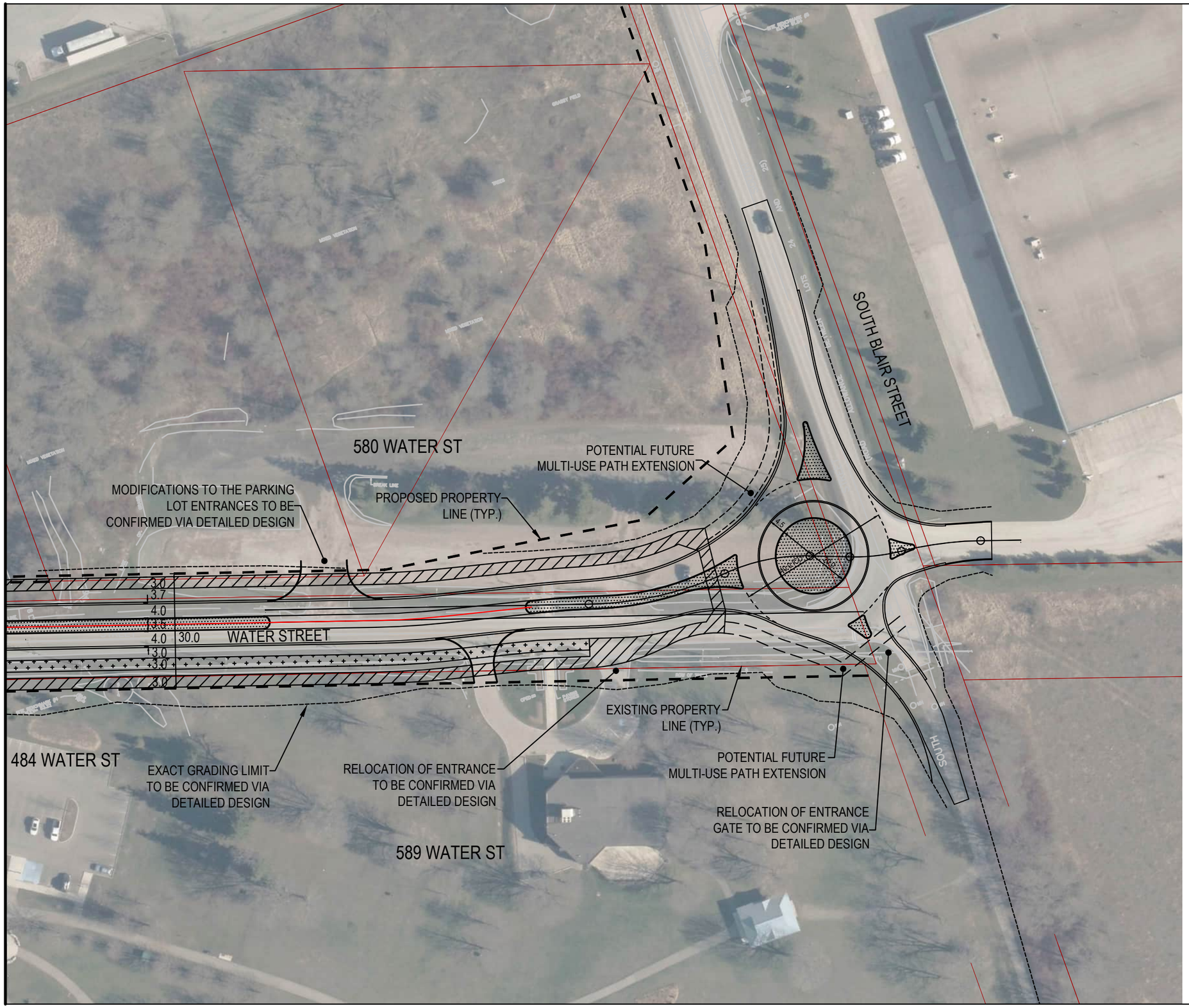
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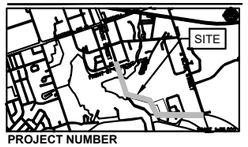
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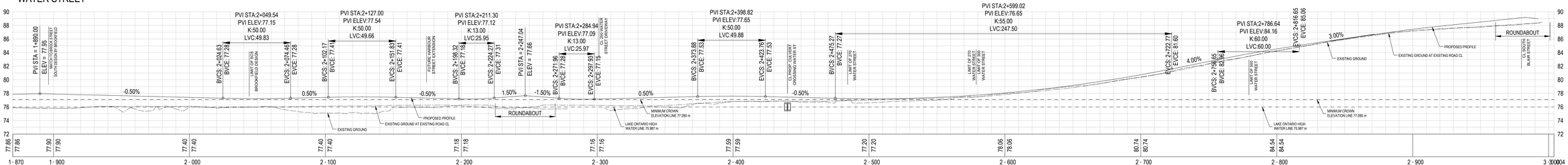
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PRELIMINARY/DRAFT

WATER STREET

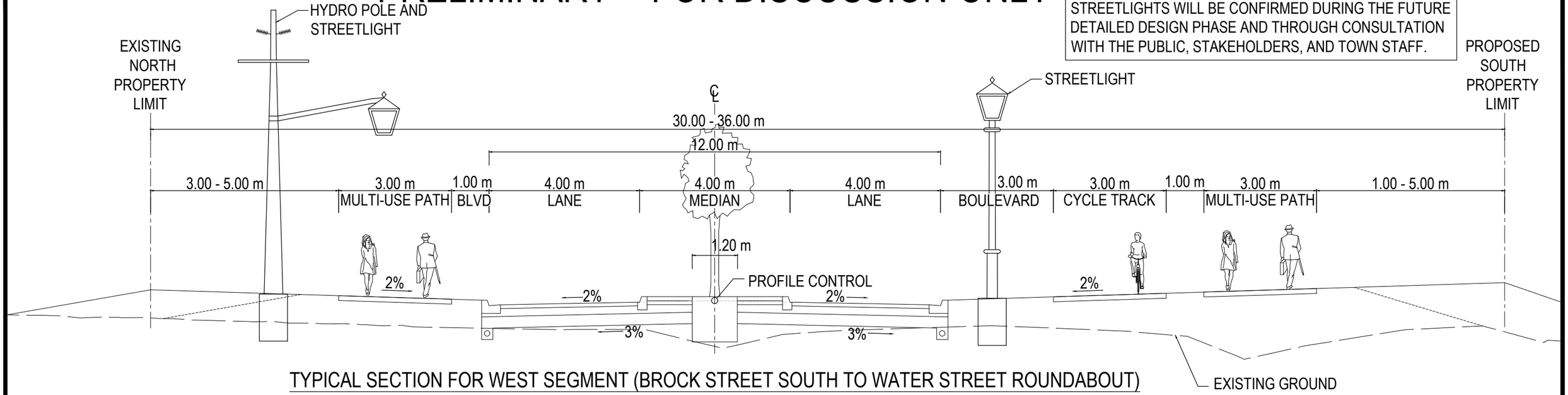


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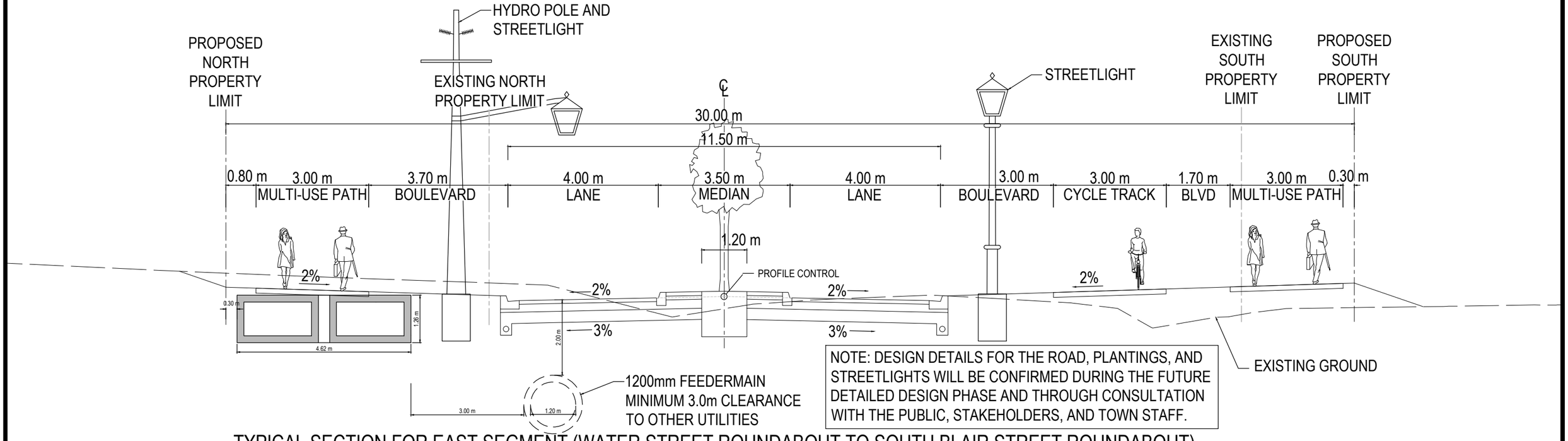
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PRELIMINARY - FOR DISCUSSION ONLY

NOTE: DESIGN DETAILS FOR THE ROAD, PLANTINGS, AND STREETLIGHTS WILL BE CONFIRMED DURING THE FUTURE DETAILED DESIGN PHASE AND THROUGH CONSULTATION WITH THE PUBLIC, STAKEHOLDERS, AND TOWN STAFF.



TYPICAL SECTION FOR WEST SEGMENT (BROCK STREET SOUTH TO WATER STREET ROUNDABOUT)



NOTE: DESIGN DETAILS FOR THE ROAD, PLANTINGS, AND STREETLIGHTS WILL BE CONFIRMED DURING THE FUTURE DETAILED DESIGN PHASE AND THROUGH CONSULTATION WITH THE PUBLIC, STAKEHOLDERS, AND TOWN STAFF.

TYPICAL SECTION FOR EAST SEGMENT (WATER STREET ROUNDABOUT TO SOUTH BLAIR STREET ROUNDABOUT)

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WATER STREET EA

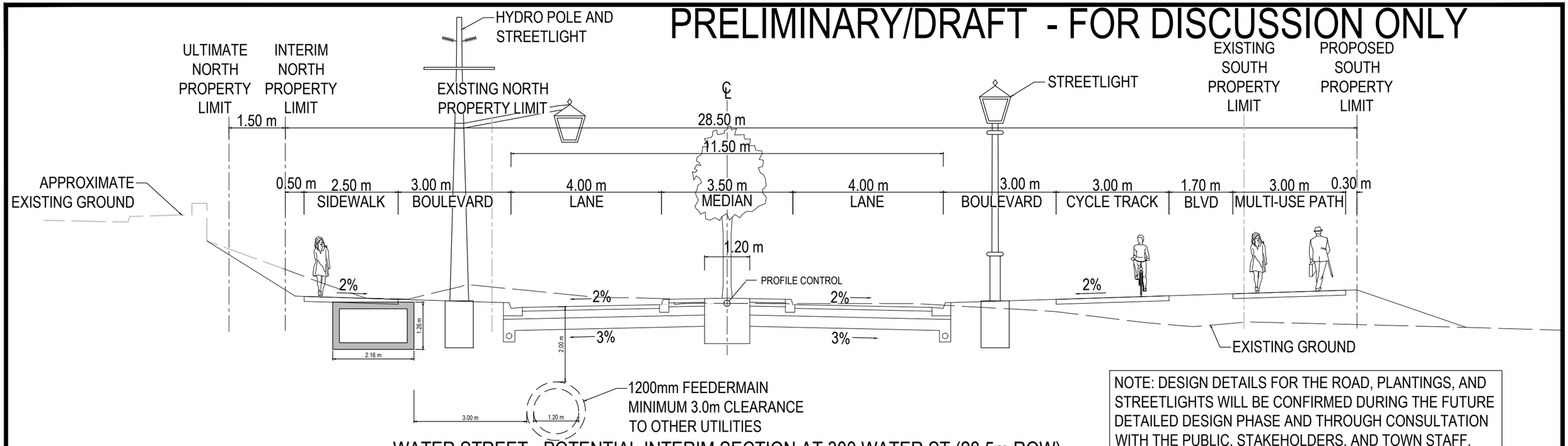
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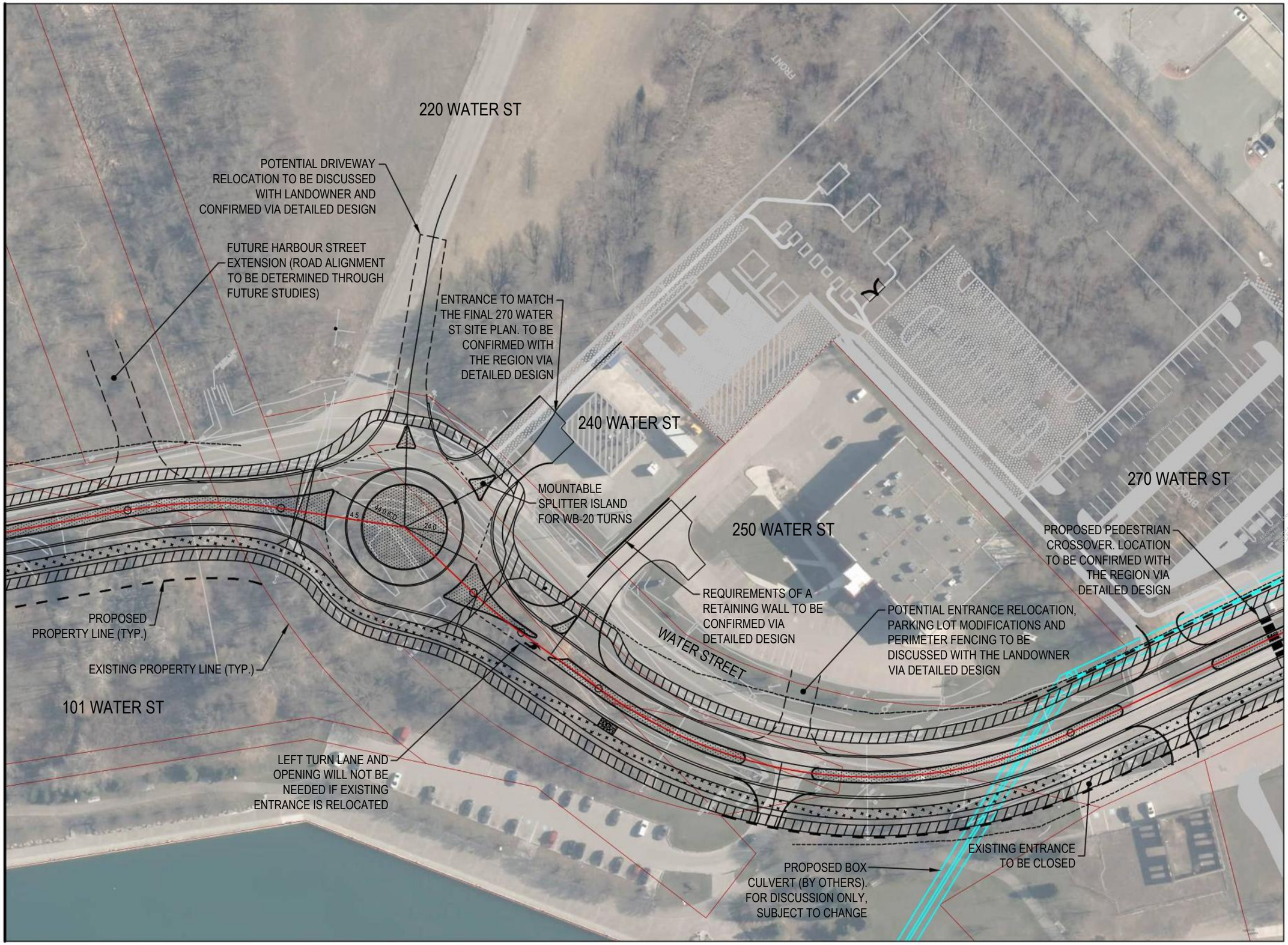


WATER STREET - POTENTIAL INTERIM SECTION AT 300 WATER ST (28.5m ROW)

NOTE: DESIGN DETAILS FOR THE ROAD, PLANTINGS, AND STREETLIGHTS WILL BE CONFIRMED DURING THE FUTURE DETAILED DESIGN PHASE AND THROUGH CONSULTATION WITH THE PUBLIC, STAKEHOLDERS, AND TOWN STAFF.

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LEGEND

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- PROPOSED PROPERTY LINE
- PROPOSED GRADING LIMIT
- PROPOSED BOX CULVERT (BY OTHERS)
- PROPOSED MULTI-USE PATH
- PROPOSED CYCLE TRACK
- PROPOSED MEDIAN
- PROPOSED TRANSIT STOP

SCALE

0 20 40 Meters
SCALE 1:1000 HORIZ

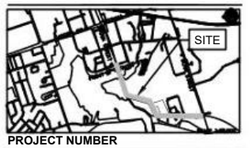
NOTES

1. ALL SITE PLANS SHOWN ON THIS DRAWING ARE FOR INFORMATION AND REFERENCE ONLY, AND ARE SUBJECT TO REFINEMENT AND APPROVALS BY THE TOWN OF WHITBY.
2. PROPOSED BOX CULVERT SHOWN ON THE DRAWING IS FOR INFORMATION AND REFERENCE ONLY, AND IS SUBJECT TO CHANGE.

ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	2025-04-11	ESR

KEY PLAN



PROJECT NUMBER

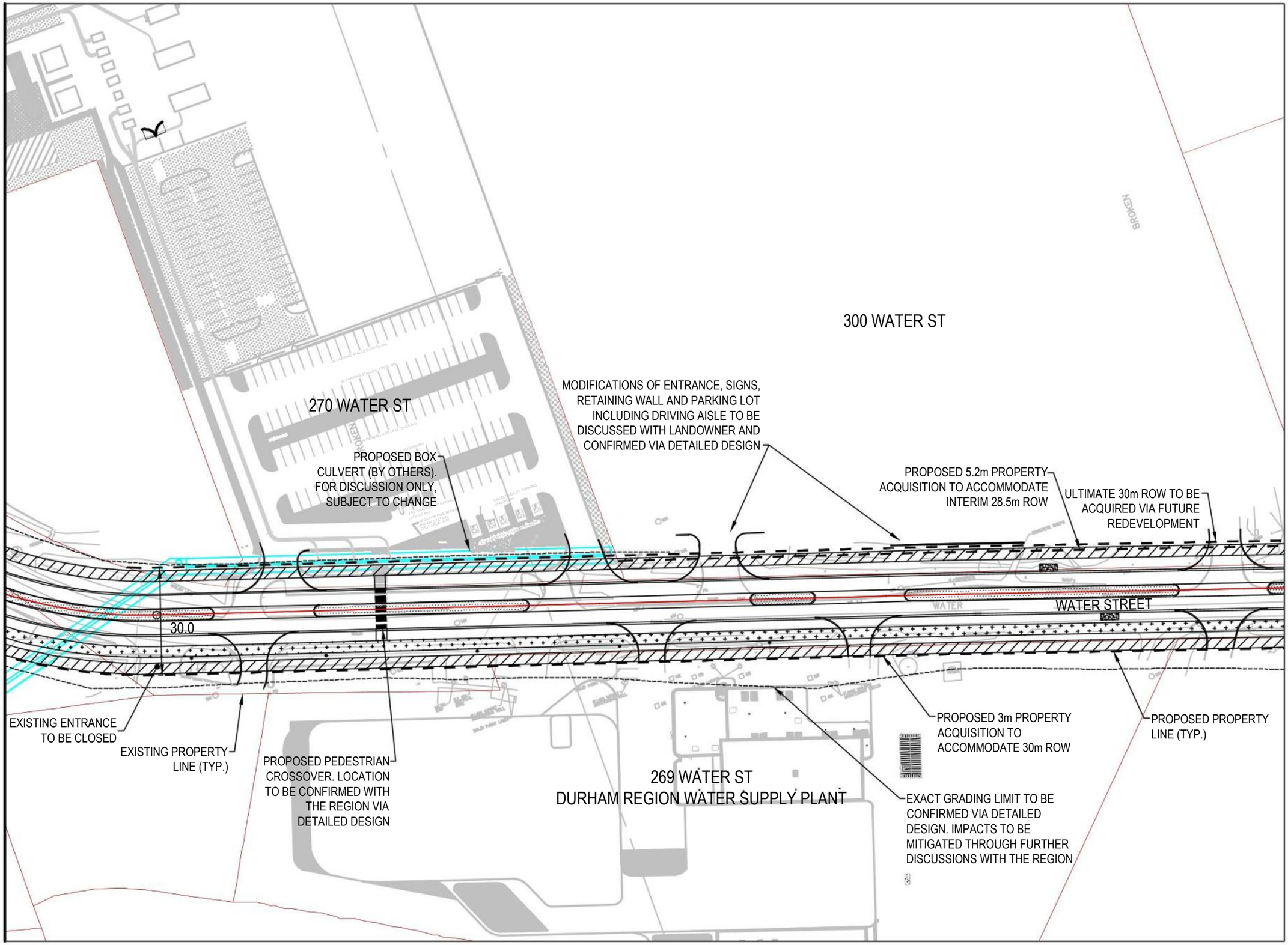
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SHEET TITLE

PREFERRED ALTERNATIVE ULTIMATE CONDITIONS PLAN

SHEET NUMBER

2A



AECOM

PROJECT

WATER STREET MCEA

WHITBY, ONTARIO

CLIENT

THE CORPORATION OF THE TOWN OF WHITBY

575 ROSSLAND ROAD EAST
WHITBY ON, L1N 2M8

CONSULTANT

AECOM CANADA LTD.
105 COMMERCE VALLEY DRIVE WEST
MARKHAM ON, L3T 7W3
905.886.7022 tel
www.aecom.com

LEGEND

- EXISTING PROPERTY LINE
- PROPOSED PROPERTY LINE
- PROPOSED GRADING LIMIT
- PROPOSED BOX CULVERT (BY OTHERS)
- PROPOSED MULTI-USE PATH
- PROPOSED CYCLE TRACK
- PROPOSED MEDIAN
- PROPOSED TRANSIT STOP

SCALE

0 20 40 Meters

SCALE 1:1000 HORIZ

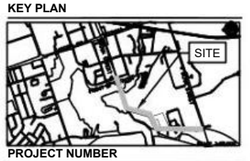
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ISSUE/REVISION

I/R	DATE	DESCRIPTION
1	2025-04-11	ESR

KEY PLAN



PROJECT NUMBER

60591304

SHEET TITLE

PREFERRED ALTERNATIVE ULTIMATE CONDITIONS PLAN

SHEET NUMBER

3A

Project Management Initials: Designer: Checked: Approved: ROLL PLAN
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Appendix H

Road Design Criteria

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DESIGN GUIDELINES / CRITERIA
Table 1: Water Street

DESIGN PARAMETERS	TOWN OF WHITBY STANDARDS[1]	TAC DESIGN STANDARDS[1]	PROPOSED DESIGN STANDARDS	COMMENTS
ROAD DESIGNATION	Local	UAU 50 (Urban Arterial Undivided)	UAU 50 (Urban Arterial Divided)	Town of Whitby Standards Table C3.01 TAC Ch. 2, Table 2.6.2
POSTED SPEED	40 km/h	40 km/h	40 km/h	Existing conditions: Water Street 40 km/h
DESIGN SPEED	50 km/h	50 km/h	50 km/h	Design speed permitted to be 10 km/h over posted speed when the $S_d \leq 50$ km/h
STOPPING SIGHT DISTANCE (MINIMUM)	N/A	65 m	65 m	Town of Whitby Standards Table C3.01 TAC Ch. 2, Table 2.5.2 From TAC he = 1.08 m ho = 0.00 m washout condition
EQUIVALENT 'K' FACTOR (MINIMUM)	7 crest 12 (no illumination) 6 Sag (illuminated)	7 crest 13 Sag (no illumination) 5-6 Sag (illumination)	7 crest 13 Sag (no illumination) 6 Sag (illumination)	Town of Whitby Standards Table C3.01 TAC Ch. 3, Table 3.3.2 (Crest) Ch. 3, Table 3.3.4 (Sag) Ch. 3, Table 3.3.5 (Comfort Sag)
SUPER-ELEVATION	N/A	e_{max} 4 %	2% (reversed crown)	TAC Ch. 3, Table 3.2.8
RADIUS (MINIMUM)	115 m (reversed crown)	115 m (reversed crown)	130 m (reversed crown)	Town of Whitby Standards Table C3.01 TAC Ch. 3, Table 3.2.8
GRADES (MIN. and MAX.)	Min: 0.5% Max: 5.0%	Min: 0.5% Max: 6.0%	Min: 0.5% Max: 5.0%	Town of Whitby Standards Table C3.01 TAC Ch. 3, Table 3.3.1 Maximum grade is 3.0% through an intersection
PAVEMENT WIDTH	• 8.5 m min. road width	• Through Lanes 3.0 - 3.7 m	• 12.0 m min. road width (including median) • Through Lanes 4.0 m	Town of Whitby Standards Table C3.01 TAC Ch. 4, Table 4.2.3 Pavement width is measured to face of curb
PEDESTRIAN AND CYCLING FACILITY WIDTHS	N/A	• Bike Path: 3.0 – 3.6 m • Multi-use Path: 3.0 – 6.0 m • Sidewalk: 1.8 -2.0 m	• Cycle Track: 3.0m • Multi-use Path: 3.0 m • Sidewalk: 1.5 m	TAC Ch. 5, Table 5.3.4 Table 5.3.5 Ch. 6, Table 6.3.1

DESIGN PARAMETERS	TOWN OF WHITBY STANDARDS[1]	TAC DESIGN STANDARDS[1]	PROPOSED DESIGN STANDARDS	COMMENTS
Median Island	3.0 – 5.0 m (wide planting median)	• 3.6 m min. at intersection • 2.0 m min. mid-block (width includes curb and gutters)	3.5-4.0 m	Town of Whitby Standard Drawing No. 412 TAC Ch.9, Pg. 150
ROW Width	18.0 – 20.0 m	N/A	30.0 m – 36.0 m	Town of Whitby Standards Table C3.01

Notes:

1. Town of Whitby design principles follow the Town's *Design Criteria and Engineering Standards (June 2022)*, and TAC *Geometric Design Guide for Canadian Roads (June 2017)* where indicated.

Appendix I

Traffic Operations Assessment Memo

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AECOM
30 Leek Crescent, Floor 4 905 882 4401 tel
Richmond Hill, ON, Canada L4B 4N4 905 882 4399 fax
www.aecom.com

Memorandum

To	Kevin Phillips, P.Eng.	Page 1
CC	Hossein Zarei, P.Eng.	
Subject	Brock and Water Street EA Study – Traffic Operations Assessment	
From	Nayer Daher, M.Eng.	
Date	February 07, 2019	Project Number 60591304

As part of the Schedule C Municipal Class Environmental Assessment (EA) Study and Preliminary Design of Brock Street and Water Street, AECOM has conducted a traffic operational assessment of Brock Street South and Water Street (generally from Victoria Street to South Blair Street) to examine whether the existing road cross section would be able to accommodate forecast traffic demand in the ultimate horizon year of 2031. This technical memorandum is intended to summarize the methodology, assumptions, and findings of the traffic operational assessment.

Methodology

The AECOM team obtained traffic movement counts for the Brock Street South intersections at Victoria Street, Watson Street, and Front Street from the Region of Durham's website and the WSP Dockside Transportation Study[1].

In order to forecast the traffic to the horizon year, a background growth rate was applied to these traffic counts, and added to the traffic volumes associated with the background developments in the area as identified in the WSP's Dockside Transportation Study[1]. The Dockside report was prepared by others in support of Brookfield Residential's proposed development located along Brock Street South, just south of Pringle Creek.

The highest projected volume of traffic along the Brock Street and Water Street mid-block sections was then used to examine the need for provision of additional capacity in the studied section of Brock Street South / Water Street. A Synchro model was also developed to analyze traffic operating conditions at the signalized intersection of Brock Street South and Victoria Street during both the AM and PM peak hours. In addition, signal warrant analysis was carried out to check if the future traffic volumes would warrant the installation of traffic signals at the Brock Street South intersections at Watson Street and Front Street.

Assumptions

The following key assumptions were made while undertaking this traffic operational assessment:

1. The ultimate horizon year is assumed to be 2031.
2. A conservative growth rate of two percent (2%) per annum was applied to the historic, yet recent, turning movement counts at the study area intersections. The noted growth rate of 2% was estimated based on comparison of the available Automated Traffic Recorder (ATR) data from the Region of Durham's website for the section of Brock Street immediately south of Victoria Avenue between 2016 and 2018.

[1] *"Dockside Transportation Study – Final" - WSP Canada Inc., June 2017*

3. According to the WSP's Dockside Transportation Study, the following background developments were taken into account as possible sources of additional traffic volumes in the study area:
   - Widening of Victoria Street to four lanes from Halls Road to Seaboard Gate and from South Blair Street to west of Thickson Road;
   - Victoria Street realignment from 510 m west of Hopkins Street to 410 m east of Hopkins Street;
   - Replacement of the Brock Street Bridge over Highway 401 and reconfiguration of the interchange;
   - Development of the GO East Rail Maintenance Facility east of South Blair Street and south of Victoria Street East; and
   - Residential and commercial developments at 1846 and 1900 Brock Street South (i.e., south of the Front Street intersection).
4. Per-lane capacity was assumed to be 800 vehicles per hour per lane as per *Exhibit 10-7 "Service Volumes for Urban Streets" – Highway Capacity Manual 2000*.
5. Signal splits at the Brock Street South / Victoria Street intersection were optimized for the 2031 operational assessment.

Summary of Findings

The per lane mid-block section volumes in the studied section in the AM and PM peak hour are presented in **Table 1**. As shown, none of the mid-blocks sections will be operating near or over-capacity.

Table 1: V/C Ratios for Mid-Block Sections in the Peak Direction of Travel in 2031

Road Section on Brock Street South	Analysis Results for Peak Direction of Travel					
	AM Peak Hour			PM Peak Hour		
	Hourly Volume	Per-Lane Capacity	V/C Ratio	Hourly Volume	Per-Lane Capacity	V/C Ratio
Victoria Street to Watson Street	485	800	0.61	659	800	0.82
Watson Street to Front Street	444		0.56	587		0.73
South of Front Street	437		0.55	589		0.74

Synchro analysis results of the Victoria Street and Brock Street South intersection in 2031 are summarized in **Table 2**. As shown, the overall intersection operation is expected to operate at LOS F during both the AM and PM peak hours in 2031. The analyses show that there would be major average vehicle delays of 225 seconds and 235 seconds during the AM and PM peak hours, respectively. In addition, the intersection would be operating over capacity as the overall v/c ratios are estimated at 2.26 and 2.36 in the AM and PM peak hours, respectively. The full Synchro report can be found in **Appendix A.**

Table 2: Traffic Operational Assessment of the Intersection of Brock Street South and Victoria Street in 2031

Intersection	Movement	AM Peak Hour				PM Peak Hour			
		V/C Ratio	Delay (sec)	LOS	95th Queue (m)	V/C Ratio	Delay (s)	LOS	95th Queue (m)
Victoria Street and Brock Street South	**EBL**	**1.91**	**451.7**	**F**	**222.1**	**2.41**	**666.8**	**F**	**452.4**
	EBTR	0.24	13.0	B	30.7	0.54	9.4	A	75.5
	WBL	0.11	21.6	C	12.1	0.27	22.3	C	15.2
	WBTR	**1.20**	**129.2**	**F**	**238.0**	0.98	30.5	C	127.4
	NBL	0.72	39.5	D	48.1	**1.40**	**285.6**	**F**	**58.9**
	NBTR	0.73	32.8	D	96.9	**1.83**	**426.0**	**F**	**264.4**
	SBL	**2.62**	**779.8**	**F**	**177.6**	**1.92**	**507.2**	**F**	**74.8**
	SBT	0.63	29.1	C	100.8	**1.30**	**194.2**	**F**	**181.2**
	SBR	**1.42**	**297.1**	**F**	**317.1**	0.89	65.4	E	116.1
	Overall Intersection	**2.26**	**224.6**	**F**	**-**	**2.36**	**236.2**	**F**	**-**

Signal warrant analysis showed that the projected 2031 traffic volumes do not warrant the installation of traffic signals at the Watson Street and Brock Street South as well as Front Street and Brock Street South intersections. **Appendix B** presents the detailed signal warrant analysis.

Appendix A

Synchro Analysis Output

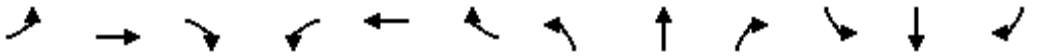


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	544	428	36	1478	151	444	422	403	1005
v/c Ratio	1.87	0.24	0.11	1.20	0.72	0.73	2.62	0.63	1.42
Control Delay	426.1	12.0	22.2	127.3	50.0	36.3	766.0	32.5	218.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	426.1	12.0	22.2	127.3	50.0	36.3	766.0	32.5	218.2
Queue Length 50th (m)	~155.5	21.3	4.8	~193.8	26.5	77.3	~145.7	67.8	~238.3
Queue Length 95th (m)	#222.1	30.7	12.1	#238.0	#48.1	96.9	#177.6	100.8	#317.1
Internal Link Dist (m)		381.3		373.9		277.0		288.8	
Turn Bay Length (m)	80.0		45.0		25.0		55.0		
Base Capacity (vph)	291	1756	314	1234	210	610	161	641	709
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.87	0.24	0.11	1.20	0.72	0.73	2.62	0.63	1.42

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	511	333	70	33	1266	94	121	322	33	401	383	955
Future Volume (vph)	511	333	70	33	1266	94	121	322	33	401	383	955
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.2	3.5	3.5	3.2	3.5	3.5	3.2	3.5	3.5	3.2	3.5	3.2
Total Lost time (s)	3.0	6.2		6.2	6.2		6.2	6.2		6.2	6.2	6.2
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		0.99	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1658	3294		1615	3338		1716	1742		1540	1842	1498
Flt Permitted	0.10	1.00		0.50	1.00		0.33	1.00		0.29	1.00	1.00
Satd. Flow (perm)	175	3294		854	3338		605	1742		463	1842	1498
Peak-hour factor, PHF	0.94	0.94	0.94	0.92	0.92	0.92	0.80	0.80	0.80	0.95	0.95	0.95
Adj. Flow (vph)	544	354	74	36	1376	102	151	402	41	422	403	1005
RTOR Reduction (vph)	0	17	0	0	6	0	0	4	0	0	0	188
Lane Group Flow (vph)	544	411	0	36	1472	0	151	440	0	422	403	817
Confl. Peds. (#/hr)	1		5	5		1	8					
Heavy Vehicles (%)	4%	6%	0%	6%	4%	29%	0%	7%	0%	12%	2%	3%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2			4			8		8
Actuated Green, G (s)	52.8	52.8		36.8	36.8		34.8	34.8		34.8	34.8	34.8
Effective Green, g (s)	52.8	52.8		36.8	36.8		34.8	34.8		34.8	34.8	34.8
Actuated g/C Ratio	0.53	0.53		0.37	0.37		0.35	0.35		0.35	0.35	0.35
Clearance Time (s)	3.0	6.2		6.2	6.2		6.2	6.2		6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	285	1739		314	1228		210	606		161	641	521
v/s Ratio Prot	c0.25	0.12			0.44			0.25			0.22	
v/s Ratio Perm	c0.76			0.04			0.25			c0.91		0.55
v/c Ratio	1.91	0.24		0.11	1.20		0.72	0.73		2.62	0.63	1.57
Uniform Delay, d1	29.8	12.7		20.9	31.6		28.3	28.4		32.6	27.2	32.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	421.8	0.3		0.7	97.6		11.2	4.3		747.2	1.9	264.5
Delay (s)	451.7	13.0		21.6	129.2		39.5	32.8		779.8	29.1	297.1
Level of Service	F	B		C	F		D	C		F	C	F
Approach Delay (s)		258.5			126.7			34.5			349.4	
Approach LOS		F			F			C			F	

Intersection Summary			
HCM 2000 Control Delay	224.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.26		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.4
Intersection Capacity Utilization	129.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	1158	1270	45	1087	101	657	121	456	703
v/c Ratio	2.37	0.54	0.27	0.98dr	1.40	1.82	1.92	1.30	0.96
Control Delay	643.0	9.0	23.8	30.8	279.4	408.8	493.3	188.7	34.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	643.0	9.0	23.8	30.8	279.4	408.8	493.3	188.7	34.3
Queue Length 50th (m)	~370.9	59.5	5.8	99.0	~27.7	~205.6	~38.1	~119.7	32.7
Queue Length 95th (m)	#452.4	75.5	15.2	127.4	#58.9	#264.4	#74.8	#181.2	#116.1
Internal Link Dist (m)		381.3		373.9		277.0		288.8	
Turn Bay Length (m)	80.0		45.0		25.0		55.0		
Base Capacity (vph)	488	2351	169	1340	72	360	63	351	735
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.37	0.54	0.27	0.81	1.40	1.82	1.92	1.30	0.96

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1112	1071	148	41	410	590	88	534	37	116	438	675
Future Volume (vph)	1112	1071	148	41	410	590	88	534	37	116	438	675
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.2	3.5	3.5	3.2	3.5	3.5	3.2	3.5	3.5	3.2	3.5	3.2
Total Lost time (s)	3.0	6.2		6.2	6.2		6.2	6.2		6.2	6.2	6.2
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00		1.00	1.00		0.99	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.91		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1708	3452		1724	3117		1715	1808		1512	1773	1469
Flt Permitted	0.13	1.00		0.22	1.00		0.20	1.00		0.20	1.00	1.00
Satd. Flow (perm)	231	3452		397	3117		365	1808		322	1773	1469
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.87	0.87	0.87	0.96	0.96	0.96
Adj. Flow (vph)	1158	1116	154	45	446	641	101	614	43	121	456	703
RTOR Reduction (vph)	0	11	0	0	5	0	0	2	0	0	0	445
Lane Group Flow (vph)	1158	1259	0	45	1082	0	101	655	0	121	456	258
Confl. Peds. (#/hr)	1		2	2		1	14		2	2		14
Heavy Vehicles (%)	1%	1%	3%	0%	3%	4%	0%	3%	0%	14%	6%	2%
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	Perm
Protected Phases	1	6			2			4			8	
Permitted Phases	6			2			4			8		8
Actuated Green, G (s)	67.8	67.8		42.8	42.8		19.8	19.8		19.8	19.8	19.8
Effective Green, g (s)	67.8	67.8		42.8	42.8		19.8	19.8		19.8	19.8	19.8
Actuated g/C Ratio	0.68	0.68		0.43	0.43		0.20	0.20		0.20	0.20	0.20
Clearance Time (s)	3.0	6.2		6.2	6.2		6.2	6.2		6.2	6.2	6.2
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	481	2340		169	1334		72	357		63	351	290
v/s Ratio Prot	c0.53	0.36			0.35			0.36			0.26	
v/s Ratio Perm	c1.10			0.11			0.28			c0.38		0.18
v/c Ratio	2.41	0.54		0.27	0.98dr		1.40	1.83		1.92	1.30	0.89
Uniform Delay, d1	27.1	8.2		18.5	25.1		40.1	40.1		40.1	40.1	39.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	639.7	0.9		3.8	5.4		245.5	385.9		467.1	154.1	26.3
Delay (s)	666.8	9.1		22.3	30.5		285.6	426.0		507.2	194.2	65.4
Level of Service	F	A		C	C		F	F		F	F	E
Approach Delay (s)		322.7			30.2			407.3			153.0	
Approach LOS		F			C			F			F	

Intersection Summary			
HCM 2000 Control Delay	236.2	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	2.36		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	15.4
Intersection Capacity Utilization	147.9%	ICU Level of Service	H
Analysis Period (min)	15		

dr Defacto Right Lane. Recode with 1 though lane as a right lane.
c Critical Lane Group

Appendix B

Signal Warrant Analysis

Signal Warrant Calculation

AECOM

MAJOR STREET:	Brock Street
MINOR STREET:	Watson Street
COMMENT	2031 Total Traffic

NUMBER OF APPROACH LANES: 1 [x] 2 [ ]

TEE INTERSECTION CONFIGURATION YES [ ] NO [X]

FLOW CONDITIONS: FREE FLOW (RURAL) [ ]
RESTRICTED FLOW (URBAN) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	1,086	1,474	n/a	640
1B - Minor	157	282	50%	110
2A - Major	929	1,192	50%	530
2B - Cross	67	51	50%	30

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% SATISFIED:	YES [ ]	NO [X]	Warrant for new intersection with forecast traffic
120% SATISFIED:	YES [ ]	NO [X]	Warrant for existing intersection with forecast traffic
100% SATISFIED:	YES [ ]	NO [X]	Warrant for existing intersection with existing traffic *
COMBO 80% SATISFIED:	YES [ ]	NO [X]	Warrant for existing intersection with existing traffic
80% SATISFIED:	YES [ ]	NO [X]	

* Consider full underground provisions if 100% for forecas

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
ALL APPROACHES	480	720	600	900	640
	% FULFILLED				89%

150% SATISFIED:	YES [ ]	NO [X]
120% SATISFIED:	YES [ ]	NO [X]
100% SATISFIED:	YES [ ]	NO [X]
80% SATISFIED:	YES [ ]	NO [X]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	110
	% FULFILLED				65%

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MAJOR STREET APPROACHES	480	720	600	900	530
	% FULFILLED				74%

150% SATISFIED:	YES [ ]	NO [X]
120% SATISFIED:	YES [ ]	NO [X]
100% SATISFIED:	YES [ ]	NO [X]
80% SATISFIED:	YES [ ]	NO [X]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	30
	% FULFILLED				39%

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

Signal Warrant Calculation

AECOM

MAJOR STREET:	Brock Street
MINOR STREET:	Front Street
COMMENT	2031 Total Traffic

NUMBER OF APPROACH LANES: 1 [X] 2 [ ]

TEE INTERSECTION CONFIGURATION YES [ ] NO [X]

FLOW CONDITIONS: FREE FLOW (RURAL) [ ]
RESTRICTED FLOW (URBAN) [X]

VOLUME	AM	PM	FACTOR *	
1A - All	883	1,456	n/a	585
1B - Minor	19	282	50%	75
2A - Major	864	1,174	50%	510
2B - Cross	9	16	50%	6

* This factor relates average of the "peak eight hours" to the average of the "am and pm peak hours"

OVERALL WARRANT

150% SATISFIED:	YES [ ]	NO [X]	Warrant for new intersection with forecast traffic
120% SATISFIED:	YES [ ]	NO [X]	Warrant for existing intersection with forecast traffic
100% SATISFIED:	YES [ ]	NO [X]	Warrant for existing intersection with existing traffic *
COMBO 80% SATISFIED:	YES [ ]	NO [X]	Warrant for existing intersection with existing traffic
80% SATISFIED:	YES [ ]	NO [X]	

* Consider full underground provisions if 100% for forecas

WARRANT 1 - MINIMUM VEHICULAR VOLUME

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
ALL APPROACHES	480	720	600	900	585
	% FULFILLED				81%

150% SATISFIED:	YES [ ]	NO [X]
120% SATISFIED:	YES [ ]	NO [X]
100% SATISFIED:	YES [ ]	NO [X]
80% SATISFIED:	YES [ ]	NO [X]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MINOR STREET APPROACHES	120	170	120	170	75
	% FULFILLED				44%

WARRANT 2 - DELAY TO CROSS TRAFFIC

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
MAJOR STREET APPROACHES	480	720	600	900	510
	% FULFILLED				71%

150% SATISFIED:	YES [ ]	NO [X]
120% SATISFIED:	YES [ ]	NO [X]
100% SATISFIED:	YES [ ]	NO [X]
80% SATISFIED:	YES [ ]	NO [X]

APPROACH LANES	1		2 OR MORE		AVERAGE HOUR PERIOD
FLOW CONDITION	FREE FLOW	REST. FLOW	FREE FLOW	REST. FLOW	
		X			
TRAFFIC CROSSING MAJOR STREET	50	75	50	75	6
	% FULFILLED				8%

1A - MINIMUM VEHICULAR VOLUME: Total vehicle volume on all approaches for average day

1B - MINIMUM VEHICULAR VOLUME: Total vehicle volume on minor streets

2A - DELAY TO CROSS TRAFFIC: Total vehicle volume on major street for average day

2B - DELAY TO CROSS TRAFFIC: Total vehicle and pedestrian volume crossing major street; comprising: (1) lefts from both minor streets, (2) heaviest through from minor street, (3) 50% of heavier left turn from major street when following criteria met: (a) left turn volume >120 and (b) left turn volume plus opposing volume > 720, (4) pedestrians crossing the major street.

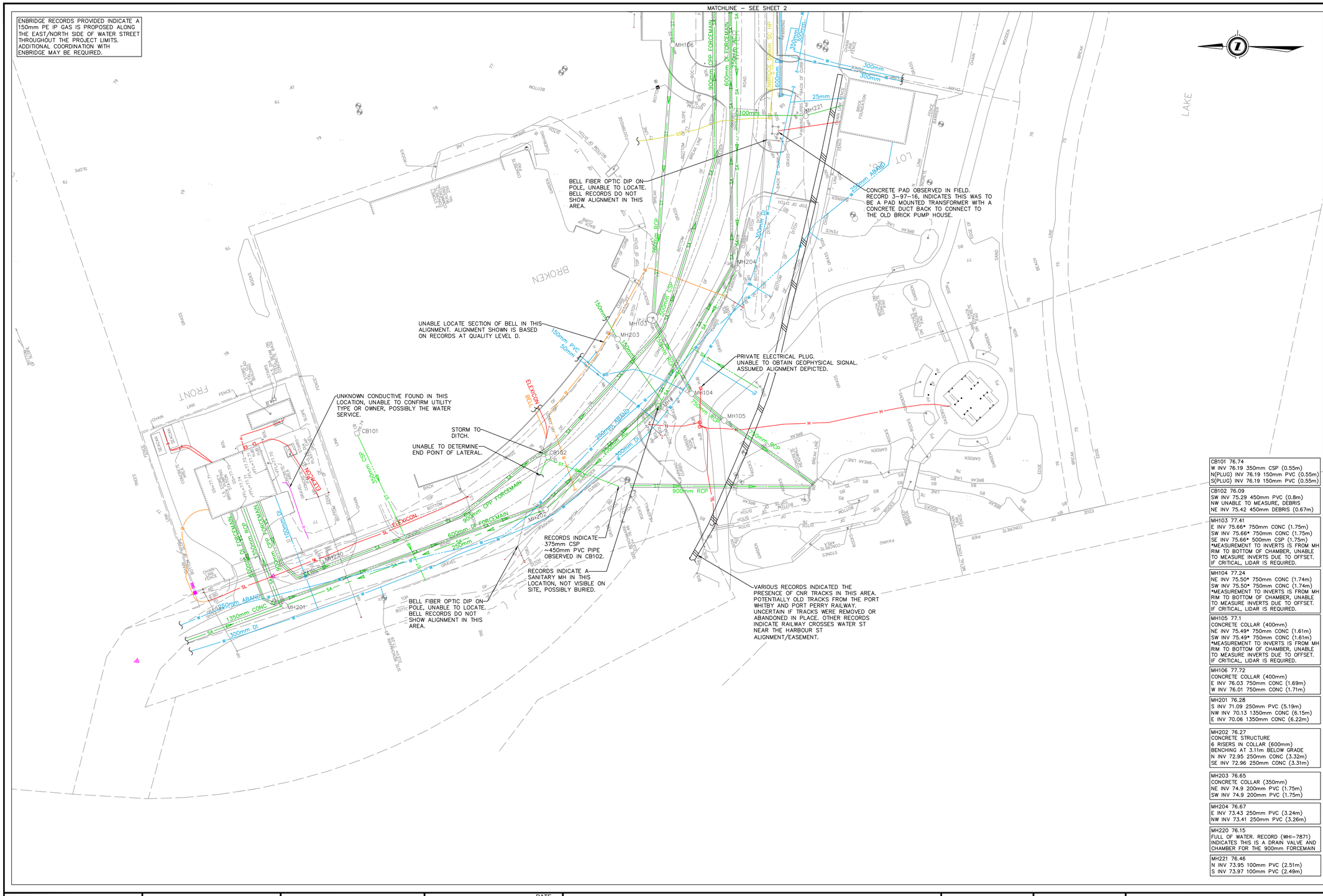
AECOM

Appendix J

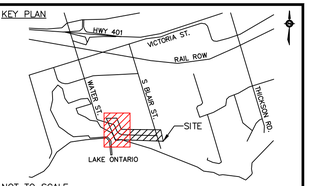
Subsurface Utility Engineering Survey

This document is not an accessible document. Please contact Engineering@whitby.ca for assistance with any accessibility issues.

ENBRIDGE RECORDS PROVIDED INDICATE A 150mm PE IP GAS IS PROPOSED ALONG THE EAST/NORTH SIDE OF WATER STREET THROUGHOUT THE PROJECT LIMITS. ADDITIONAL COORDINATION WITH ENBRIDGE MAY BE REQUIRED.



KEY PLAN



NOT TO SCALE

GENERAL NOTES

1. THE FIELD INVESTIGATION WAS COMPLETED IN FEBRUARY 2022.
2. THE LIMITS OF THE INVESTIGATION ARE AS PER SHOWN ON THE DRAWING.
3. THE BASE PLAN FOR THIS DRAWING WAS PROVIDED BY THE CLIENT AND 4SIGHT IS NOT RESPONSIBLE FOR ITS ACCURACY.
4. UTILITY SIZES AND MATERIALS ARE SHOWN IF AVAILABLE FROM RECORD INFORMATION.
5. KNOWN UTILITY OWNERS IDENTIFIED WITHIN PUBLIC RIGHT OF WAY INCLUDE:
   a. WATER – REGION OF DURHAM
   b. SEWERS – REGION OF DURHAM
   c. ELECTRICAL – ELEXICON
   d. TELECOM – BELL
   e. GAS – ENBRIDGE
7. SEE PROJECT REPORT FOR ADDITIONAL DETAILS.

LEGEND:

G	GAS
W	WATER
SA	SANITARY SEWER
ST	STORM SEWER
H	HYDRO
B	TELECOMMUNICATIONS (BELL)
TV	ROGERS COAXIAL
SL	STREETLIGHT
TL	TRAFFIC LIGHT
PL	PIPELINE
C	PRIVATE COMMUNICATIONS
E	PRIVATE ELECTRICAL
FO	FIBER OPTIC
BF	BELL FIBER OPTIC
RF	ROGERS FIBER OPTIC
CF	COGECO FIBER OPTIC
	QUALITY LEVEL "B"
	QUALITY LEVEL "C"
	QUALITY LEVEL "D"
LIMIT	LIMIT OF INVESTIGATION
	CONTINUES OUT OF LIMITS
	FLOW ARROW
	END CAP
	LOCATION BASED ON FIELD OBSERVATION
#	LOCATION BASED ON RECORDS
	LOSS OF SIGNAL
	CONTROL MONUMENT
MH	STORM MANHOLE
MH	SANITARY MANHOLE
CB	CATCH BASIN
	WATER CHAMBER
	FIRE HYDRANT
	WATER VALVE
HP	HYDRO POLE
LS	LIGHT STANDARD
HW	HAND WELL
	FIRE HYDRANT
	TELECOM PEDESTAL
FTG	FLUSH-TO-GRADE

ASCE QUALITY LEVELS

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INCREASED QUALITY

QUALITY LEVEL "D" – INFORMATION DERIVED FROM EXISTING RECORDS OR VERBAL RECOLLECTIONS.

QUALITY LEVEL "C" – INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGEMENT IN CORRELATING THIS INFORMATION TO THE QUALITY LEVEL "D" INFORMATION.

QUALITY LEVEL "B" – INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF THE UTILITIES.

QUALITY LEVEL "A" – PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITES OBTAINED BY THE ACTUAL EXPOSURE AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES.

PREPARED BY. 4SIGHT UTILITY ENGINEERS

REVISIONS

DISCLAIMER.
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		DATE (MM/DD/YY)
DRAWN	JOSH C.	02/28/22
CHECKED	JOSH C.	03/01/22
APPROVED	ALAN R.	03/15/22

SCALE 1:500 (0 10 20m)

THE ENGINEER'S SEAL HEREON IS TO CERTIFY THAT THE UTILITIES SHOWN HAVE BEEN INVESTIGATED IN ACCORDANCE WITH STANDARD SUE INDUSTRY PRACTICES. ALL OTHER INFORMATION HEREON HAS BEEN PROVIDED BY OTHERS AND IS NOT A PART OF THIS CERTIFICATION.

PROJECT.
WHITBY WATER SUPPLY PLANT

DRAWING.
SUBSURFACE UTILITY ENGINEERING INVESTIGATION

CLIENT.
AECOM
REGION OF DURHAM

PROJECT NO. 21-0254

SHEET NO. 01 OF 02

ENBRIDGE RECORDS PROVIDED INDICATE A 150mm PE IP GAS IS PROPOSED ALONG THE EAST/NORTH SIDE OF WATER STREET THROUGHOUT THE PROJECT LIMITS. ADDITIONAL COORDINATION WITH ENBRIDGE MAY BE REQUIRED.

MATCHLINE - SEE SHEET 2

RECORDS INDICATE 375 CONCRETE PIPE. ~500mm CONCRETE PIPE OBSERVED IN MH108 TO THE EAST AND A ~500mm PVC PIPE OBSERVED GOING WEST FROM MH111.

ELECTRIC TO FLOOD LIGHTS

UNABLE LOCATE SECTION OF BELL IN THIS ALIGNMENT. ALIGNMENT SHOWN IS BASED ON RECORDS AT QUALITY LEVEL D.

ENBRIDGE RECORD SHOWS MATERIAL CHANGE IN THIS APPROXIMATE LOCATION.

UNCLEAR FOR FIELD CHECKS AND RECORDS HOW CB 120 AND CB 121 CONNECT TO THE REST OF THE STORM SEWER NETWORK

SUMP PUMP PRESENT IN MH

SUMP PUMP PRESENT IN CB

SUMP PUMP PRESENT IN CB

UNABLE TO OBSERVE NORTH PIPE DUE TO CHAMBER OFFSET. ASSUMED TO CONNECT FROM MH1002. RECOMMEND LIDAR SCAN IF CONFIGURATION IS CRITICAL.

UNABLE TO INVESTIGATE WATER CHAMBER, PAD LOCKED

ELECTRICAL BOX OBSERVED ON BUILDING EXTERIOR, UNABLE TO OBTAIN SIGNAL TO LOCATE ELECTRICAL SERVICE. ALSO NOT SHOWN ON AVAILABLE UTILITY RECORDS.

LOCKED CONCRETE CHAMBERS OBSERVED IN FIELD, UNABLE TO INVESTIGATE. NO UTILITIES ASSOCIATED WITH THESE CHAMBERS SHOWN ON AVAILABLE UTILITY RECORDS. ONE STORM PIPE OBSERVED IN OUTFALL TO THE SOUTH WAS CONFIRMED TO ENTER THIS CHAMBER VIA A SOUND TEST. UNCERTAIN WHAT HAPPENS TO PIPE AFTER ENTERING CHAMBER. SEE SUE REPORT FOR MORE DETAILS.

MONITORING WELLS

SUSPECTED WATER CHAMBER. UNABLE TO INVESTIGATE, PAD LOCKED. NOT SHOWN ON AVAILABLE UTILITY RECORDS.

DITCH INLET

BROKEN

STREET

ONTARIO

LOT 25

CB120 76.30
S 75.24 250mm PVC (1.06m)

CB121 76.19
N 74.90 250mm PVC (1.29m)

CB122 76.18
NE INV 74.51 200mm PVC (1.67m)
SW INV 74.49 200mm PVC (1.69m)

MH123 N/A
E -4.18 200mm ST (4.18m)

CB124 76.28
S 74.40 200mm PVC (1.88m)
E UNABLE TO MEASURE, DEBRIS

CB125 76.26
E INV 74.47 200mm CONC (1.79m)
W INV 74.42 200mm CONC (1.84m)

CB126 76.22
UNABLE TO COLLECT INVERTS. CB COVERED WITH ICE

CB127 76.21
UNABLE TO COLLECT INVERTS. CB COVERED WITH ICE

CB128 76.27
NW INV 74.89 200mm CONC (1.38m)
SE INV 74.9 200mm CONC (1.37m)

CB129 N/A
W -1.33 200mm CONC (1.33m)

CB130 83.08
DITCH INLET, UNABLE TO OPEN GRATE

MH1002 76.44
NE INV 74.44 200mm CONC (2.00m)
SW INV 75.39 200mm CONC (1.05m)

MH1001 77.56
N PIPE OFFSET, UNABLE TO MEASURE
SE INV 76.10 100mm METAL (1.46m)
S INV 75.39 650mm CONC (1.82m)

CB1000 75.84
NW INV 75.10 100mm METAL (0.74m)

CB1003 77.12
CHAMBER IS VERY DEEP, UNABLE TO MEASURE INVERT. RECOMMEND LIDAR SCAN IF DIMENSIONS/ CONFIGURATION IS CRITICAL.

STM VAULT 1003 77.12
W INV 77.66 1000mm METAL (2.45m)
S INV UNABLE TO MEASURE, OFFSET IN CHAMBER. RECOMMEND LIDAR SCAN IF DIMENSIONS/ CONFIGURATION IS CRITICAL

WC1 82.14
CHAMBER FULL OF WATER, CANNOT SEE PIPE. BOTTOM OF CHAMBER IS APPROX 77.91m (~4.23m).

WC2 80.45
TOP OF PIPE 78.69 600mm METALLIC

WC3 78.54
TOP OF PIPE 76.71 600mm METALLIC
SEE LIDAR DATA FOR ADDITIONAL DETAIL.

WC4 77.68
TOP OF PIPE 73.94 1200mm METALLIC
SEE LIDAR DATA FOR ADDITIONAL DETAIL.

WC5 76.70
TOP OF PIPE 74.56 600mm METALLIC
SEE LIDAR DATA FOR ADDITIONAL DETAIL.

CB107 77.64
N (DEBRIS) 76.44 250mm (1.20m)

MH108 78.98
N INV 76.57 750mm CONC (2.41m)
S INV 76.28 250mm CONC (2.70m)
E INV 76.46 500mm CONC (2.52m)
W INV 76.28 750mm CONC (2.70m)

MH109 78.68
N INV 76.7 750mm CONC (1.98m)
S INV 76.66 750mm CONC (2.02m)
E INV 76.68 500mm CONC (2.00m)
W INV 76.73 150mm CONC (1.95m)

CB110 78.92
N (DEBRIS) 77.56 250mm PVC (1.36m)

MH111 79.46
E INV 77.53 500mm PVC (1.93m)
W INV 77.53 500mm PVC (1.93m)

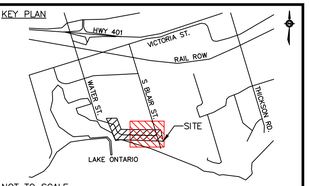
CB112 81.21
N (DEBRIS) 79.79 250mm PVC (1.42m)

MH205 78.48
N INV 75.99 100mm UNK (2.49m)
S INV 75.99 100mm UNK (2.49m)
PIPES ARE FULL OF DEBRIS

MH206 77.24
E INV 73.84 250mm CONC (3.4m)
W INV 73.84 250mm CONC (3.4m)

MH207 77.88
S INV 73.72 200mm CONC (3.69m)
SE INV 73.7 200mm CONC (3.71m)
N INV 73.77 200mm CONC (3.64m)
W INV 73.67 400mm CONC (3.74m)

KEY PLAN



NOT TO SCALE

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   d. TELECOM – BELL
   e. GAS – ENBRIDGE
7. SEE PROJECT REPORT FOR ADDITIONAL DETAILS.

LEGEND:

G	GAS
W	WATER
SA	SANITARY SEWER
ST	STORM SEWER
H	HYDRO
B	TELECOMMUNICATIONS (BELL)
TV	ROGERS COAXIAL
SL	STREETLIGHT
TL	TRAFFIC LIGHT
PL	PIPELINE
C	PRIVATE COMMUNICATIONS
E	PRIVATE ELECTRICAL
FO	FIBER OPTIC
BF	BELL FIBER OPTIC
RF	ROGERS FIBER OPTIC
CF	COGECO FIBER OPTIC
	QUALITY LEVEL "B"
	QUALITY LEVEL "C"
	QUALITY LEVEL "D"
LIMIT	LIMIT OF INVESTIGATION
	CONTINUES OUT OF LIMITS
	FLOW ARROW
	END CAP
*	LOCATION BASED ON FIELD OBSERVATION
#	LOCATION BASED ON RECORDS
	LOSS OF SIGNAL
	CONTROL MONUMENT
MH	STORM MANHOLE
MH	SANITARY MANHOLE
CB	CATCH BASIN
	WATER CHAMBER
	FIRE HYDRANT
	WATER VALVE
HP	HYDRO POLE
LS	LIGHT STANDARD
HW	HAND WELL
	FIRE HYDRANT
	TELECOM PEDESTAL
FTG	FLUSH-TO-GRADE

ASCE QUALITY LEVELS

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QUALITY LEVEL "A" – PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITES OBTAINED BY THE ACTUAL EXPOSURE AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES.

PREPARED BY.
4SIGHT UTILITY ENGINEERS

REVISIONS

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		DATE (MM/DD/YY)
DRAWN	JOSH C.	02/28/22
CHECKED	JOSH C.	03/01/22
APPROVED	ALAN R.	03/15/22

SCALE 1:500 (0, 10, 20m)

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PROJECT.
WHITBY WATER SUPPLY PLANT

DRAWING.
SUBSURFACE UTILITY ENGINEERING INVESTIGATION

CLIENT.
AECOM
REGION OF DURHAM

PROJECT NO. 21-0254

SHEET NO. 02 OF 02

AECOM

Appendix K

Cultural Heritage Evaluation Report & Heritage Impact Assessment: Port Whitby & Port Perry Railway Corridor

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Cultural Heritage Evaluation Report and Heritage Impact Assessment: Port Whitby & Port Perry Railway Corridor

Water Street Improvement between Brock Street South and South Blair Street

Town of Whitby

60783709

June 2026

Delivering a better world

Statement of Qualifications and Limitations

The attached Report (the "Report") has been prepared by AECOM Canada ULC ("AECOM") for the benefit of the Client ("Client") in accordance with the agreement between AECOM and Client, including the scope of work detailed therein (the "Agreement").

The information, data, recommendations and conclusions contained in the Report (collectively, the "Information"):

- is subject to the scope, schedule, and other constraints and limitations in the Agreement and the qualifications contained in the Report (the "Limitations");
- represents AECOM's professional judgement in light of the Limitations and industry standards for the preparation of similar reports;
- may be based on information provided to AECOM which has not been independently verified;
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued;
- must be read as a whole and sections thereof should not be read out of such context;
- was prepared for the specific purposes described in the Report and the Agreement; and
- in the case of subsurface, environmental or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time.

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2	June 12, 2026	Preston Arens	Final

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Executive Summary

AECOM Canada ULC (AECOM) was retained by the Town of Whitby to conduct a Cultural Heritage Evaluation Report (CHER) as well as a Heritage Impact Assessment (HIA) for the Port Whitby & Port Perry Railway (PW&PPR) Corridor to determine whether the PW&PPR Corridor has Cultural Heritage Value or Interest (CHVI) according to Ontario Regulation 9/06 (O. Reg. 9/06). This work is being completed ahead of the Water Street Improvements Brock Street South to South Blair Street (The Project). AECOM had previously conducted a Cultural Heritage Screening Report (CHSR) as part of the Schedule “C” Municipal Class Environmental Assessment Study (MCEA) and determined the PW&PPR Corridor as being impacted by the Project and requiring further cultural heritage assessment with the present report.

The Town of Whitby is undertaking the Project to realign the curve of Water Street immediately south of Brock Street South, on a new alignment outside the existing right-of-way (ROW). Other proposed work includes boulevard improvements on the north and south sides of Water Street, and two new roundabouts proposed along Water Street. The Project is being undertaken to address existing issues with parking, road alignment, and drainage.

Based on a comprehensive review that included background historical research, field assessments, professional expertise, and the application of O. Reg. 9/06, it has been determined that the PW&PPR Corridor possesses CHVI at the local level and therefore qualifies for designation under the *Ontario Heritage Act*.

The PW&PPR Corridor holds historical value due to its association with the PW&PPR, a local railway company established by residents of the Town of Whitby. This railway played a significant role in the historical development of the town, particularly in connecting Port Whitby to Port Perry, Lindsay, and the broader railway network, including the Midland Railway, the Grand Trunk Railway and later the Canadian National Railway. The history of the PW&PPR Corridor also speaks to the anthropogenic transformation of the landscape in the Town of Whitby over the past two centuries. The construction of railways and other transportation infrastructure was instrumental in the formation of the town and the transformation of the Whitby waterfront from a natural landscape used by Indigenous peoples to an industrial harbour and, more recently, to a community-oriented recreational area. The vestiges of the corridor, and any remaining archaeological potential within the corridor, are considered to yield, or have the potential to yield information that contributes to an understanding of a community or culture, particularly as these relate to human land use in what is now the Town of Whitby. Despite its historical significance, the PW&PPR Corridor was found to lack physical and contextual value. The removal of railway tracks and ties, along with

significant alterations to the waterfront of Port Whitby, has effectively eliminated the transportation and industrial functions and the historical context of the corridor.

In light of the CHVI of the PW&PPR Corridor documented in this report, and the anticipated impacts of the Project as outlined in **Section 8**, cultural heritage mitigation is required. Selection and implementation of mitigation measures should be done in consultation with a Town of Whitby Heritage Planner.

In consideration of the impacts outlined in **Table 3** of this report, it was determined that there will be direct, permanent, irreversible impacts to the PW&PPR Corridor, which will in turn directly impact the CHVI of the corridor. As a result, conservation and mitigation options were evaluated, and the following recommendations developed:

General Recommendations:

- **Designation under the Ontario Heritage Act**: Given the identified cultural heritage value or interest of the PW&PPR Corridor, the Town of Whitby should consider designation of the corridor under Part IV of the Ontario Heritage Act to formally recognize and protect its heritage attributes.
- **Indigenous Engagement:** Engagement with relevant Indigenous communities should be undertaken during the detailed design phase to identify and incorporate Indigenous values, interests, and perspectives into the Project, including opportunities for interpretation and commemoration.
- **Archaeological Assessment and Mitigation:** All required archaeological assessments shall be completed prior to construction in accordance with applicable provincial standards and guidelines. Any identified archaeological resources will be addressed through appropriate mitigation measures, including licensed archaeological investigation, documentation, and reporting.
- **Commemoration Strategy (Applicable to All Options):** Regardless of the conservation option selected, the incorporation of commemorative measures is strongly encouraged, as it represents a positive intervention that enhances public understanding, appreciation, and engagement with the history of the corridor. See **Section 9.2.3** for potential commemorative options.

Conservation Strategy Recommendations:

- **Preferred Conservation Strategy – Modified Design (Option 2):** A modified design approach (Option 2) is recommended as the preferred conservation strategy. This approach represents a balanced response that minimizes impacts to key

heritage attributes while allowing the Project to proceed. In particular, the following measures are recommended:

- Retention of the pedestrian crossing alignment (Design Modification B) to maintain the physical and visual continuity of the PW&PPR Corridor across Water Street and support its legibility as a historic transportation route; or if not feasible,
- Maintenance of corridor connectivity and landscape continuity (Design Modification C), including:
  - Formalized pedestrian and cyclist connections between the corridor and adjacent multi-use pathways;
  - Implementation of wayfinding and interpretive signage; and
  - Strategic retention and planting of vegetation aligned with the historic corridor edges to reinforce its linear form

- **Alternative Approach – Preliminary Design with Commemoration (Option 3):** Should the Town determine that the modified design approach (Option 2) is not feasible, proceeding with the Preliminary Design (Option 3) may be undertaken, provided that a commemorative strategy is implemented to interpret and communicate the cultural heritage value of the PW&PPR Corridor. See **Section 9.2.3** for more detailed information.

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1. Introduction

1.1 Study Context

AECOM Canada ULC (AECOM) was retained by the Town of Whitby to conduct a Cultural Heritage Evaluation Report (CHER) as well as a Heritage Impact Assessment (HIA) for the Port Whitby & Port Perry Railway (PW&PPR) Corridor to determine whether the PW&PPR Corridor has Cultural Heritage Value or Interest (CHVI) according to Ontario Regulation 9/06 (O. Reg. 9/06). This work is being completed ahead of the Water Street Improvements Brock Street South to South Blair Street (The Project). AECOM had previously conducted a Cultural Heritage Screening Report (CHSR) as part of the Schedule "C" Municipal Class Environmental Assessment Study (MCEA) and determined the PW&PPR Corridor as being impacted by the Project and requiring further cultural heritage assessment with the present report.

The Town of Whitby is undertaking the Project to realign the curve of Water Street immediately south of Brock Street South, on a new alignment outside the existing right-of-way (ROW). Other proposed work includes boulevard improvements on the north and south sides of Water Street, and two new roundabouts proposed along Water Street. The Project is being undertaken to address existing issues with parking, road alignment, and drainage.

1.2 Methodology

The intent of the CHER/HIA is to determine whether this the PW&PPR Corridor has CHVI based on the criteria of O. Reg. 9/06, and to explore conservation options and, if required, to prepare mitigation measures to minimize anticipated Project impacts to the CHVI and heritage attributes of the property. This CHER/HIA was prepared in support of the municipal planning and approvals process and was conducted in accordance with the *Ontario Heritage Act* and applicable municipal and provincial heritage policies and guidance, including the Town of Whitby Cultural Heritage Impact Assessment Terms of Reference. This CHER/HIA includes the following key tasks:

- A review of the Cultural Heritage Screening Report: Water Street Improvement between Brock Street South and South Blair Street – Municipal Class Environmental Study finalized by AECOM in 2023 for the Project;
- Community engagement with groups and individuals with associations to the PW&PPR Corridor, including the Town of Whitby (see **Section 6** for more detail);

- Preparation of a land use history of the PW&PPR Corridor based on a review of primary and secondary sources, previous evaluations, and research, as well as historical mapping;
- A field review was completed by AECOM field staff in March of 2026 to document the existing conditions of the PW&PPR Corridor and surrounding area;
- An evaluation of the PW&PPR Corridor according to the criteria outlined in O. Reg. 9/06, Criteria for Determining Cultural Heritage Value, or Interest, and
- Preparation of a draft Statement of Cultural Heritage Value including a list of heritage attributes, if applicable.
- A description of the Preliminary Design for the Water Street Improvements in relation to the PW&PPR Corridor;
- A description of the potential project impacts on the cultural heritage value and heritage attributes of the PW&PPR Corridor; and
- A list of mitigation measures and recommendations to conserve the CHVI of the PW&PPR Corridor, as required.

2. Location and Description of the PW&PPR Corridor

As its name suggests, the Port Whitby and Port Perry Railroad historically ran from Port Whitby on the shore of Lake Ontario to Port Perry on the shore of Lake Scugog, with an extension running north to Lindsay around Lake Scugog. Within the current bounds of the Town of Whitby, the former PW&PPR Corridor ran in a generally north-south direction from Port Whitby through the settlements of Whitby, Brooklin, and the village of Myrtle before passing into Scugog Township at Townline Road.[1]

The more northerly portions of the PW&PPR Corridor were abandoned in stages through the 20th century, with the portions between the Scugog and Brooklin having ceased operations by the 1940s. These, and the portions between Brooklin and the Canadian Pacific Railway (CPR, now CPKC) line in the north side of Whitby were entirely removed by the 1970s. The section of the PW&PPR Corridor running through Whitby between the CPR at the north end of the town and the Canadian National Railway (CNR) line at the south end of the town were subsequently removed by the mid 1990s. The last portion of the former PW&PPR line, running from the CNR tracts down to the Lake Ontario waterfront were extant until at least 2018 (see **Section 5**).

While traces of the former PW&PPR Corridor exist within the Town of Whitby, because of the span of time since the line's abandonment and removal, most of the corridor has been subsumed, either by agricultural fields in the north end of the town, or by the urban expansion of the Town of Whitby. In consequence, the only section of the PW&PPR Corridor that can be readily identified as a railway bed is the section between Watson Road East and the Waterfront Trail Parking Lot to the south of Water Street, which was the most recently decommissioned. Therefore, the term "PW&PPR Corridor" hereafter refers only to the section of the former corridor between Watson Street East and the Waterfront Trail Parking Lot, which is still extant, and is the Subject Area for this CHER/HIA.

2.1 Heritage Recognition of the PW&PPR Corridor

The PW&PPR Corridor has no formal heritage recognition within the Town of Whitby. However, the railway is acknowledged in the pamphlet for the Town's self-guided walking tour of Port Whitby, which notes that the area contains the last portion of the PW&PPR line. The pamphlet, which was published in 2016, notes that the area retains tracks, although these have since been removed, with only the corridor remaining (Town of Whitby, 2016).

1. Bryant Side Road, in the Township of Scugog, branches north off of Townline Road at the intersection of Townline Road and the former PW&PPR rail bed.

Figure 1: The PW&PPR Corridor on Base Mapping

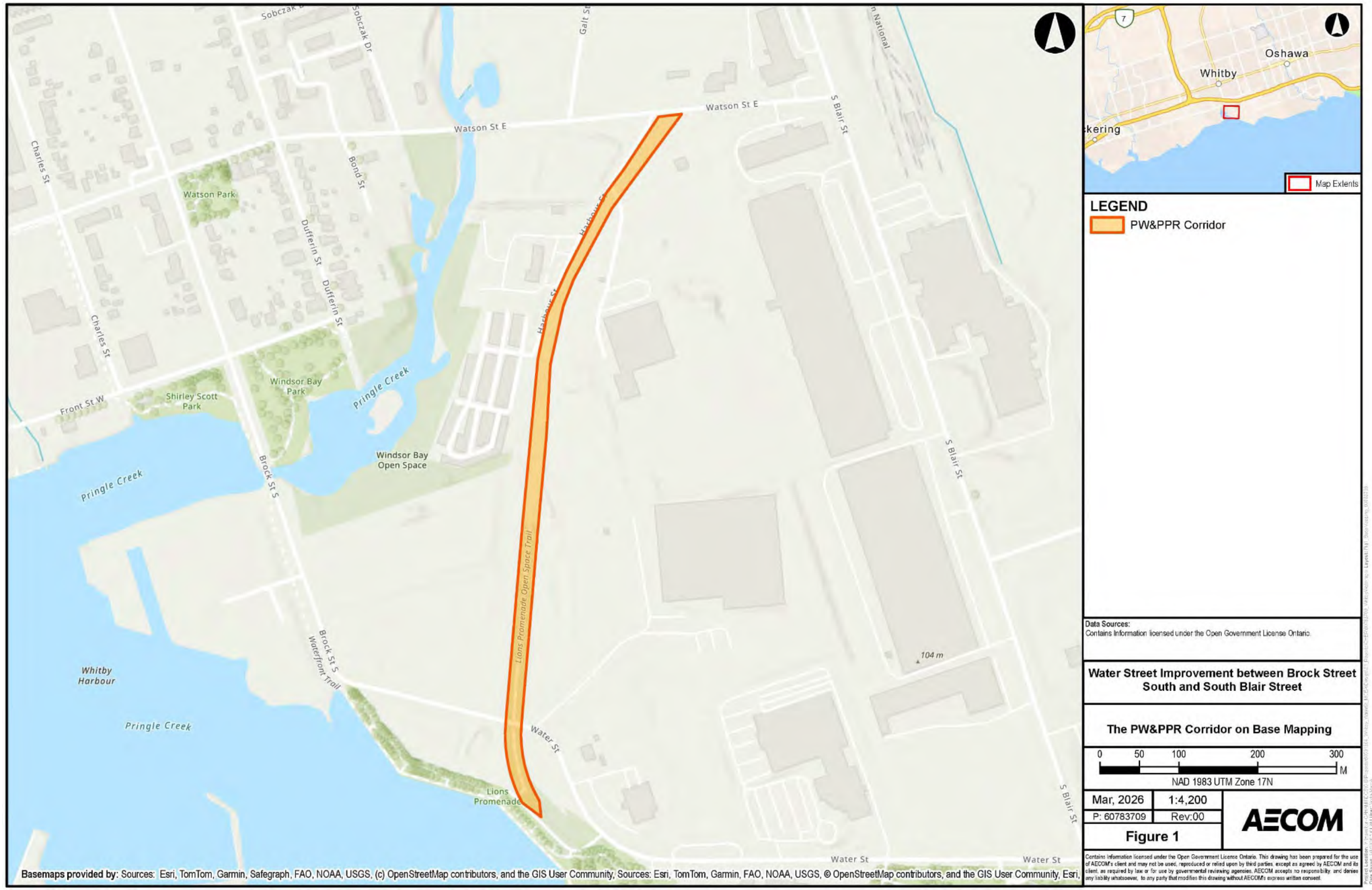
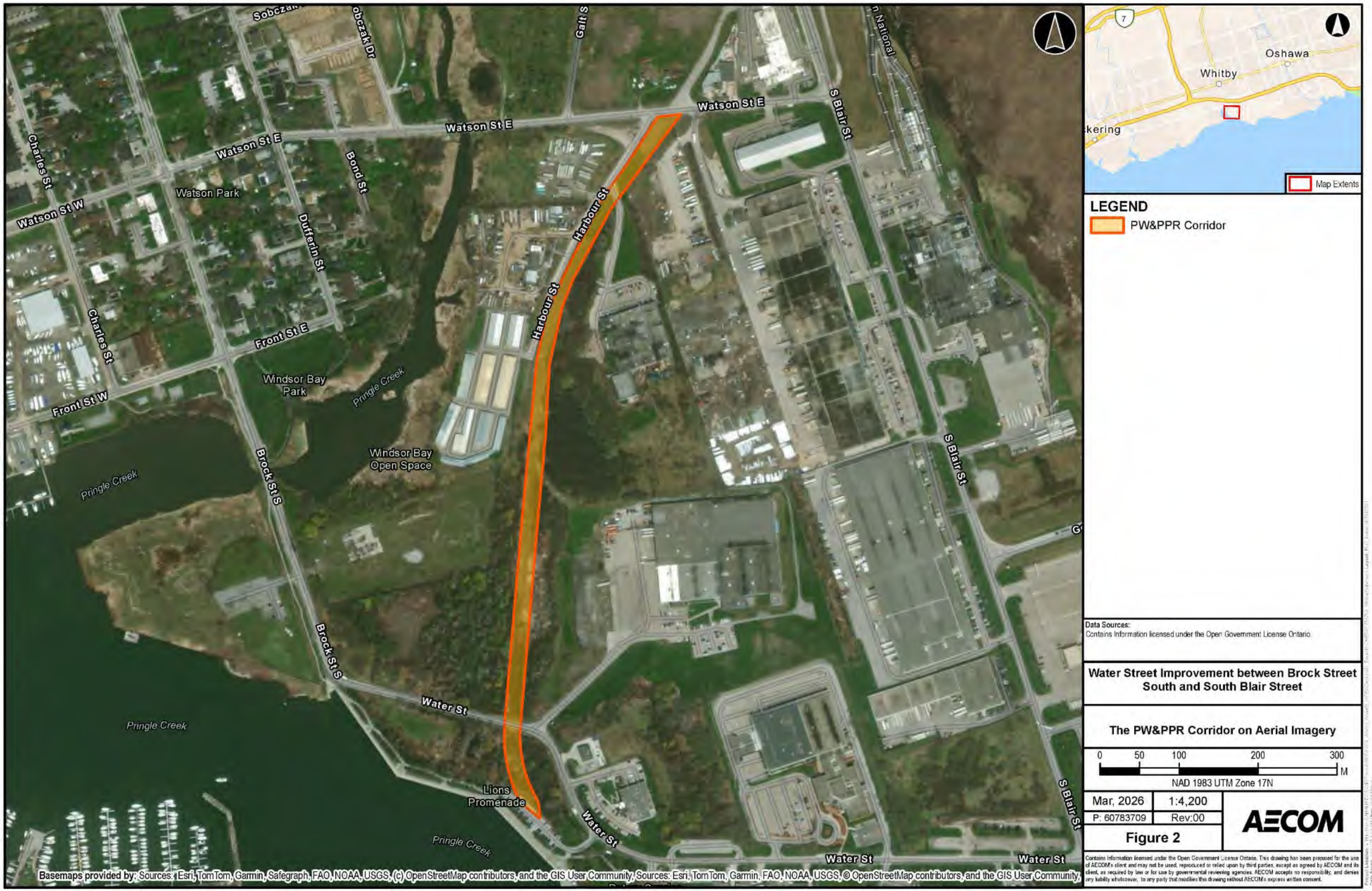


Figure 2: The PW&PPR Corridor on Aerial Imagery



3. Policy Context

The following sections provide an overview of heritage policies relevant to the PW&PPR Corridor.

3.1 Planning Act and Provincial Planning Statement

The *Planning Act* (1990) and the associated Provincial Planning Statement (PPS, 2024) provide a legislative framework for land use planning in Ontario. Both documents identify matters of provincial interest, which include the conservation of significant features of architectural, cultural, historical, archaeological, or scientific interest. The *Planning Act* requires that all decisions affecting land use planning matters "shall be consistent with" the PPS. In general, the PPS recognizes that Ontario's long-term prosperity, environmental health, and social well-being depend on protecting natural heritage, water, agricultural, mineral, cultural heritage, and archaeological resources for their economic, environmental, and social benefits.

Pursuant to Section 4.6 of the PPS, Policy 4.6.1. states a "*Protected heritage property, which may contain built heritage resources or cultural heritage landscapes, shall be conserved*." The PPS issued under the authority of the *Planning Act* defines "conserved" as "*means the identification, protection, management and use of built heritage resources, cultural heritage landscapes and archaeological resources in a manner that ensures their cultural heritage value or interest is retained. This may be achieved by the implementation of recommendations set out in a conservation plan, archaeological assessment, and/or heritage impact assessment that has been approved, accepted or adopted by the relevant planning authority and/or decision-maker. Mitigative measures and/or alternative development approaches should be included in these plans and assessments*."

To conserve Built Heritage Resources (BHRs) or Cultural Heritage Landscapes (CHLs), a municipality or approval authority may require a Heritage Impact Assessment (HIA) and/or a conservation plan to guide the approval, modification, or denial of a proposed development or site alteration that affects a cultural heritage resource. Using tools such as heritage impact assessments, municipalities and approval authorities can further enhance their own heritage preservation objectives.

Furthermore, a policy in Section 4.6 of the PPS, Policy 4.6.3., states "*Planning authorities shall not permit development and site alteration on adjacent lands to protected heritage property unless the heritage attributes of the protected heritage property will be conserved*."

3.2 Ontario Heritage Act

The Ontario Heritage Act enables municipalities and the province to designate individual properties and/or districts as being of CHVI. *Ontario Regulation 9/06, Criteria for Determining Cultural Heritage Value or Interest of the Ontario Heritage Act* provides criteria for determining CHVI. If a property meets two or more of the criteria, it may be designated under Section 29 of the *Ontario Heritage Act.* The province or municipality may also "list" a property, or include a property on a municipal register, that has not been designated but meets one or more of the following criteria under *Ontario Regulation 9/06, Criteria for Determining Cultural Heritage Value or Interest of the Ontario Heritage Act* and is thus believed to be of CHVI:

1. The property has design value or physical value because it is a rare, unique, representative or early example of a style, type, expression, material or construction method;
2. The property has design value or physical value because it displays a high degree of craftsmanship or artistic merit;
3. The property has design value or physical value because it demonstrates a high degree of technical or scientific achievement;
4. The property has historical value or associative value because it has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community;
5. The property has historical value or associative value because it yields, or has the potential to yield, information that contributes to an understanding of a community or culture;
6. The property has historical value or associative value because it demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community;
7. The property has contextual value because it is important in defining, maintaining or supporting the character of an area;
8. The property has contextual value because it is physically, functionally, visually or historically linked to its surroundings; and
9. The property has contextual value because it is a landmark.

3.3 Durham Region Land Use Policies

The *Region of Durham Official Plan* (OP) is the policy document that establishes policies and strategic direction for future growth in the region. The plan was most recently updated in 2024 with the intent of guiding regional policy and land use planning to the year 2051. It should be noted that, pursuant to Bill 23, as of January 1, 2025, the planning responsibilities of Durham Region were conferred to its eight constituent municipalities. As such, the *Region of Durham OP* therefore provides land use policy direction, while ultimate approval authority under the *Planning Act* rests with the municipalities.

The *Region of Durham OP* envisions the substantial growth of the regional population over the next 25 years and seeks to balance that growth with access to services and the conservation of the natural, rural, and historical areas that are cherished by Durham residents (Durham Region, 2024: 9-10). The OP outlines that the Region should "*preserve and complement built and natural heritage character of existing areas*" and that the policies should provision for a "*vibrant and attractive public realm incorporating art, culture and heritage, and contributing to a sense of place and identity*". To that end, Section 3 of the *Region of Durham OP* contains policies specific to Built and Cultural Heritage. Policies relevant to the present report are reproduced below.

> *Built & Cultural Heritage*
>
> *The Region prioritizes the recognition, conservation, and enhancement of cultural heritage in the region, including resources and landscapes, such as downtowns, historical areas, scenic lookout areas, archaeological sites or natural elements that are valued together for their interrelationship, meaning or association with the community.*
>
> *It is the policy of Council to:*
>
> > *3.3.32 Recognize downtowns and historical areas as key inter- and intraregional destinations based on their historic and traditional function as centres for culture and commerce, their built form and their cultural and social importance.*
> >
> > *3.3.33 Strengthen, restore and enhance the local, historical and cultural heritage, character and role of Durham's downtowns and historical areas as walkable centres of tourism, recreation, housing, employment, main street shopping and social gathering to foster cultural capital and a creative economy.*

3.3.34 Encourage the conservation and enhancement of the distinct character and unique local, historical and/or cultural heritage of Durham's downtowns, especially during redevelopment or intensification of surrounding areas by considering:

a) scale and massing of new buildings to complement the existing built form within the downtown;

b) protecting important built elements and other heritage features, including facades and other built form, as part of development and redevelopment;

c) a transition that supports a visual connection between historic neighbourhoods and new development;

d) conserving cultural heritage of existing buildings and structures; and

e) preserving and enhancing the urban tree canopy in downtowns.

3.3.35 Encourage economic development and tourism and support historic shopping functions by promoting downtowns as key areas for locating local businesses, including restaurants, cafes and other attractions that are well served by transit and accessible through a variety of transportation modes.

3.3.36 Consider the following where downtowns coincide with a Strategic Growth Area or Local Centre:

a) balancing intensification and redevelopment with sensitivity to local heritage, built form and character;

b) providing healthy, accessible and complete communities that reduce vehicular dependence and support a mix of land uses, active transportation, transit routes and community services and facilities that serve the needs of residents of all ages and abilities, in accordance with Policy 3.3.1;

c) providing a range of appropriate housing options, including compact, higher density housing types, affordable housing and special needs housing that have regard for historical neighbourhoods within the downtown;

d) incorporating sustainability and climate resilient development that achieves the Region's climate resiliency and sustainability objectives, in accordance Section 3.2, while maintaining the local heritage; and

e) implementing mobility choices that facilitate active transportation and cycling that contribute to main street shopping and the overall economic development of the downtown.

3.3.37 Promote downtowns as focal points of culture, art, entertainment and assembly through the provision of public squares, cultural facilities, parks and other community services.

3.3.38 Promote a high-quality public realm, in accordance with Policy 3.3.3.

3.3.39 Require area municipal official plans to support downtowns with policies that:

a) strengthen the intended role and character of the downtown;

b) enhance and conserve historic and cultural resources and functions;

c) provide for appropriate development that addresses the built, natural and cultural heritage of the downtown within which it is situated;

d) guide development, redevelopment and intensification while protecting and preserving built heritage resources, and cultural heritage landscapes;

e) support the restoration and where appropriate, the adaptive reuse of built heritage resources;

f) provide an appropriate interface or transition between new developments and protected heritage properties or heritage conservation districts;

g) provide for development that is compatible with existing communities; and

h) identify the core values and function of the downtown(s).

3.3.40 Promote built and cultural heritage awareness throughout the region and support area municipal efforts to establish heritage conservation districts and areas.

3.3.41 Encourage area municipalities to:

a) adopt policies to protect and enhance cultural heritage resources in their official plans, including the use of heritage impact assessments where development is proposed adjacent to properties designated under the Ontario Heritage Act, heritage conservation districts and provincial heritage properties;

b) utilize the Ontario Heritage Act to conserve, protect and enhance the built and cultural heritage resources of the municipality;

c) establish and maintain Municipal Heritage Committees to consult on matters relating to built and cultural heritage resources and landscapes during the planning process and the designation of heritage

conservation districts and properties as provided for in the Ontario Heritage Act;

d) update municipal heritage registers on a regular basis;

e) create urban design standards in historic districts and areas to reflect the history, character and streetscape; and

f) create and retain a list of cultural heritage landscape features and include official plan policies to protect and enhance these features throughout the region.

3.3.42 Engage with Indigenous communities, along with area municipalities, and consider their interests when identifying, protecting and managing cultural heritage and archaeological resources.

3.3.43 Encourage built and cultural resource conservation through adaptive reuse. Where original uses cannot be maintained, promote opportunities for adaptive reuse of heritage structures and sites, including the recycling of building materials, wherever feasible.

3.3.44 Evaluate and conserve, where possible, cultural heritage resources in all capital works projects.

3.3.45 Support the development of scenic lookouts or staging areas outside the Urban Area in appropriate areas to promote the preservation and utilization of the region's cultural heritage landscapes.

3.3.46 Encourage area municipalities to conserve and protect significant natural and cultural heritage landscapes through the development process, including the Lake Ontario waterfront, the Lake Ontario Waterfront Trail, Lake Scugog, Lake Simcoe and the Rouge National Urban Park views and vistas.

3.4 Town of Whitby Land Use Policies

3.4.1 Town of Whitby Official Plan

The *Town of Whitby Official Plan* is the principal policy document for the town that establishes a land use strategy to guide the physical development of the Municipality, while assessing and managing the social, economic, and environmental effects of growth within the town. The current iteration of the *Town of Whitby OP* was consolidated in December of 2024 and is intended to direct development until 2031 (Town of Whitby, 2024). The OP outlines that "*Whitby's vision is to be a healthy, sustainable and complete community providing for balanced residential and*

employment growth, while maintaining a high quality of life and enhancing its cultural and natural heritage attributes." To that end, it is the policy of the municipality "*to recognize and protect the Municipality's natural heritage and cultural heritage resources to attract economic development, including tourism opportunities*" and to "*encourage the expansion of recreation and tourism based on assets such as the Lake Ontario Waterfront, arts and cultural facilities, cultural heritage resources, natural heritage features, active and passive recreational areas, and tourist destinations*." (Town of Whitby, 2024). In addition to these general goals that pertain to the PW&PPR Corridor, the Town of Whitby OP also includes a larger set of policies specific to cultural heritage. These policies are included in Section 6 of the OP, with select policies reproduced below.

6.1 Cultural Heritage Resources and Archaeological Resources

6.1.1 Goal

> *6.1.1.1 To identify and conserve Whitby's cultural heritage resources and archaeological resources for the benefit of existing and future generations, to enhance Whitby's sense of community and identity, and to contribute to its sustainability and economic viability.*

6.1.2 Objectives

> *6.1.2.1 To identify, conserve, and enhance cultural heritage resources in accordance with the Ontario Heritage Act and to ensure that such resources are protected through the development approval process in accordance with applicable legislation, plans, programs, and guidelines.*
>
> *6.1.2.4 To encourage the development of a municipal-wide culture of conservation by promoting cultural heritage initiatives as part of a comprehensive economic, environmental, and social strategy to recognize that cultural heritage resources contribute to achieving a sustainable, healthy, and prosperous community.*

6.1.3 Cultural Heritage Resources

> *6.1.3.1 The Municipality shall protect and conserve cultural heritage resources in accordance with applicable legislation, policies, and recognized heritage protocols. In this regard, the Municipality:*
>
> > *a) shall maintain a publicly accessible Register of Properties of Cultural Heritage Value or Interest (Heritage Register) consisting of cultural heritage resources designated under Parts IV (individual) or V (district) of the Ontario Heritage Act and non-designated properties that have been identified by Council as having cultural heritage value or interest;*

b) shall use applicable Federal, Provincial, and municipal legislation and guidelines to conserve and maintain all designated properties on the Heritage Register;

c) may designate built heritage resources and cultural heritage landscapes;

d) may establish Heritage Conservation Districts under Part V of the Ontario Heritage Act and adopt Heritage Conservation District Plans for each district;

e) may establish policies and/or guidelines and tools to manage cultural heritage resources and recognize the importance of cultural heritage;

f) may enter into heritage easement agreements to conserve cultural heritage resources; and

g) shall promote local heritage and properties on the Heritage Register through educational programs, exhibits, displays, brochures, and local events.

6.1.3.4 The Municipality, in consultation with the municipal heritage committee, shall encourage the designation and retention of cultural heritage resources on the original site and that such resources be integrated into new development and redevelopment, where appropriate, through the development approval process and other appropriate mechanisms. Retention of façades alone will generally be discouraged.

6.1.3.8 The Municipality may require a cultural heritage impact assessment that describes the cultural heritage resource and potential impacts of development and recommends strategies to mitigate negative impacts, where the alteration, development, or redevelopment of property is proposed on, or adjacent to cultural heritage resources that are designated under Part IV or Part V of the Ontario Heritage Act.

6.1.3.9 The Municipality may require a cultural heritage impact assessment for the removal of a property from the Heritage Register or the demolition of part or all of a building or structure on a property identified on the Heritage Register.

6.1.3.10 The Municipality may impose, as a condition of any development approvals, the implementation of appropriate conservation, restoration, or mitigation measures to ensure the conservation of any affected cultural heritage resources.

6.1.3.11 Where cultural heritage resources cannot be retained, they shall be documented and are encouraged to be commemorated where appropriate.

4. Existing Conditions

4.1 Field Review

A field review of the PW&PPR Corridor and surrounding area was conducted by AECOM field staff on March 4, 2026. Representative photos from the field review are included in **Section 4.3**, below.

4.1.1 Field Review Limitations

Snowpack to an approximate depth of 15 to 20 centimetres was present along the PW&PPR Corridor during the field review. The snowpack generally obscured the ground conditions along the corridor, but during the field review, several test trenches were dug through the snowpack, and several melted areas examined to confirm the ground conditions along the PW&PPR Corridor.

4.2 Surrounding Area

As noted in **Section 2**, the extant portion of the PW&PPR Corridor runs from north to south from the Watson Street East to the Waterfront Trail Parking Lot within the Town of Whitby. The portions of the corridor anticipated to be impacted by the project are located along Water Street near the southern terminus of the corridor.

The area surrounding the PW&PPR Corridor is primarily industrial and commercial, although some significant green spaces exist around the corridor. The properties directly north of Watson Road East contain a commercial welding establishment, an auto wrecker, and a field. The extant corridor to the south of Watson Street East follows along the east side of Harbour Street before continuing south to Water Street. This stretch of the PW&PPR Corridor is generally treed but is flanked by commercial and industrial establishments, including a trucking yard, plastic and rubber manufactory, and an industrial warehouse to the east, and a towing company and impound yard, storage facility, and two brownfield sites to the west. To the south of Water Street, the area includes public parks and trails along the Lake Ontario waterfront that are part of the Whitby Lions Promenade. The park areas provide recreational access to the Lake Ontario waterfront, while commemorating the industrial heritage of Port Whitby.

Photograph 1: Watson Road East, looking west (AECOM, 2026)



Photograph 2: Watson Road East, looking east (AECOM, 2026)



Photograph 3: Signage for Watson Street East and Harbour Street, with the PW&PPR Corridor and an industrial property in the background. Looking east (AECOM, 2026)



Photograph 4: Auto wrecking business to the north of Watson Road East (AECOM, 2026)



Photograph 5: Harbour Street, looking south (AECOM, 2026)



Photograph 6: Storage facility and towing business to the west of Harbour Street, looking north (AECOM, 2026)



Photograph 7: Large warehouse facility to the east of the corridor, looking southeast (AECOM, 2026)



Photograph 8: Water Street, looking southeast (AECOM, 2026)



Photograph 9: Water Street, looking west (AECOM, 2026)



Photograph 10: Whitby Harbour, looking south from the parking area at the terminus of the PW&PPR Corridor (AECOM, 2026)



Photograph 11: Preserved mooring cleats and anchor motifs commemorate the heritage of Whitby Harbour along the Lions Promenade (AECOM, 2026)



Photograph 12: Anchors are also used to commemorate the heritage of Whitby Harbour along the Lions Promenade (AECOM, 2026)



Photograph 13: South-facing view of Whitby Harbour pier. Note the lighthouse and mooring cleats (AECOM, 2026)



Photograph 14: A former municipal pumphouse now serves as a beer garden and event space along the Lake Ontario waterfront (AECOM, 2026)



Photograph 15: Lions Promenade pavilion to the east of the harbour mouth (AECOM, 2026)



Photograph 16: Entrance to the Lions Promenade. The parking area at right is the terminus of the PW&PPPR Corridor (AECOM, 2026)



4.3 Description of the Port Whitby & Port Perry Railway Corridor

Although the PW&PPR Corridor passes through a fairly uniform context through the Port Whitby, area, the corridor itself includes two distinct sections. The first section, running alongside Harbour Street for approximately 350 metres southerly from Watson Street East, includes an open corridor that has been fully overgrown with grasses and shrubs. Some portions of this section have been maintained as lawn, but the overall stretch has been fully naturalized. This section of the PW&PPR Corridor begins level with Watson Street East but remains level as the surrounding landscape descends towards the Lake Ontario shore, resulting in a raised bed with steep ditches on either side. Based on Land Records, this second section is still owned by the CNR as a railway ROW. This section includes a driveway crossing to a rubber manufactory. This driveway includes embedded rails that are the last known in situ portion of the PW&PPR railway. Several water test wells are also located along this stretch of the corridor.

The second section, beginning approximately 350 metres south of Watson Street East, is also a section of raised railbed with steep ditches that is generally overgrown. However, a gravel path follows the railbed from this point south to the terminus of the corridor at a Waterfront Trail Parking Lot to the south of Water Street. An additional entrance to the corridor has been built from the end of Harbour Street that connects with the PW&PPR Corridor. The path is maintained as part of the Lions Promenade Open Space Trail, which is linked to the Whitby Lions Promenade park area and the Waterfront Trail system. This section of the PW&PPR Corridor gradually levels as it approaches the waterfront, and, in addition to including the gravel pathway, is generally surrounded by trees and wetlands and is the greenest portion of the corridor. The mature vegetation creates a near-tunnel visual effect on either side of Water Street. The final portion of this stretch includes a former spur siding to the east toward the property at 220 Water Street, as well as a crossing of Water Street, which features concrete aprons with steel tactile warning plates, a solar powered crosswalk light, and steel rail baffle gates to the path on either side of Water Street. The Water Street crossing is approximately 83 metres from the southern terminus of the corridor.

Photograph 17: CN Railway control box for the "Whitby Harbour Spur" located at Watson Road East (AECOM, 2026)



Photograph 18: The PW&PPR Corridor looking south from Watson Road East (AECOM, 2026)



Photograph 19: The PW&PPR Corridor, looking north towards Watson Road East. Note the test wellhead in the foreground (AECOM, 2026)



Photograph 20: The PW&PPR Corridor looking south (AECOM, 2026)



Photograph 21: Entrance to the rubber manufactory, marked with an upright rail from the former PW&PPR (AECOM, 2026)



Photograph 22: Tracks embedded in the entrance driveway to the rubber manufactory, which are the only known in situ rails associated with the PW&PPR (AECOM, 2026)



Photograph 23: Beginning of the gravel path midway down Harbour Street. Note the cleared vegetation along the pathway. Looking south (AECOM, 2026)



Photograph 24: Beginning of the gravel path midway down Harbour Street. Note the concrete barriers. Looking northwest (AECOM, 2026)



Photograph 25: Overgrown portion of the PW&PPR Corridor, looking north from the beginning of the gravel path (AECOM, 2026)



Photograph 26: Gravel path along the PW&PPR Corridor, looking south. Note Harbour Street to the right (AECOM, 2026)



Photograph 27: South-facing view of the PW&PPR Corridor, showing the former spur line to 220 Water Street (AECOM, 2026)



Photograph 28: East-facing view of the former spur line to 220 Water Street (AECOM, 2026)



Photograph 29: Intersection of the trail from Harbour Street, left, and the PW&PPR Corridor, right. Looking north (AECOM, 2026)



Photograph 30: View of the trail from Harbour Street, looking northwest from the PW&PPR railbed (AECOM, 2026)



Photograph 31: View of the PW&PPR Corridor from the trail to Harbour Street. Note the railbed passing from left to right, and the industrial warehouse at 220 Water Street in the background (AECOM, 2026)



Photograph 32: Stack of potentially original hewn cedar railway ties along the east side of the corridor (AECOM, 2026)



Photograph 33: The PW&PPR Corridor passing through a wetland, looking south (AECOM, 2026)



Photograph 34: The PW&PPR Corridor passing through a wetland, looking north (AECOM, 2026)



Photograph 35: Forested section of the PW&PPR Corridor, looking south towards Water Street (AECOM, 2026)



Photograph 36: Forested section of the PW&PPR Corridor, looking north from Water Street (AECOM, 2026)



Photograph 37: Trail crossing at Water Street, looking south towards Lake Ontario (AECOM, 2026)



Photograph 38: Trail crossing at Water Street, looking north along the PW&PPR Corridor (AECOM, 2026)



Photograph 39: Lateral view of the Water Street trail crossing, showing the solar powered crossing lights and steel gates (AECOM, 2026)



Photograph 40: View of the PW&PPR Corridor south of Water Street, with Lake Ontario in the background (AECOM, 2026)



Photograph 41: View of the PW&PPR Corridor south of Water Street, looking northwest from the trail entrance (AECOM, 2026)



Photograph 42: Representative image of the gravel trail surface that has been laid on the railbed between Whitby Lions Promenade and Harbour Street (AECOM, 2026)



Photograph 43: Trail entrance at the waterfront parking lot at the Whitby Lions Promenade, looking north (AECOM, 2026)



Photograph 44: View of the waterfront parking lot that acts as the terminus of the PW&PPR Corridor, looking east (AECOM, 2026)



5. Historical Research

5.1 Historical Overview

The PW&PPR Corridor is in the Town of Whitby, Regional Municipality of Durham, Ontario. The following historical overview provides context for Indigenous land use in the region (**Section 5.1.1**), as well as the historical development of Ontario County and the Town of Whitby (**Section 5.1.2** and **Section 5.1.3**). The history of the PW&PPR is also specifically discussed in **Section 5.2**, with a detailed historical review of the PW&PPR Corridor, including a review of historical maps, in **Section 5.3**.

5.1.1 Pre-Contact Indigenous Overview

It is important to note that, when discussing the historical documentation of the movement of Indigenous people, what has been documented by early European explorers and settlers represents only a very small snap-shot in time. Documentation of where Indigenous groups were residing during European exploration and settlement is restricted to only a very short period of time and does not reflect previous and subsequent movements of these groups. This brief history does not reflect the full picture of the pre- or post-contact period occupation of Indigenous groups or cultures. As such, relying on historic documentation regarding Indigenous occupation and movement across the landscape can lead to misinterpretation. For example, noting the movement of Indigenous groups into an area may incorrectly suggest to the reader that these groups had not occupied the area previously; however, this is not the case. It is clear from Indigenous oral histories and the archaeological record that pre-contact Indigenous populations were extremely mobile and not tied to any one specific area. Over the vast period of time prior to the arrival of Europeans, Indigenous groups, language families, and cultures were fluid across the landscape. Indigenous communities continued traditional practices in the face of warfare, disease, and European encroachment through the post-contact period, often moving, and in some cases negotiating and settling, to secure their interests in the face of overwhelming colonial pressures.

The Paleo Period

In this area the first human settlement can be traced back to 11,000 years ago; these earliest well-documented groups are referred to as Paleo which literally means old or ancient. During the Paleo period people were non-agriculturalists who depended on hunting and gathering of wild food, they moved their encampments on a regular basis to be in the locations where these resources naturally became available, and the size of

the groups occupying any particular location would vary depending on the nature and size of the available food resources (Ellis and Deller 1990). The picture that has emerged for the early and late Paleo is of groups at low population densities who were residentially mobile and made use of large territories during annual cycles of resource exploitation.

The Archaic Period

The next major cultural period following the Paleo is termed the Archaic, which is broken temporally into the Early, Middle, and Late Archaic periods. There is much debate on how the term Archaic is employed; general practice bases the designation off assemblage content as there are marked differences in artifact suites from the preceding Paleo and subsequent Woodland periods. As Ellis *et al.* (1990) note, from an artifact and site characteristic perspective the Archaic is simply used to refer to non-Paleo manifestations that pre-date the introduction of ceramics. Ellis *et al.* (1990) stress that Archaic groups can be distinguished from earlier groups based on site characteristics and artifact content.

Early Archaic sites have been reported throughout much of southwestern Ontario and extend as far north as the Lake Huron Basin region and as far east as Rice Lake (Ellis and Deller, 1986). A lack of excavated assemblages from southern Ontario has limited understandings and inferences regarding the nature of stone tool kits in the Early Archaic and tool forms other than points are poorly known in Ontario; however, at least three major temporal horizons can be recognized and can be distinguished based on projectile point form (Ellis *et al.* 1990). These horizons are referred to as Side-Notched (*ca.* 8,000-7,700 BC), Corner-Notched (*ca.* 7,700-6,900 BC), and Bifurcated (*ca.* 6,900-6,000 BC) (Ellis *et al.* 1990). Additional details on each of these horizons and the temporal changes to tool types can be found in Ellis *et al*. 1990.

The Middle Archaic period (6,000-2,500 BC), like the Early Archaic, is relatively unknown in southern Ontario. Ellis *et al.* (1990) suggest that artifact traits that have come to be considered as characteristic of the Archaic period as a whole, first appear in the Middle Archaic. These traits include fully ground and polished stone tools, specific tool types including banner stones and net-sinkers, and the use of local and/or non-chert type materials for lithic tool manufacture (Ellis *et al.* 1990).

The Late Archaic begins around approximately 2,000 BC and ends with the beginning of ceramics and the Meadowood Phase at roughly 950 BC. Much more is known about this period than the Early and Middle Archaic and a number of Late Archaic sites are known. Sites appear to be more common than earlier periods, suggesting some degree of population increase. True cemeteries appear and have allowed for the analysis of band size, biological relationships, social organization, and health. Narrow and Small

point traditions appear as well as tool recycling wherein points were modified into drills, knives, end scrapers, and other tools (Ellis *et al.* 1990). Other tools including serrated flakes used for sawing or shredding, spokeshaves, and retouched flakes manufactured into perforators, gravers, micro-perforators, or piercers. Tools on coarse-grained rocks such as sandstone and quartz become common and include hammerstones, net-sinkers, anvils, and cobble spalls. Depending on preservation, several Late Archaic sites include bone and/or antler artifacts, which likely represent fishing toolkits and ornamentation. These artifacts include bone harpoons, barbs or hooks, notched projectile points, and awls. Bone ornaments recovered have included tubular bone beads and drilled mammal canine pendants (Ellis *et al.* 1990).

Throughout the Early to Late Archaic periods the natural environment warmed, and vegetation changed from closed conifer-dominated vegetation cover, to the mixed coniferous and deciduous forest in the north and deciduous vegetation in the south that we see in Ontario today (Ellis *et al.* 1990). During the Archaic period there are indications of increasing populations and decreasing size of territories exploited during annual rounds, fewer moves of residential camps throughout the year and longer occupations at seasonal campsites, continuous use of certain locations on a seasonal basis over many years, increasing attention to ritual associated with the deceased, and long range exchange and trade systems for the purpose of obtaining valued and geographically localized resources (Ellis *et al.* 1990).

The Woodland Period

The Early Woodland period is distinguished from the Late Archaic period primarily by the addition of ceramic technology, which provides a useful demarcation point for archaeologists but is expected to have made less difference in the lives of the Early Woodland peoples. The settlement and subsistence patterns of Early Woodland people shows much continuity with the earlier Archaic with seasonal camps occupied to exploit specific natural resources (Spence *et al.* 1990). During the Middle Woodland well-defined territories containing several key environmental zones were exploited over the yearly subsistence cycle. Large sites with structures and substantial middens appear in the Middle Woodland associated with spring macro-band occupations focussed on utilizing fish resources and created by consistent returns to the same site (Spence *et al.* 1990). Groups would come together into large macro-bands during the spring-summer at lakeshore or marshland areas to take advantage of spawning fish; in the fall inland sand plains and river valleys were occupied for deer and nut harvesting and groups split into small micro-bands for winter survival (Spence *et al.* 1990). This is a departure from earlier Woodland times when macro-band aggregation is thought to have taken place in the winter (Ellis *et al.,* 1990; Granger, 1978).

The period between the Middle and Late Woodland period was both technically and socially transitional for the ethnically diverse populations of southern Ontario and these developments laid the basis for the emergence of settled villages and agriculturally based lifestyles (Fox 1990). The Late Woodland period began with some groups shifting settlement and subsistence patterns, involving an increasing reliance on corn horticulture. Corn may have been introduced into southwestern Ontario from the American Midwest as early as 600 AD. However, it did not become a dietary staple until at least three to four hundred years later. The first agricultural villages in southwestern Ontario date to the 10th century A.D. Unlike the riverine base camps of the Middle Woodland period, Late Woodland sites are located in the uplands, on well-drained sandy soils.

In the Late Woodland period, between 900-1300 AD, villages tended to be small settlements with nearby camps and hamlets that served as temporary spaces for hunting game and gathering resources outside of the villages. At this time, small village sites were characterized by the presence of longhouses with villages being occupied considerably longer than later in the Woodland period. Villages tended to be moved when nearby soils had been depleted by farming and conveniently collected firewood grew scarce. The Jesuits reported that the Huron moved their villages once every 10-15 years as they relied less heavily on corn than did later groups, and since their villages were much smaller, there was less demand on nearby resources. Small amounts of corn appear to have been a dietary component at this time; however, archaeological evidence suggests that its role was not as a dietary staple at this time but was possibly supplemental in nature.

Between 1300 and 1400 AD, village sizes grew significantly, resulting in the development of complex community political systems. This period also marks the emergence of fully developed horticulture, including the cultivation of corn, beans, and squash. Additionally, changes in ceramic styles may reflect increasing levels of inter-community communication and integration. Iroquoian groups lived side by side with the more nomadic Algonquin speakers, notably the Odawa (or "Ottawa") and Ojibway in southwestern Ontario. Because Iroquoian and Algonquin groups interacted frequently it can be difficult to differentiate them archaeologically. Circa 1650, following the immense impacts of European diseases and associated warfare Petun, Huron-Wendat and Neutral populations were driven out of their historic homelands by the movement of the Five Nations Iroquois.

By the beginning of the fourteenth century, larger fortified village sites were often cleared to accommodate the cultivation of corn, beans, and squash as a result of an increasing reliance on horticulture. Longhouses also continued to grow in size until 1450 AD when a decrease in house length is observed. This decrease in house length may

be partially attributed to large scale drops in population size associated with the introduction of European diseases.

The Post-Contact Period

The post-contact Indigenous occupation of southern Ontario was heavily influenced by the dispersal of Iroquoian speaking peoples, including the Six Nations of the Iroquois – Mohawk, Cayuga, Oneida, Seneca, Onondaga, and Tuscarora. This was followed by the return of Algonkian speaking groups from northern Ontario who had temporarily retreated to their wintering grounds in the mid-1600s to avoid warfare and disease as a result of colonial settlement. Algonkian speaking Ojibway (Chippewa), Odawa (Ottawa), and Pottawatomi, known as the Three Fires Confederacy, remained in their traditional territory that covered a vast area of southern Ontario as well as eastern Michigan.

As European settlers encroached on their territory the nature of Indigenous population distribution, settlement size and material culture changed. Despite these changes it is possible to correlate historically recorded villages with archaeological manifestations and the similarity of those sites to more ancient sites reveal an antiquity to documented cultural expressions that confirms a long historical continuity to systems of Indigenous ideology and thought.

The Johnson-Butler Purchase and Williams Treaties

The Project is located on land part of the Johnson-Butler Purchase in 1788 and the Williams Treaties in 1923. The Johnson-Butler Purchase covered the north shore of Lake Ontario from the east end of the Toronto Purchase to the Bay of Quinte and the west end of the Crawford Purchase (Ontario Government, 2024). The northern boundary of the Johnson-Butler Purchase was less well defined as it was outlined to be as far back from Lake Ontario that a person could hear a gunshot, giving the Johnson-Butler Purchase the nickname “Gunshot Treaty” (Ontario Government, 2024). The negotiations were between representatives of the Crown and leaders of the Mississauga in 1787, with the final payments made in 1788 (Boileau, 2020).

Disputes over the size of the Johnson-Butler Purchase became apparent shortly after as later colonial governments struggled to understand how much land they had acquired in the Johnson-Butler Purchase. Further treaties were drawn up in the late 18th and early 19th centuries to affirm ownership of lands (Boileau, 2020). The Williams Treaties in 1923 finalized the ceding of land along the north shore of Lake Ontario (Boileau, 2020). Large one-time payments were made to Mississauga and Chippewa communities living in the area covered by the Williams Treaties but amounted to only a fraction of the land’s estimated value (Wallace, 2018). Disputes remained, particularly over issues on fishing and hunting rights. In 2018, the Governments of Canada and Ontario settled litigation from the Williams Treaties First Nations to compensate them for

the historical undervaluing of the land, recognition of harvesting rights, and the ability for each First Nation to add land to their reserves. Finally, the governments issued an apology for the historic failures of their governments (Wallace, 2018)

5.1.2 Ontario County

While many Indigenous groups lived in this area during the Contact and Historic Periods, by the turn of the 19th century, the area that would become Ontario County was principally home to Mississauga Nations of the Anishinaabe People. The long-term Euro-Canadian settlement of what became Ontario County began with the 1788 Johnson-Butler Purchases. These purchases concerned the north shore of Lake Ontario between the east boundary of the 1787 Toronto Purchase and the west boundary of the 1783 Crawford Purchase at the Bay of Quinte. The Johnson-Butler Purchases, also known as the “Gunshot Treaty” included the Lake Ontario shoreline as far inland as a person could hear a gunshot (Government of Ontario, 2024). These lands were meant to connect previous Crown purchases on the north side of Lake Ontario, which were intended to open land for settlement by United Empire Loyalists moving to Canada following the American War for Independence. A secondary wave of loyalist migrants also came north following the War of 1812.

As new territories were incorporated into Upper Canada, new administrative districts were organized. Soon after the Johnson-Butler Purchases, Lieutenant Governor John Graves Simcoe reorganized the new colony of Upper Canada into nineteen counties within four broader districts (Robinson, 1885: 14). Ontario County was located in the so-called “Home District” as part of the East Riding of York County (Farewell, 1907: 3). Most of these early Euro-Canadian settlers were United Empire Loyalists moving north and west from Niagara and enjoying priority treatment under the system of Crown land grants (Colonial Office, 1837: 6). It should be noted that the survey and settlement of Ontario County occurred on unceded Indigenous lands well beyond earshot of the immediate Lake Ontario shoreline, as ceded in the Johnon-Butler Purchases. The ownership of these lands was not confirmed until 1923, when the Williams Treaties consolidated and expanded Crown ownership of the lands between the Lake Ontario shoreline and Lake Nipissing to the north (Government of Ontario, 2024).

Ontario County was further defined by administrative devolution and a move towards responsible government as recommended in Lord Durham’s 1839 report on the causes of the 1837 Upper Canada Rebellion. As part of this movement, in 1852 the districts system was abolished, including the Home District. That same year, the old County of York was also reorganized to form the United Counties of York, Peel, and Ontario, each with a greater degree of self government to reflect their growing populations. These administrative trends continued, and the United Counties of York Peel, and Ontario

soon fragmented, with Ontario County separating as an independent county in 1854 (McKay, 1961: 113).

Ontario County was dissolved in 1974 with the creation of the Region of Durham to accommodate the growing economic and population of the area (Durham Region).

5.1.3 Town of Whitby

Present-day Downtown Whitby is the old town centre which encompasses much of the original Town of Whitby and includes Perry's Corners, the early 19th century nucleus of the town at Dundas and Brock Streets (Town of Whitby). The current Town of Whitby consists of three separate settlements, Perry's Corners, Hamer's Corners, and Port Windsor, that all were founded in the early 19th century. Hamer's Corners was the first settlement, founded in the 1823 when the Warren family set up a general store and post office at the modern-day intersection of Dundas Street and Anderson Street (Beers, 1877: 8). Perry's Corners was founded in 1836 when Peter Perry started a general store at the intersection of Dundas Street and Brock Street. Peter Perry was well-connected in the colony having served as a politician in the colonial legislature and had built a network of political and business contacts (Turner, 1985). Port Windsor, built on the mouth of Pringle Creek and the bay it forms as it flows into Lake Ontario, was founded in the 1820s with the port developing in the 1830s around land owned by the Scadding family from Toronto (Town of Whitby). The growth of the settlements, with Perry's Corners forming the core, became associated as one settlement and took the name Whitby in 1847 (Historical Markers Database).

Whitby was incorporated as a town in 1855 as the three villages were formally united as a town (Town of Whitby). This sparked population growth along with the anticipation of the Grand Trunk Railway connecting Montreal to Toronto. Railway and road construction supported economic growth and physically shaped the township, connecting villages within Whitby, as well as providing links from coast to interior, and to neighbouring townships. However, despite the advantages of transportation infrastructure, the mid 19th century economic boom in Whitby ended in 1857 when development stalled due to a worldwide economic crisis. Many of the subdivided lots of the nascent town remained vacant. There was a small commercial core at Dundas and Brock Streets - the Four Corners. Although development was scattered throughout the town, there was a greater concentration west of Brock Street where the County of Ontario buildings were located (Beers, 1877: 11). A devastating fire in 1877 saw most of the southern half of the downtown core burn down (Historical Markers Database). While Whitby contained a good harbour and multiple transportation routes in railways and roads connecting it as a transport hub, the economic fortunes of Whitby declined in the second half of the 19th century as it soon became eclipsed by the cities of Oshawa and Toronto (Stortz, 2012). While the harbour continued to operate, it eventually was

declared a recreational harbour by the Government of Canada in 1967 (Arculus, 2018: 109). The small town character of Whitby saw it chosen as the site for Camp X in 1940, a covert and intelligence training camp for British, Canadian, and American operatives during the Second World War (Stafford, 2006).

After the Second World War, Whitby grew as support industries for the General Motors Plant in neighbouring Oshawa saw Whitby chosen due to its proximity on the CN Railway (Arculus, 2018: 107). The growing urbanization in Whitby was reflected in the amalgamation of the Town of Whitby with the surrounding Township of Whitby in 1968 (Stortz, 2012). In 1974, the Ontario Government created a new regional government east of Toronto, named the Region of Durham, which included portions of the former counties of Ontario, Durham, and Northumberland (Durham Region). Whitby was chosen over the City of Oshawa to serve as the seat for the Region of Durham.

5.2 The Port Whitby and Port Perry Railway

The PW&PPR was a north-south railway line that began operation in 1871. The PW&PPR was first conceived by Peter Perry who purchased land in Whitby Harbour in 1836 and Scugog Village, now known as Port Perry, in 1844. Peter Perry proposed the construction of a railway line from Whitby to Lake Huron, passing through Port Perry in 1848 as a means to move agricultural goods and lumber south to Lake Ontario (Hall, 2018). Perry's plan was never fulfilled as he passed away in 1851. In 1854, new patents for the construction of a railway were issued, but no action was taken (Stevens, 1973: 122). Local support wavered for the train, resulting in rival towns to Port Perry and Port Whitby to receive the boom of railway infrastructure including Lindsay, Coburg, and Port Hope in the form of the Toronto and Nipissing Railway, the Midland Railway, and the Cobourg & Peterborough Railway (Arculus, 2018: 20).

Transportation between Port Whitby and Port Perry was along a plank road (today, Simcoe Street, Regional Road 2) that was constructed in 1842 (Angus, 1988: 85). The plank road was soon rendered obsolete when railway construction linking the Trent-Severn Waterway and Lake Ontario began in 1855 to Port Hope (Angus, 1988: 107-108). The development of the other railway companies to Port Hope, Coburg, and Toronto from the Trent-Severn Waterway resulted in booms for local towns, and competition between railway companies who sought to undercut each other to their own gain. By the 1860s, Port Perry and Port Whitby were being left behind by rival communities (Arculus, 2018: 25-27). The conversion of the Lindsay Lock in 1859 to a log flue saw lumber on Lake Scugog go to the Midland Railway and travel to Port Hope on Lake Ontario. The rerouting of lumber away from Port Perry caused a local decline in commerce, much to the dissatisfaction of local entrepreneur Joseph Bigelow, a leading figure in Port Perry, that (Angus, 1988: 133; Hall, 2018). With the support of business

interests in Toronto and Whitby, in 1868, a new railway charter was granted to Bigelow as the president of the PW&PPR (Angus, 199: 134). Funding for the PW&PPR came from the local municipalities and residents, with Whitby Town providing $50,000, Whitby Township $20,000, and Reach Township $30,000, as a total of $300,000 of stock was authorized with $110,080 paid into the company (Stevens, 1960: 445). The visit of Prince Arthur, a son of Queen Victoria, to Canada West in 1869 helped gather further support and funds for the PW&PPR as Prince Arthur participated in breaking ground for the railway in Whitby (Arculus, 2018: 40).

The PW&PPR needed to first secure the new lock at Lindsay to have any hope of ensuring the railway would be economically viable. Opposition from the Midland Railway came in 1869 when they threatened to build a bridge over the Scugog River and ensure no logs could be floated through the new lock (Angus, 1988: 135). To solve this issue, the PW&PPR proposed just rebuilding the locks themselves, forcing the Ontario Government to act and rebuild the locks in the face of the Midland Railway's opposition in 1870 (Angus, 1988: 136). With the lock built, ensuring lumber could arrive at Port Perry, the construction of the railway began. Construction of the railway was not without controversy. The PW&PPR struggled for funds, even though they had strong local support and significant government grants. The struggle for money was primarily due to mismanagement by the company directors (Arculus, 2018: 35). Construction was also plagued by disputes between the contractors and the company over pay. Between 1869 and 1871, two contractors to build the railway quit and sued the PW&PPR over their failure to uphold the signed contracts, with the company forced to undertake the final construction of the line in late 1871 (Arculus, 2018: 41-60). The design and construction of the PW&PPR was a mix of engineers, builders, and company officials rather the reflection of a single individual or organization. The first trains departed from Port Perry in October 1871, with the first passenger trains in November (Arculus, 2018: 62).

The line was approximately 30 km (19 miles) in length, with stations located in Port Perry, Prince Albert, Manchester, Myrtle, Brooklin, and Whitby. The station in Whitby was located north of Port Whitby, in the main settlement at Dundas Street and Hickory Street (Toronto Railway Historical Association, n.d.). The terminus of the line at both Port Perry and Port Whitby reshaped the waterfront areas, with direct connections to docks which allowed freight trains to load and unload goods for shipping on Lake Ontario and Lake Scugog.

The PW&PPR immediately gained a reputation for poor quality as the railway line was poorly built, particularly over the Oak Ridges Moraine. The steep grade meant that a full train had trouble travelling over the Moraine unless it had a run-up, resulting in the nickname for the PW&PPR of "Nip 'n Tuck" (Hall, 2018). The passengers at Myrtle often saw their train blow past as it refused to stop to ensure it had the speed for the Moraine. The decline off the Moraine also led to issues, particularly into Whitby as the trains were

known to come close to derailing and flying into Lake Ontario as they reached the end (Stevens, 1960: 447). The railway was also noted to lack a snow plough, resulting in long delays for trains in the winter and passengers dipping into the agricultural goods being transported on the railway to feed themselves as they were trapped (Stevens, 1960: 447).

In addition to the technical difficulties, the PW&PPR consistently ran in financial difficulties. To support the railway's operations, the PW&PPR operated steamships on Lake Scugog to help move lumber and logs to the rail terminal in Port Perry through the Lindsay Lock (Arculus, 2018: 78-79). Plans to expand the railway line north to Muskoka and Gravenhurst were made in 1874 when the PW&PPR received further charter rights. However, a railway engineer and consultant Francis Shanly predicted that the company would struggle to make a profit. When his prediction came to fruition the next year, plans for expansion were scaled back (Cooper, 2017). In 1876, the railway expanded northward to Lindsay, connecting it to the Victoria Railway and an additional 41 km (26 miles) to the length of the railway (Stevens, 1960: 446). The company was renamed the Whitby, Port Perry, and Lindsay Railway after this expansion.[2] The expansion northward increased the financial burden, as it was soon discovered that the traffic on the railway did not provide enough to cover the debts of the company. Bigelow was forced to resign as president just so he could lend the PW&PPR $40,000 to keep it solvent (Stevens, 1960: 447). The railway though was viewed as a personal possession by the citizens of Whitby who regularly contributed funds to keep the railway alive (Stevens, 1973: 122). The rural community, north of Whitby, retained fond memories of the PW&PPR, particularly as it was used by high school students to travel to school in Whitby (Arculus, 2018: 104-105).

The PW&PPR remained independent until 1881 when it was purchased by the rival Midland Railway. The Midland Railway undertook a large expansionist policy, buying not only the PW&PPR but other small local railway lines including the Grand Junction, Toronto and Nipissing, Victoria, and the Toronto and Ottawa railway companies (Stevens, 1960: 439). Two years later, the Midland Railway began leasing their network to the Grand Trunk Railway, who by 1893 had taken over Midland's holdings (Stevens, 1960: 440). The old PW&PPR remained in use by the Grand Trunk railway, with a junction between the Grand Trunk mainline traveling east-west through Whitby and the PW&PPR line created to allow trains to switch between the two (Toronto Railway Historical Association, n.d.). The Grand Trunk Station in Whitby was located at the junction with the PW&PPR and after the construction of the PW&PPR, became known as Whitby Junction Station and serviced both lines (Toronto Railway Historical

2. For simplicity, this report will continue to refer to the railway as the PW&PPR even though it had changed its name.

Association, n.d.). The original station was built in 1856 and was located on the north side of the tracks, at approximately Grand Trunk Street and Galt Street. In 1903, a new Whitby Junction Station was constructed after upgrades to the tracks as a new larger station that could better service both lines (Toronto Railway Historical Association, n.d.) (**Image 1**).

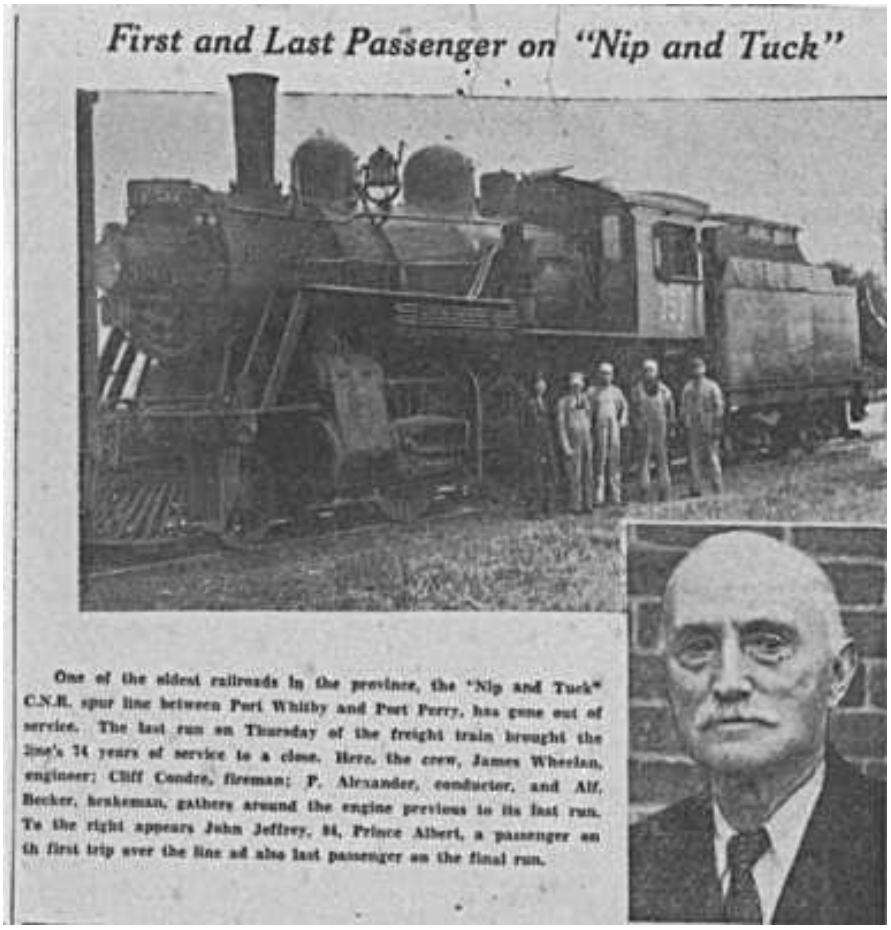
Image 1: Whitby Junction Station (second building) in 1906. The PW&PPR line is to the right of the station and not visible (Whitby Public Library)



The demise of the Grand Trunk Railway in 1923, which saw it nationalized and merged with the CNR, saw the old PW&PPR line become part of the new company (Toronto Railway Historical Association, n.d.). The use of the old PW&PPR line declined during this period as the rise of automobiles replaced both rail passengers and freight over short distances. The extension to Lindsay from Port Perry to Manilla Junction was shut down in 1933 due to the lack of use and was removed in 1936 (Hall, 2018). Then in 1937, passenger trips between Whitby and Port Perry were shut down for the same reason. The last passenger train to run on the original PW&PPR line between Port Perry and Whitby was in 1939 when a special train took passengers south to go to Toronto and witness the visit of King George VI and Queen Elizabeth to Canada (Toronto Railway Historical Association, n.d.). The start of the Second World War later that year saw a demand for steel for the war effort. With the PW&PPR no longer

operating, the tracks north of Garden Street in Whitby to Port Perry were removed and melted down as part of the war effort (Toronto Railway Historical Association, n.d.). The last freight train was in 1941, with John Jeffrey, who was a passenger on the first train in 1871, being given the honour to be the last passenger on the line (Oshawa Daily Times, 1941) (**Image 2**). The section of track from Manilla Junction to Lindsay remained in use by the Canadian National Railway until 1991 when they were removed (Cooper, 2017).

Image 2: Photograph of John Jeffrey and the last train on the PW&PPR (Oshawa Daily Times, 1941)


First and Last Passenger on "Nip and Tuck"

One of the oldest railroads in the province, the "Nip and Tuck" C.N.R. spur line between Port Whitby and Port Perry, has gone out of service. The last run on Thursday of the freight train brought the line's 74 years of service to a close. Here, the crew, James Wheelan, engineer; Cliff Condre, fireman; P. Alexander, conductor, and Alf. Becker, brakeman, gathers around the engine previous to its last run. To the right appears John Jeffrey, 84, Prince Albert, a passenger on th first trip over the line ad also last passenger on the final run.

The tracks of the old PW&PPR within Whitby were maintained as they provided access to industrial clients and the harbour, with these tracks turning into spur and connecting lines between the CN and CP Railways in Whitby (Toronto Railway Historical Association, n.d.). The old Whitby Railway Station for the PW&PPR was converted into a post office shipping depot and operated until 1963 and was then demolished in 1970 (Toronto Railway Historical Association, n.d.). In 1978, the tracks of the old PW&PPR between the CN and CP were removed, leaving only the tracks south of the CN to Whitby Harbour remaining (Toronto Railway Historical Association, n.d.). The original

engine building, located at Mary Street East and Hickory Street in the Whitby, was converted into a garage and was demolished in the early 2020s. The only remaining structure associated with the PW&PPR is the Whitby Junction Station. It is currently located at 1450 Henry Street in Whitby and has been converted into an art gallery. In Port Perry, the wood grain elevator at Water Street and Queen Street is the last surviving industrial evidence of the railway along the waterfront, with the mills, station, and other railway facilities since removed.

The railway line remained running up to the filtration plant in 1994. By 2005, the railway tracks south of Water Street had been removed, with the rest of the line removed north of Water Street to the CN Railway at some point after 2018 when they were identified as still being present in Paul Arculus's book on the railway (Arculus, 2018: 110). The Town of Whitby extended Harbour Street south from Watson Street East along the old right-of-way of the PW&PPR, with the rest of the PW&PPR route converted into a walking path, now part of the Lions Promenade, the Waterfront Trail, and the Rotary Sunrise Lake Park. Elements of the PW&PPR extension to Lindsay are still visible and have been integrated into the Trans-Canada Trail west of Lindsay. The route of the PW&PPR through Port Perry is still visible in Old Rail Lane and walking paths along the waterfront of Lake Scugog.

5.3 PW&PPR Corridor

The PW&PPR Corridor consists of the former ROW of the PW&PPR running south from Watson Street East to the waterfront at Port Whitby. As noted above in **Section 5.2**, this section of the former PW&PPR was the last remaining section with railway tracks, present until at least 2018 (Arculus, 2018: 110). The current conditions of the former PW&PPR Corridor are described in **Section 4**.

The PW&PPR Corridor is located on Lots 25 and 26, Broken Front Concession, in the Town of Whitby, Ontario County, now located in the Town of Whitby in the Regional Municipality of Durham. Based on the Land Records, Lot 26 and the adjacent Lot 27 were granted to John Scadding in 1802 (LRO 40, Durham, Whitby, Book 251). It is unclear if Scadding or others were granted Lot 25 as no Land Records prior to the 1850s could be located. Scadding was a government official who worked for Lieutenant-Governor John Graves Simcoe in Toronto and the land was granted to him as part of his payments as a government employee (Firth and Fahey, 1994). John Scadding never resided on the land, as he spent the final years of his life in Toronto on land he owned on the Don River (York Pioneer and Historical Society).

Development of Lot 26 began in the 1820s as John Scadding's son, also named John Scadding, who inherited the property, began selling parcels, noted in the Land Records

as primarily being half acres (LRO 40, Durham, Whitby, Book 251). Based on historical mapping, and the history of the Town of Whitby, these early sales were the first developments of Port Whitby, which during this period was known as Windsor (Mika and Mika, 1983: 642).

The first patents for Lot 25 were granted in 1855 in three sections: the southern section to the waterfront consisting of 72 acres was granted to John Warren and Laurence Hayden; the centre-west section consisting of 22 acres was granted to John Watson and Joseph Pearson; and the northern section consisting of 40 acres to Thomas Galt, Samuel Peto, William Brassey, M. Jackson, and Edward Betts (LRO 40, Durham, Whitby, Book 250). The northern 40 acres was owned by the Grand Trunk Railway Company as Peto, Brassey, Jackson, and Betts were the construction firm hired to build the railway (Marsh, 2006). The Grand Trunk Railway constructed its first railway line between Toronto and Montreal in the 1850s, opening in 1859 (Marsh, 2006). Today, this line is the CN Railway north of the PW&PPR Corridor.

As seen on the 1860 Tremaine Map of the Township of Whitby, the settlement was concentrated in the northwest corner of Lot 26, along the boundary line with Lot 27 (**Figure 3**). The southern half of Lot 26, where the PW&PPR passes through has no identified occupant, though there are separate parcels in the lot. Lot 25 shows the Grand Trunk Railway through the north half of the lot, with development to the south, which is reflected in the sale of land in the Land Records (LRO 40, Durham, Whitby, Book 250). The other parcels granted to Warren and Hayden, and to Watson and Pearson are visible, though Watson is the sole owner of the centre parcel. The Whitby Station for the Grand Trunk Railway (Whitby Junction Station) was located on Lot 25 as shown on the map.

In 1870, the PW&PPR purchased land in Lot 25 and Lot 26 from John Greenwood and Donald M. Bronham of England south of the Grand Trunk Railway, and in 1871 from Barbara Heyden and John Watson further south (LRO 40, Durham, Whitby, Book 250; Book 251). It was at this time that the PW&PPR Corridor was created. As noted in **Section 5.2**, the PW&PPR opened in late 1871.

In the 1877 Illustrated Historical Atlas, the route of the PW&PPR south of the Grand Trunk Railway is shown for the first time (**Figure 4**). The route is not a straight line, as it takes a “S” turn as it crosses the Grand Trunk line, crossing from Lot 25 to Lot 26 where it then travels south to the waterfront. The railway passes through the T. Galt Addition south of the Grand Trunk Railway, passing through the planned residential lots, over Watson Street, and ending on a pier forming the east side of the entrance to the harbour. Two spur lines are shown travelling west from the pier along the waterfront to land owned by the late C. Draper and J. Watson at the end of Richmond Street (today Brock Street) where warehouses and grain elevators are located. These grain elevators

Figure 3: The PW&PPR Corridor on the 1860 Tremaine Map

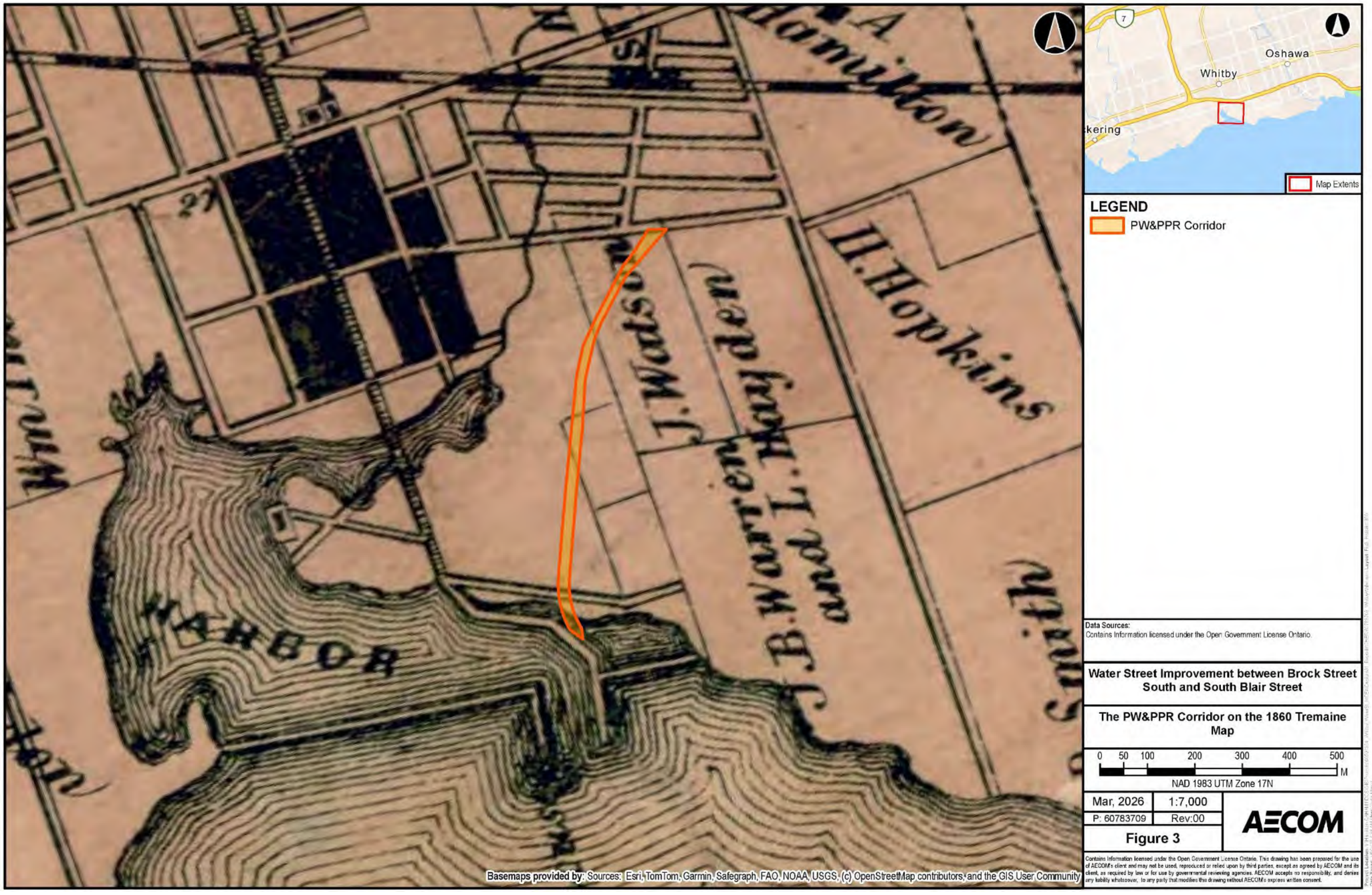
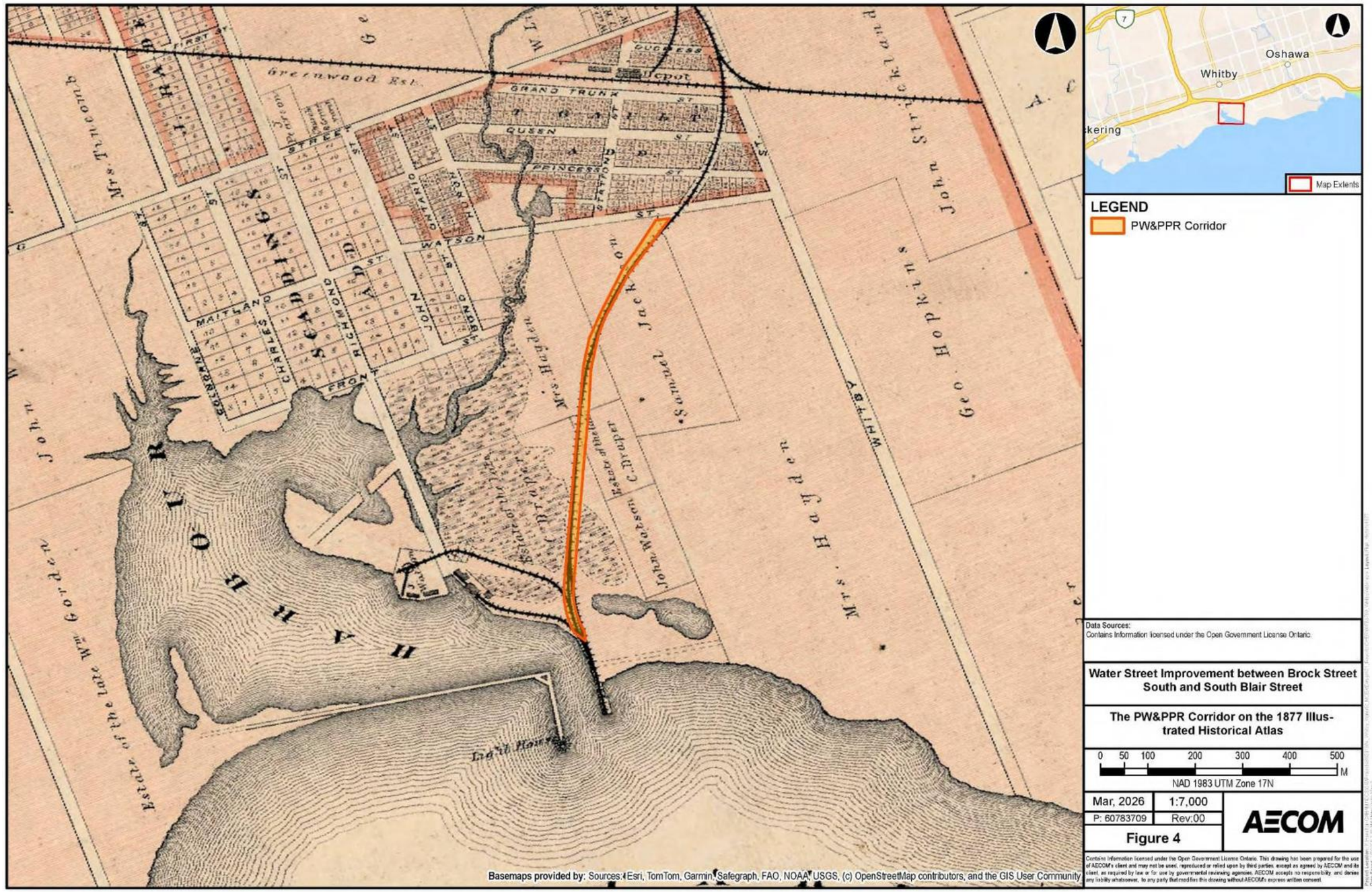


Figure 4: The PW&PPR Corridor on the 1877 Illustrated Atlas



were the primary customers of the PW&PPR for decades, with the Draper elevator built in 1867 and was demolished in 1916, while the Watson elevator was built in 1850 and demolished in 1926 (Whitby Public Library). Based on this mapping, the current route of Water Street west of the PW&PPR Corridor follows the route of the northern spur line to the base of Brock Street (identified in 1877 as Richmond Street). The Whitby Station, since renamed Whitby Junction Station, sits west of the PW&PPR crossing of the Grand Trunk line. A spur line, north of the Grand Trunk line, connects the station to the PW&PP, while the main PW&PPR in Whitby is located on Dundas Street (see **Section 5.2**).

Views of the railway in the PW&PPR Corridor are limited. Views of the north end are primarily seen in the corner of photographs showing the Whitby Junction Station as seen in **Image 3**. The photograph is from 1918 and was taken from the Blair Street Bridge looking west showing a train pulling into the station on the Grand Trunk Railway with a cargo train on the north end o the PW&PPR on the left of the photograph. The train was carrying soldiers from the First World War being transported to the hospital in Whitby. A second photograph from the Blair Street Bridge from 1958 shows the PW&PPR line going south from Whitby Junction Station, with little development in the area (**Image 4**)

Image 3: Whitby Junction Station in 1918 with PW&PPR line to left and right (Whitby Public Library)



Image 4: Whitby Junction Station in 1958 with PW&PPR line to the left (Whitby Public Library)



Meanwhile, views of the south end of the PW&PPR Corridor are primarily seen in the background of photographs of Whitby Harbour. A clear view of the railway terminus is seen in **Image 5**, an aerial photograph of the entrance to Whitby Harbour from 1920. The photograph shows the railway line turning east as it hits the waterfront and terminating at the pump house. A second aerial photograph from 1920 looking south shows the grain elevators that had the 1877 spur lines that were replaced by Water Street and Brock Street (now the Waterfront Trail) (**Image 6**). The grain elevators were the primary customers of the PW&PPR.

Image 5: Photograph of Whitby Harbour from 1920 looking east with the PW&PPR in the background (Whitby Public Library)



Image 6: Photograph of Whitby Harbour from 1920 looking south with PW&PPR in top left corner (Whitby Public Library)



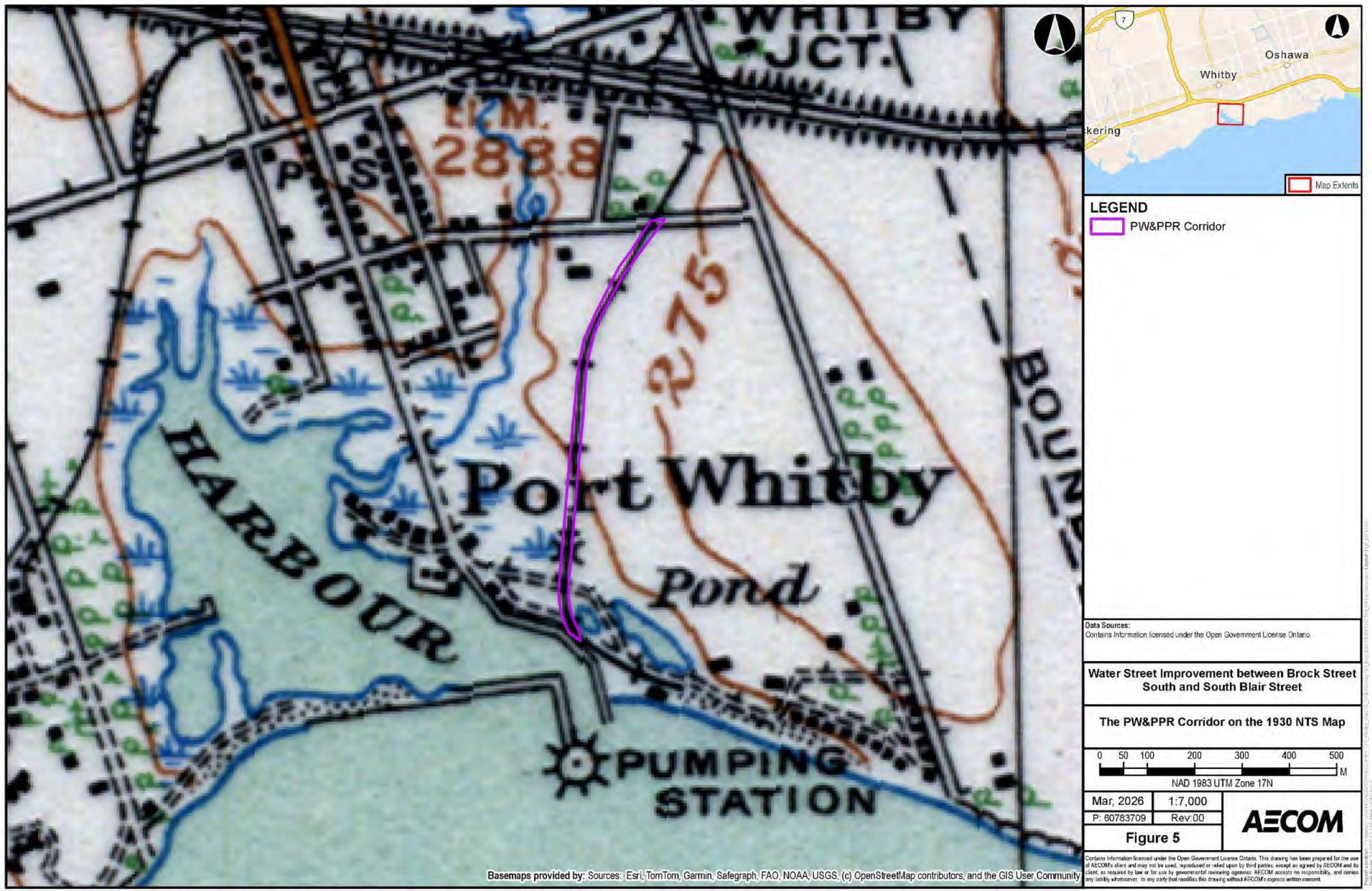
Even after ownership changes of the PW&PPR line, eventually becoming the property of the Canadian National Railway in 1923, the line in the PW&PPR Corridor remained in use as it provided access to Port Whitby. By 1930, the changes to the line are visible in the NTS map (**Figure 5**). The planned development in Lot 25 never materialized, with the land by 1930 remaining sparsely populated with a few houses. The line has undergone significant alterations from 1877 along the waterfront. The railway no longer travels along the east pier of the entrance to the harbour and instead turns east ending at the pumping station. The pumping station was constructed in 1904 by the Town of Whitby, and the railway appears to be used to access the pumping station (Town of Whitby). The two spur lines that went west along the waterfront in 1877 are no longer present, however, their routes are visible in the 1930 NTS map as a southern extension of Brock Street and Water Street. Buildings are located along these streets west of the railway, indicating the continued use of the harbour.

New industries developed along the waterfront that were serviced by the PW&PPR. In the 1930s, new petroleum and gas tanks were constructed west of the railway, replacing the grain elevators (Whitby Public Library). During the Second World War, the Brunton Lumber Company occupied land on either side of the railway at the waterfront, south of Water Street. A photograph from 1947 shows the stacks of lumber as the railway turned east towards the pumping station (**Image 7**). In the background, the oil and gas tanks are visible. The lumber company would burn down in 1951 after it was sold to General Mills (Whitby Public Library).

Image 7: Photograph of the Brunton Lumber Yard with the PW&PPR Corridor running through it in 1947 (Whitby Public Library)



Figure 5: The PW&PPR Corridor on the 1930 NTS Map



By 1952, the PW&PPR line north of the Canadian National Railway was identified as abandoned, but still present. It was not until the 1960s and early 1970s that saw changes to the land around the railway. In the 1973 NTS map, new industrial buildings began developing east of the old PW&PPR and to the west along the waterfront (**Figure 6**). Several large industrial buildings, located at 202 South Blair Street, 240 South Blair Street, and 220 Water Street, were constructed and spur lines were built off the old PW&PPR line to access these buildings. West of the railway, along the waterfront are new storage facilities for oil and gas, as identified on the 1973 NTS map. The industrial nature of the Whitby Harbour is evident in a 1988 photograph showing the large number of cranes and warehouses along the waterfront (**Image 8**).

Image 8: View of the Whitby Harbour in 1988 (Toronto Public Library)



In 1994, further developments along the railway are visible with new industrial buildings west of the railway (**Figure 7**). The south end of the railway, along the waterfront saw the first changes to parkland as the Lakeshore Park (now the Rotary Sunrise Lake Park) is identified west of the pump house, with the railway line through the north end of the park. The 1994 NTS map continues to indicate the presence of the spur lines and the railway line running to the 1904 pump house. The end of Brock Street, which followed the path of the southern spur line, had been converted by this point into a walking path and was no longer a road. While several structures were still present, their use for oil and gas no longer appears labelled on the 1994 NTS map.

Figure 6: The PW&PPR Corridor on the 1973 NTS Map

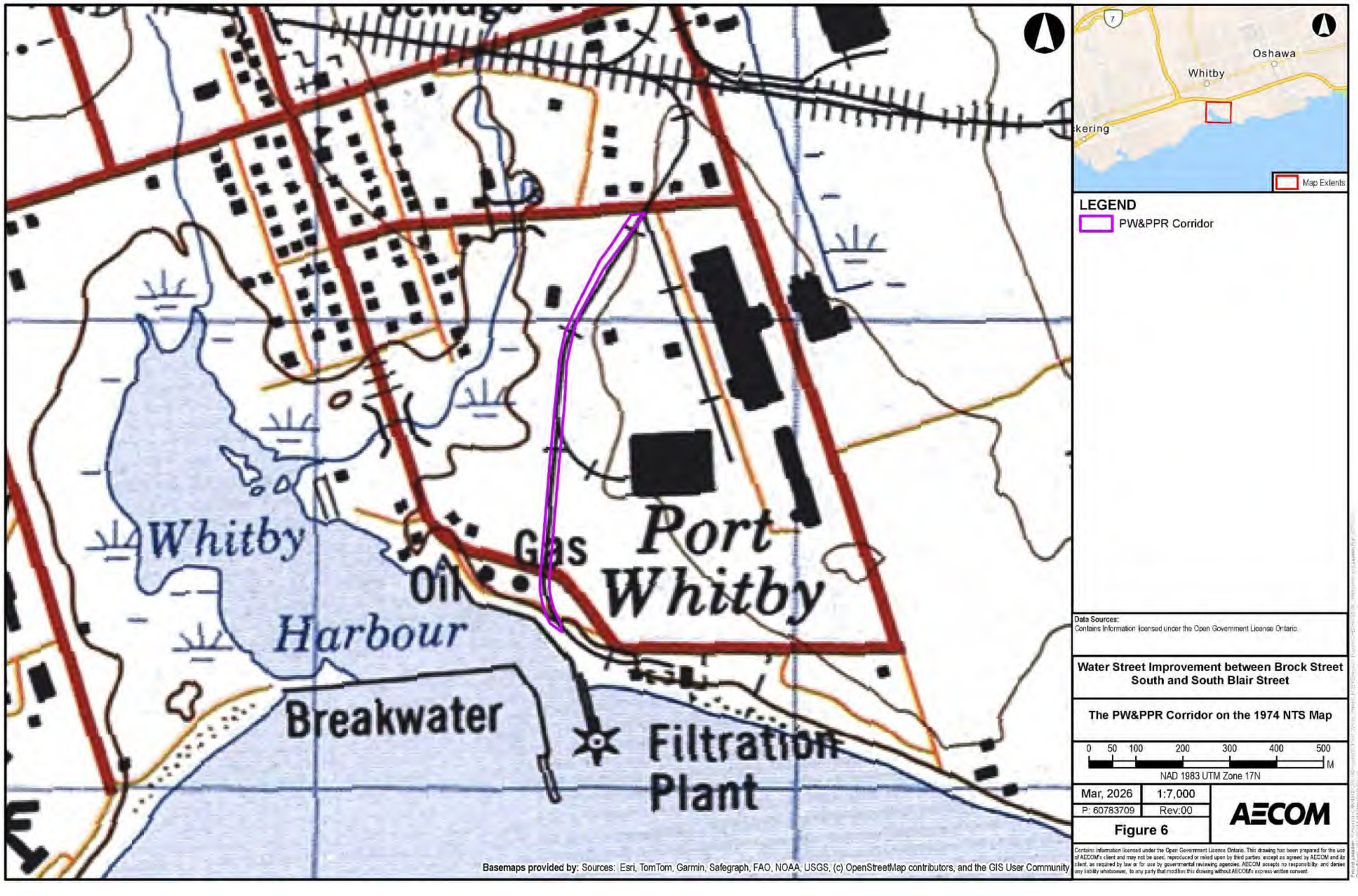
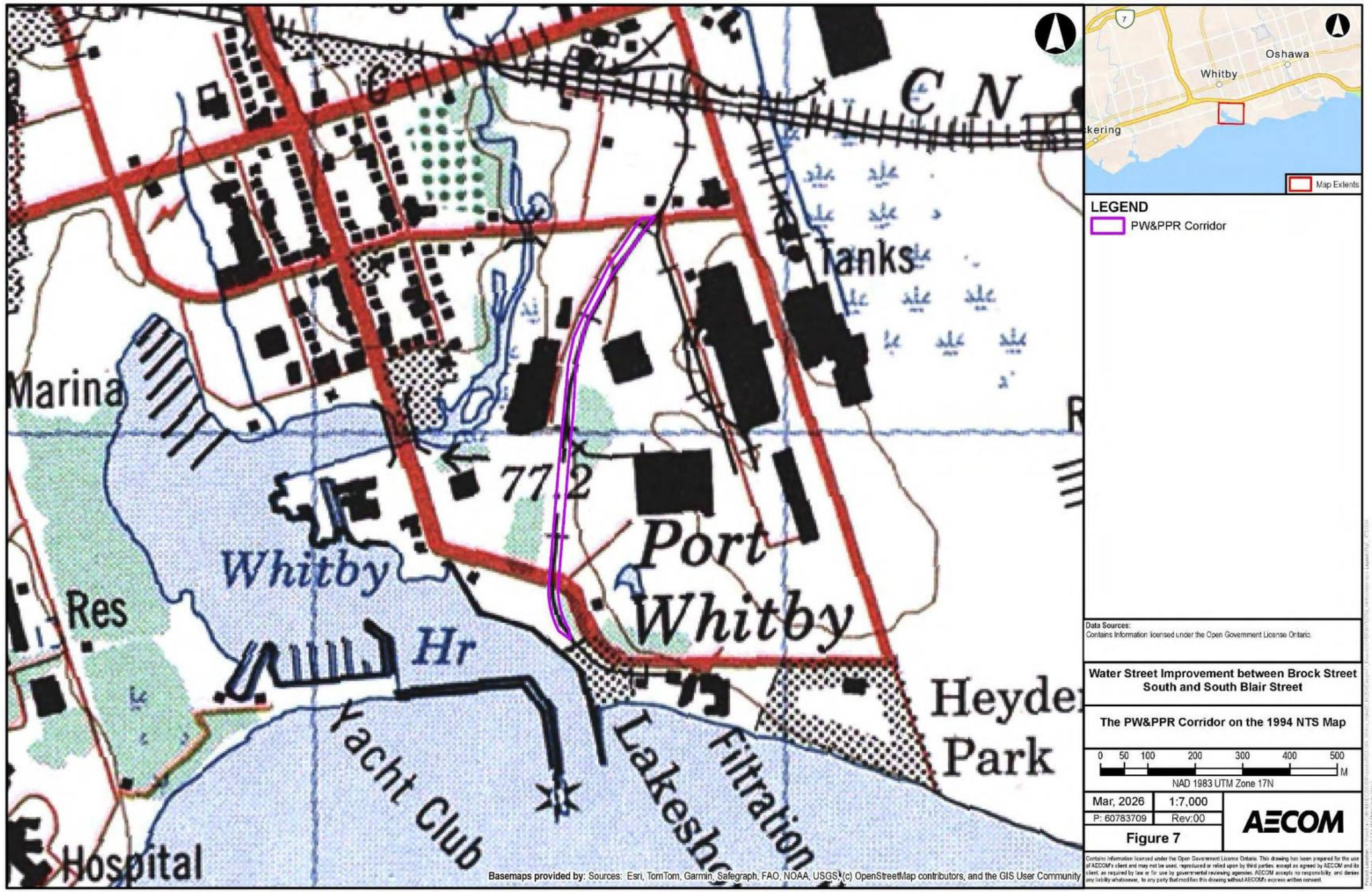


Figure 7: The PW&PPR Corridor on the 1994 NTS Map



The decline of Whitby Harbour as a shipping location saw the use of the railway and the spur lines decline. Aerial photographs from 2004 on Google Earth reveal that the railway tracks south of Water Street had been removed, with the Waterfront Trail Parking Lot, along with the paths of the Waterfront Trail replacing the tracks. The spur line to 220 Water Street was still present, however, the spur line to 202 South Blair Street and 240 South Blair Street had been removed with a driveway to the buildings replacing the spur line (Google Earth). By 2013, track south of Watson Street East, including the spur line to 220 Water Street had been removed, though the track just north of Water Street was still present. The track leading from the Canadian National Railway was still present but was no longer in use (Google Earth). Reconstruction of the Canadian National Railway and the South Blair Street underpass between 2013 and 2018 saw this section of track removed. The last evidence of the tracks north of Water Street still being present was in Paul Arculus' book from 2018 on the history of the PW&PPR (Arculus, 2018: 110). It is not known when these last sections of rail were removed. The route, however, was still used as a walking path and with support from the local Lions Club was cleaned up to provide access to the waterfront from Harbour Street, now known as Whitby Lions Promenade.

6. Stakeholder Engagement

During the preparation of this report, AECOM's Cultural Heritage Team engaged with the organizations listed in **Table 1** for information that could contribute to understanding and evaluating the CHVI of the PW&PPR Corridor.

Table 1: Results of Data Collection

Contact	Contact Information	Date	Comments
David Johnson, Planner II-Heritage, Town of Whitby	johnsond@whitby.ca	February 17, 2026	AECOM requested information from the Town of Whitby on the PW&PPR, as well as on the Grand Trunk Railway and Canadian National Railway in Whitby, to assist with historical research on the PW&PPR Corridor. Information was requested that would aid in determining the significance of the railways to the municipality, the contemporary significance of the corridor, background studies on the development of the waterfront area, and the establishment on the Lions Promenade Open Space Trail.
David Johnson, Planner II-Heritage, Town of Whitby	johnsond@whitby.ca	February 19, 2026	David Johnson replied to AECOM's request via email. He provided AECOM with a link to the Whitby Archives digital images, including an article on the final trip on the railway from 1941 as well as information on book by Paul Arculus on the history of the PW&PPR. Both sources were used by AECOM to develop the history of the PW&PPR and the PW&PPR Corridor (**Section 5**).
David Johnson, Planner II-Heritage, Town of Whitby	johnsond@whitby.ca	April 23, 2026	In a meeting and subsequent summary email, David Johnson provided feedback on the draft report, and requested that Criterion 5 be considered in the 09/06 evaluation as there is strong community interest in the history of the railway within the Town of Whitby, and because there was First Nations interest in the history and any archaeological work associated with the corridor during the city's consultations for the Project. This information was taken into advisement and the 09/06 table revised, and a Statement of Significance for the PW&PPR Corridor was prepared.
Toronto Railway Historical Association	research@trha.ca	February 17, 2026	AECOM requested information from the Toronto Railway Historical Association on the PW&PPR. The Association was asked if they had any primary or secondary resources on the PW&PPR speaking on the significance of the railway to the Town of Whitby in their collection.
Toronto Railway Historical Association	research@trha.ca	February 17, 2026	No response has yet been received.

7. Evaluation of Cultural Heritage Value or Interest

The following evaluation uses O. Reg. 9/06 of the *Ontario Heritage Act* to determine if the PW&PPR Corridor has CHVI. Background research and consultation with the municipality confirmed that PW&PPR Corridor has not been subject to any previous heritage evaluations.

7.1 Ontario Regulation 9/06

O. Reg. 9/06 sets out the criteria for determining CHVI. These criteria have been applied to the PW&PPR Corridor and are summarized in **Table 2** below.

The PW&PPR Corridor meets two of the nine criteria of O. Reg. 9/06 and therefore possesses CHVI at the local level and is eligible for designation under the *Ontario Heritage Act.*

Table 2: Ontario Regulation 9/06 Evaluation for the PW&PPR Corridor

Criteria	Meets Criteria (Yes/No)	Rationale
1. The property has design value or physical value because it is a rare, unique, representative or early example of a style, type, expression, material or construction method.	No	The PW&PPR Corridor does not retain sufficient intact and character-defining design or physical elements to demonstrate design or physical value. While certain features such as the linear form, rail bed outline, and drainage ditches remain, the removal of critical components, including tracks, ties, ballast structure, and the majority of associated railway infrastructure, has significantly diminished the corridor's ability to illustrate the design style, construction methods, and material characteristics of a 19th century railway corridor. The remaining elements are fragmentary landscape traces that lack the specificity and representational quality necessary to serve as a definitive example of historic railway design. As a result, the corridor lacks the design and physical integrity required to meet this criterion.
2. The property has design value or physical value because it displays a high degree of craftsmanship or artistic merit.	No	The PW&PPR Corridor retains its form as a linear corridor which is typical of former railways. The Corridor does not demonstrate a high degree of craftsmanship or artistic merit.
3. The property has design value or physical value because it demonstrates a high degree of technical or scientific achievement.	No	The PW&PPR Corridor was constructed using methods and materials typical to late 19th century railway construction and is not considered to demonstrate a high degree of technical or scientific achievement.
4. The property has historical value or associative value because it has direct associations with a theme, event, belief, person, activity, organization or institution that is significant to a community.	Yes	The PW&PPR Corridor is historically associated with the Port Whitby & Port Perry Railway, the Midland Railway, the Grand Trunk Railway, and the Canadian National Railway, and reflects the broader theme of railway development as a transformative force in the settlement, industrial growth, and economic integration of Durham Region and southern Ontario. The corridor is directly linked to late 19th century railway expansion, and the development of lumbering and agricultural export industries in the former Ontario County. As noted in **Section 5**, the terminus of the corridor at Port Whitby has historically included grain elevators and lumber mills, as local businesses participated in this development. The PW&PPR Corridor is also associated with the theme of community-sponsored development and redevelopment. As noted in **Section 5**, the PW&PPR Corridor was established with a high degree of community support and funding, which contributed to both the establishment and continued operation of the railway. More recently, the redevelopment of the Whitby waterfront area has also been a product of significant community involvement, with community organizations including the Rotary, Lions, and Kiwanis Clubs sponsoring sections of waterfront park. The PW&PPR Corridor has been part of that movement, and the southern portion of the corridor currently includes the Lions Promenade Open Space Trail, which is linked to the Whitby Lions Promenade park area and the Waterfront Trail system.
5. The property has historical value or associative value because it yields, or has the potential to yield, information that contributes to an understanding of a community or culture.	Yes	The history of the PW&PPR Corridor speaks to the anthropogenic transformation of the landscape in the Town of Whitby over the past two centuries. As noted in **Section 5**, the construction of railways and other transportation infrastructure was instrumental in the formation of the town and the transformation of the Whitby waterfront from a natural landscape used by Indigenous peoples to an industrial harbour and, more recently, to a community-oriented recreational area. While the history of the PW&PPR has been well documented in primary and secondary sources, the vestiges of the corridor, and any remaining archaeological potential within the corridor, are considered to yield, and have the potential to yield information that contributes to an understanding of a community or culture, particularly as these relate to human land use in what is now the Town of Whitby.
6. The property has historical value or associative value because it demonstrates or reflects the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community.	No	The PW&PPR Corridor is not known to reflect the work or ideas of an architect, artist, builder, designer or theorist who is significant to a community. While the PW&PPR was formed by leading figures of Whitby and Port Perry, with significant community support, the construction of the railway was fraught with difficulties that saw two contractors resign partway through construction. As such, the design and construction of the PW&PPR is not the work or design of a single individual or organization, but rather was mixed design of multiple engineers, builders, and company officials.
7. The property has contextual value because it is important in defining, maintaining or supporting the character of an area.	No	The PW&PPR Corridor no longer retains sufficient contextual value to be considered important in defining, maintaining, or supporting the character of the surrounding area. Although the corridor maintains some landscape features, such as a linear form, treelines, and a naturalized appearance, these elements are not strongly tied to its role in transportation and the industrial character of the area. The removal of the majority of the tracks and associated railway infrastructure has eliminated the principal physical features that once expressed and reinforced the area's former industrial and transportation character. As a result, the corridor's remaining features no longer meaningfully contribute to, or define, the character of the area, and thus do not meet the threshold for contextual value under this criterion.
8. The property has contextual value because it is physically, functionally, visually, or historically linked to its surroundings.	No	The PW&PPR Corridor does not retain the sufficient physical, functional, visual, or historical linkages to its surroundings to merit contextual value. While the corridor remains geographically continuous, the removal of a majority of the tracks, rail infrastructure, and operational railway functions has severed its historical and functional relationships with adjacent industrial lands, former spur lines, and the broader historic rail network. The current recreational use, including the Lions Promenade Trail, is a contemporary adaptation that does not reflect or sustain the corridor's historic transportation role. Without the defining railway elements that once established these connections, the corridor no longer manifests meaningful physical or functional relationships to surrounding areas, nor does it retain the visual or operational characteristics that historically linked it to Whitby's industrial and transportation character.
9. The property has contextual value because it is a landmark.	No	The PW&PPR Corridor is integrated into the surrounding landscape and does not stand out as a local landmark.

7.2 Draft Statement of Cultural Heritage Value and Heritage Attributes

7.2.1 Description of the Property

The Port Whitby & Port Perry Railway (PW&PPR) Corridor consists of the former right of way of the PW&PPR. With the gradual decommissioning of the railway, the corridor has largely been subsumed into the countryside and the urban fabric of the Town of Whitby. The last portion that can be readily identified as a railway bed is located between Watson Road East and the Waterfront Trail Parking Lot to the south of Water Street in the Town of Whitby. Therefore, the term "PW&PPR Corridor" hereafter refers only to the section of the former corridor between Watson Street East and the Waterfront Trail Parking Lot, which is still extant.

7.2.2 Statement of Cultural Heritage Value

The PW&PPR Corridor demonstrates historical value and associative value through its direct associations the Port Whitby & Port Perry Railway, the Midland Railway, the Grand Trunk Railway, and the Canadian National Railway, and reflects the broader theme of railway development as a transformative force in the settlement, industrial growth, and economic integration of Durham Region and southern Ontario. The corridor is directly linked to late 19th century railway expansion, and the development of lumbering and agricultural export industries in the former Ontario County. The terminus of the corridor at Port Whitby has historically included grain elevators and lumber mills, as local businesses participated in this development. The PW&PPR Corridor is also associated with the theme of community-sponsored development and redevelopment. The PW&PPR Corridor was established with a high degree of community support and funding, which contributed to both the establishment and continued operation of the railway. More recently, the redevelopment of the Whitby waterfront area has also been a product of significant community involvement, with community organizations including the Rotary, Lions, and Kiwanis Clubs sponsoring sections of waterfront park. The PW&PPR Corridor has been part of that movement, and the southern portion of the corridor currently includes the Lions Promenade Open Space Trail, which is linked to the Whitby Lions Promenade park area and the Waterfront Trail system.

The PW&PPR Corridor also has historical and associative value because it yields, or has the potential to yield, information that contributes to an understanding of a community or culture. In particular, the history of the corridor speaks to the anthropogenic transformation of the landscape in the Town of Whitby over the past two centuries. The construction of railways and other transportation infrastructure was

instrumental in the formation of the town and the transformation of the Whitby waterfront from a natural landscape used by Indigenous peoples to an industrial harbour and, more recently, to a community-oriented recreational area. While the history of the PW&PPR has been well documented in primary and secondary sources, the vestiges of the corridor, and any remaining archaeological potential within the corridor, are considered to yield, and have the potential to yield information that contributes to an understanding of a community or culture, particularly as these relate to human land use in what is now the Town of Whitby.

7.2.3 Heritage Attributes

- The continuous linear alignment of the railway corridor extending from Watson Road East to the Waterfront Trail Parking Lot in the Town of Whitby.
- The raised gravel rail bed and associated deep ditches;
- Any remaining railway infrastructure elements, including, but not limited to extant rails, signals, and signage;
- Mature treelines and hedgerows that define the historic edges of the railway corridor and reinforce its linear character;
- The corridor's legibility as a historic transportation route reflecting late 19th century railway construction;
- The spatial and functional relationship of the corridor to the Whitby waterfront and historic harbour/terminus area;
- The corridor's associative connection to the Port Whitby and Port Perry Railway, the Midland Railway, the Grand Trunk Railway, and the Canadian National Railway; and
- Areas within the corridor exhibiting archaeological potential, including subsurface remains related to railway construction, industrial activity, and indigenous land use.

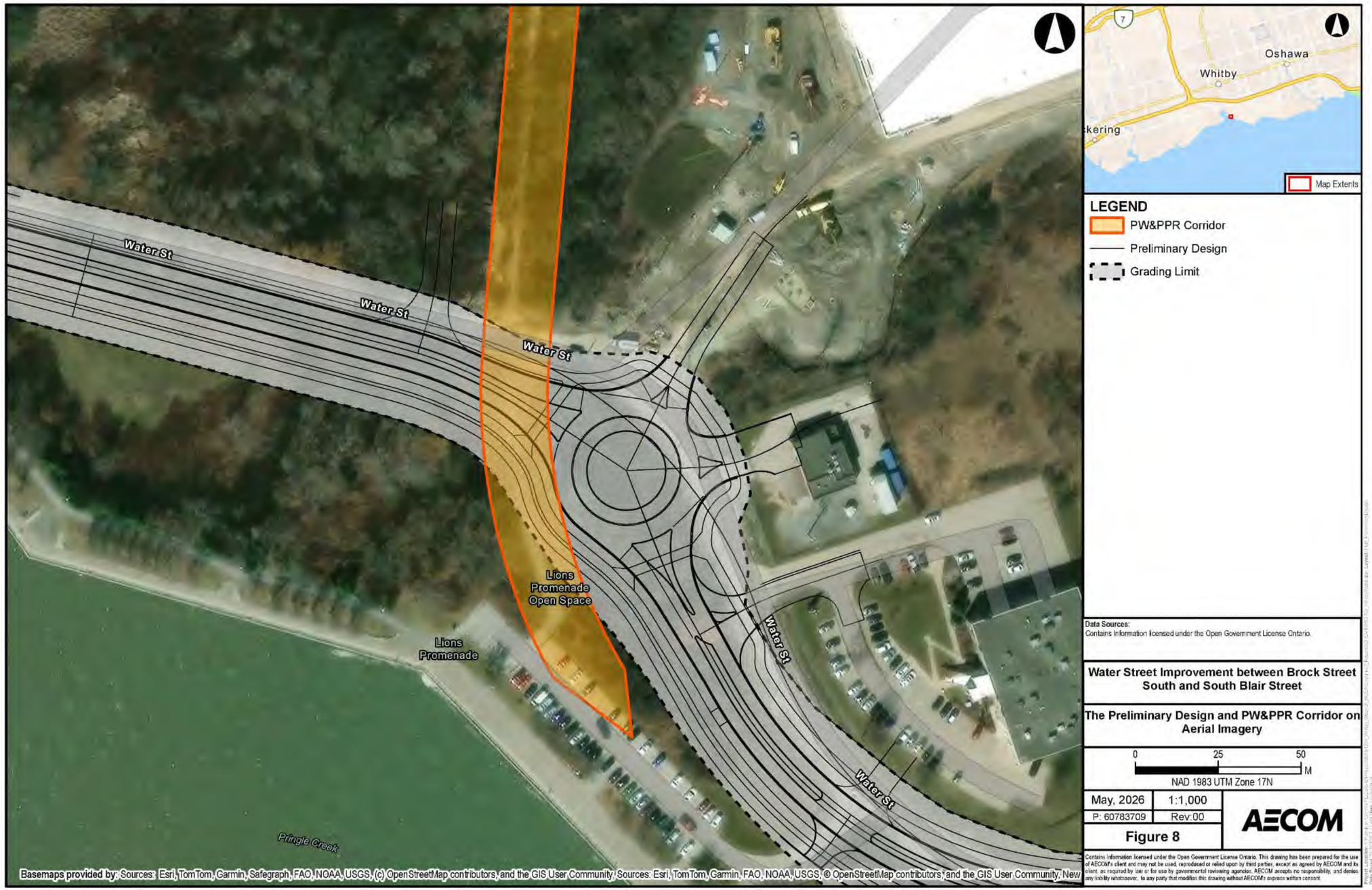
8. Evaluation of Anticipated of Impacts

The conservation of cultural heritage resources in Town of Whitby planning is a matter of public interest. The HIA portion of this report assesses the impact of anticipated project related construction activities to the PW&PPR Corridor. The intention of the impact assessment contained in this report is to:

- Review the Preliminary Design as it relates to the PW&PPR Corridor;
- Based on the design, identify impacts as outlined in the *Ontario Heritage Toolkit* (MCM, 2006) to the PW&PPR Corridor; and
- If required, recommend measures to avoid or mitigate potential direct and indirect adverse impacts to the PW&PPR Corridor, including its heritage attributes. The proposed mitigation measures will inform the next steps of the project planning and design.

The following section presents the results of the impact assessment of the PW&PPR Corridor based on the Preliminary Design plan of the preferred alternative for the project. **Figure 8**, below, is an overlay of the Preliminary Design and the PW&PPR Corridor on aerial imagery.

Figure 8: The Preliminary Design and the PW&PPR Corridor on Aerial Imagery



8.1 Assessment of Impacts

8.1.1 Screening for Potential Impacts

To assess the potential impacts of the undertaking, identified cultural heritage resources are considered against a range of possible impacts based on the *Ontario Heritage Tool Kit, Heritage Resources in the Land Use Planning Process*, *InfoSheet* #5 *Heritage Impact Assessments and Conservation Plans* (MCM 2006:3) which include, but are not limited to:

- Destruction of any, or part of any, significant heritage attributes or features;
- Alteration that is not sympathetic, or is incompatible, with the historic fabric and appearance;
- Shadows created that alter the appearance of a heritage attribute or change the viability of a natural feature or plantings, such as a garden;
- Isolation of a heritage attribute from its surrounding environment, context, or a significant relationship;
- Direct or indirect obstruction of significant views or vistas, within, from, or of built and natural features;
- A change in land use such as rezoning a battlefield from open space to residential use, allowing new development or site alteration to fill in the formerly open spaces; and
- Land disturbances such as a change in grade that alters soils, and drainage patterns that adversely affect an archaeological resource.[3]

The MCM document defines “impact” as a change, either positive or adverse, in an identified cultural heritage resource resulting from a particular activity. This report identifies *direct (physical) impacts*, *indirect impacts*, and/or *positive impacts* as the impact types that a construction component and/or activity may have on cultural heritage resources.

A direct (physical) negative impact has a permanent and irreversible negative affect on the cultural heritage value or interest of a property, or results in the loss of a heritage attribute on all or part of the heritage property. Any land disturbance, such as a change in grade and/or drainage patterns may adversely affect a heritage property, including archaeological resources. An indirect negative impact is the result of an activity on or

3. This CHER/HIA only examines impacts to above-ground cultural heritage resources. Archaeological resources should be assessed in a dedicated report.

near the property that may adversely affect its cultural heritage value or interest and/or heritage attributes. A positive impact will conserve or enhance the cultural heritage value or interest and/or heritage attributes of the property.

8.1.2 Assessment of Potential Impacts to the PW&PPR Corridor

The impact assessment of the proposed project in **Table 3** presents the possible impacts to the PW&PPR Corridor based on the Preliminary Design for the Project (**Figure 8**). The impact assessment utilizes the *Ontario Heritage Tool Kit, Heritage Resources in the Land Use Planning Process, InfoSheet #5 Heritage Impact Assessments and Conservation Plans* (MCM, 2006:3).

Table 3: Impact Assessment – PW&PPR Corridor

Impact	Discussion of Impacts
Destruction, Removal, or Relocation	■ Based on the Preliminary Design (**Figure 8**), the impacts to the Subject Property are directly related to the realignment of Water Street. The design indicates the road will be widened and the alignment shifted south into the PW&PPR Corridor between Water Street and the Waterfront Trail Parking Lot. This new proposed infrastructure will result in the removal of mature trees defining a portion of the historic edges of the PW&PPR Corridor, relocation of the existing pedestrian crossing from within the PW&PPR Corridor to the east, and road construction and re-grading that will remove a portion of the historic railbed to the south of Water Street. All of these impacts will reduce the legibility of the PW&PPR Corridor to the south of Water Street as a historic railway corridor.
Alteration	■ The proposed development is not anticipated to alter the PW&PPR Corridor
Shadows	■ This category is not applicable as the proposed development is entirely at grade.
Isolation	■ Based on the Preliminary Design (**Figure 8**), the realignment of Water Street and the relocation of the pedestrian crossing outside the PW&PPR Corridor may disconnect and isolate the portions of the PW&PPR Corridor to the north and south of Water Street.
Direct or Indirect Obstruction of Significant Views	■ This category is not applicable as no significant views were determined.
A Change in Land Use	■ The proposed development is anticipated to introduce minor modifications within the Water Street right-of-way; however, no changes to the existing land use are proposed.
Land Disturbance	■ There is expected soil disturbance involved in the realignment of Water Street and associated regrading within the new Water Street right of way. Although it is unlikely given the extensive industrial facilities that once existed in the area, there may nonetheless be undisturbed sections that retain potential for below-ground cultural heritage resources, such as archaeological remains.

9. Development Options

The Preliminary Design for the proposed alterations to Water Street includes a southward shift of the right-of-way. This adjustment will require the removal of mature trees that define a portion of the historic edge of the PW&PPR Corridor and will disrupt the continuity of the corridor's linear alignment, diminishing its legibility as a historic railway corridor south of Water Street. As such, the project will result in direct adverse impacts to identified heritage attributes of the PW&PPR Corridor.

Based on the anticipated impacts of the proposed infrastructure discussed in **Section 8**, this section describes conservation options and mitigation measures to avoid or reduce potential negative impacts to the PW&PPR Corridor and its heritage attributes. The following mitigation options should be considered as part of the heritage planning process and should inform subsequent stages of the Detailed Design.

9.1 Conservation Options

As summarized in **Table 3**, the proposed development will result in direct adverse impacts, including the removal and alteration of identified heritage attributes, isolation, and associated ground disturbance within the corridor. Accordingly, three mitigation options are presented:

- Retention *in situ* (Option 1)
- Modified Design (Option 2)
- Proceeding According to the Preliminary Design (Option 3)

Regardless of the conservation option selected, engagement with relevant Indigenous communities should be undertaken during the detailed design phase to identify and incorporate Indigenous values, interests, and perspectives where appropriate.

In addition, all required archaeological assessments shall be completed prior to construction in accordance with applicable provincial standards and guidelines. Any identified resources will be addressed through appropriate mitigation measures, including licensed archaeological investigation, documentation, and reporting.

9.2 Evaluation of Conservation Options

Per Section G of the Town of Whitby's Cultural Heritage Impact Assessment Terms of Reference, this section assesses mitigation options for the PW&PPR Corridor that may avoid or limit impacts to the CHVI of the corridor.

9.2.1 Option 1: Retention In situ

Option 1, retention in situ, represents the avoidance of development to preserve the PW&PPR Corridor in its existing condition. From a cultural heritage perspective, this approach is generally preferred, as it avoids adverse impacts and ensures the continued conservation of identified heritage attributes and cultural heritage value. In this case, retention in situ would eliminate direct impacts to the PW&PPR Corridor by maintaining its current form.

However, the proposed Project is intended to address existing deficiencies related to parking, road alignment, and drainage along Water Street, and is therefore required to support public safety and the functional needs of the Whitby waterfront area. In addition, the corridor has already undergone functional and physical changes associated with its adaptive reuse as a multi-use trail, resulting in an altered condition relative to its historic use as a railway corridor.

Accordingly, retention in situ is not considered feasible given the infrastructure requirements of the Project. While this option would provide the highest level of heritage conservation, it is of limited practical application in this context.

9.2.2 Option 2: Modified Design

Since Option 1 is not feasible, modification of the project design to better conserve the heritage attributes of the PW&PPR Corridor is considered the next best conservation option.

9.2.2.1 Design Modification A: Road Realignment

One approach to minimizing impacts would be to modify the alignment of Water Street to better maintain the linear continuity and legibility of the PW&PPR Corridor at the crossing. This could involve retaining the road alignment closer to its existing right-of-way and introducing a perpendicular crossing that aligns with the corridor. Such an approach would also support the retention of mature trees that define the corridor edges south of Water Street.

However, this modification would necessitate substantial redesign of the Preliminary Design, including potential relocation or reconfiguration of the proposed roundabout and associated traffic controls (see **Figure 8**). As the current alignment reflects the preferred alternative identified through the Schedule “C” Municipal Class Environmental Assessment process, any significant changes could require updates to supporting technical studies and introduce additional cost and schedule implications.

While technically feasible, this option is not recommended due to its broader implications for the overall project design which was developed through investigations, study and stakeholder inputs to optimize the balance of project needs and impacts.

9.2.2.2 Design Modification B: Retention of Pedestrian Crossing

A second approach is to retain the general configuration of the Preliminary Design while modifying the alignment of the pedestrian crossing to correspond with the PW&PPR Corridor. This would maintain physical and visual continuity along the corridor, supporting its legibility as a historic transportation route and maintaining pedestrian connectivity.

This modification would involve shifting the location of the proposed crosswalk to align with the corridor, rather than with the adjacent roundabout. Minor adjustments to the boulevard and surrounding landscape would be required to accommodate this change.

This approach can likely be implemented with minimal design alterations and cost implications. However, consultation with a qualified traffic engineer during Detailed Design would be required to confirm that the revised crosswalk location meets safety requirements. Subject to appropriate design measures (e.g., signage, lighting, refuge islands), this option is considered feasible and represents the preferred mitigation strategy.

9.2.2.3 Design Modification C: Maintain Corridor Connectivity

If Design Modification B is not feasible and Preliminary Design is advanced without modifications to the crossing, measures should be implemented to maintain a degree of physical and visual continuity between the portions of the PW&PPR Corridor on either side of Water Street. These modifications could include:

- **Maintaining pedestrian and cyclist connectivity** through formalized connections between the corridor and proposed multi-use paths, supported by appropriate wayfinding and signage;
- **Reinforcing the visual alignment of the corridor** through strategic tree planting and landscape design, including the retention of existing vegetation where feasible and the introduction of new plantings aligned with the historic corridor edges.

These measures would not mitigate impacts to the corridor's integrity but would assist in maintaining the continued use as a public open space.

9.2.3 Option 3: Proceed According to the Preliminary Design

If the Preliminary Design is advanced without modification, the impacts identified in **Section 8.1.2** will result in the loss of heritage attributes associated with the PW&PPR

Corridor, as outlined in **Section 8.1.3**. These impacts would be considered permanent and irreversible. In such circumstances, it is best practice to incorporate a commemorative strategy to interpret and communicate the cultural heritage value of the corridor where physical conservation is not feasible.

Based on the Preliminary Design and the anticipated patterns of pedestrian and cycling traffic, opportunities for commemoration are best located in areas of high public access and visibility. In particular, the vicinity of the Water Street crossing and the Whitby Lions Promenade, south of Water Street, are considered appropriate locations. These areas represent key points of overlap between the PW&PPR Corridor, the Waterfront Trail, and proposed multi-use pathways, thereby maximizing opportunities for public engagement. The following commemorative options have been proposed to memorialize the PW&PPR Corridor.

9.2.3.1 Commemoration Option A: Storyboards

This commemorative option involves the installation of a storyboard at the south end of the PW&PPR Corridor. Storyboards, also referred to as panels, can provide an opportunity to explore more in-depth discussions and allow for pictures which can commemorate an individual feature as well as the broader context (see, for example **Image 9**). Storyboards can be varied in style, size, and material and are generally better suited than plaques for commemoration, especially where public engagement is desired, since they often include eye-catching photographs and can include more information or narrative than a conventional historical plaque.

Storyboards may be designed as low-profile elements that orient viewers toward particular landscape features, or as upright panels that communicate broader historical narratives. The installation should be context-specific and designed to highlight the history of the PW&PPR Corridor while drawing attention to remaining elements of the corridor.

To enhance interpretive value, consideration may be given to the incorporation of salvaged railway materials, such as the piles of railway ties (**Photograph 32**) within the corridor, into or adjacent to the installation. The selective reuse of such materials, where feasible and undertaken in accordance with established conservation principles, can provide a tangible connection to the corridor’s historical function and strengthen the overall commemorative experience.

The final location and design of the storyboard should be determined by the Town and implemented following completion of construction. The use of historic images, such as those presented in **Section 5.3** of this report, is recommended to support interpretation.

Image 9: Examples of Storyboards



a) Low-profile storyboard, City of Mississauga, Ontario (left)
b) Upright panel- Outdoor exhibit, Paris, France (right)

9.2.3.2 Commemoration Option B: Pavement Treatments

This commemoration option provides a visual indication of the former route of the PW&PPR Corridor across the new proposed of Water Street. For example, as noted in Parks Canada's *Standards and Guidelines for the Conservation of Historic Places in Canada* (2010), alternative pavement treatments can evoke the former location of historic features and can adjust the visual scale of a given space (see **Image 10**).

Image 10: Example of Alternative Pavement Treatments



Note: a) The layout of the former Canadian Pacific Railway Station is evoked in Dalhousie Square in Old Montreal using pavers of various sizes, colours, and textures.

By using alternative pavement treatments or painting schemes to highlight the former route of the PW&PPR, the history of the railway and its former physical alignment can be evoked and commemorated without altering the Preliminary Design for the road. This commemoration option can also contribute to the visual continuity of the PW&PPR Corridor's linear alignment, particularly if combined with the minor design modifications noted in **Section 9.2.2.3**.

9.2.3.3 Commemoration Option C: Digital Commemoration

Digital commemoration provides an opportunity to incorporate technology into a commemorative strategy. Using a website and/or a smartphone app, digital commemoration could supplement other commemoration measures in the Whitby harbour area.

For example, "Hear, Here" in the City of London uses the Driftscape app to tell stories of particular heritage buildings (**Image 11**). This interpretation method requires implementing and maintaining a digital platform and requires that potential viewers have access to a digital device and that they understand how to use it. If smartphone apps are not a viable option, interested viewers can be directed to a dedicated website, thus making sure this commemoration method remains accessible for as many viewers as possible. One of the greatest advantages of this method of commemoration is that it can tie a physical place to a vast range of information and opportunities for engagement online, opening the door for broader community engagement and connections across municipal and regional sites (i.e., for tourism, heritage, etc.). In this manner, digital commemoration has the potential to evolve into a community venture, where the story of the PW&PPR Corridor is continually engaged with the public, rather than only in discrete instances.

Image 11: Example of Digital Commemoration



a) Stories about heritage, London, Ontario

9.3 Recommended Conservation Strategy

Based on the evaluation of conservation options presented in **Section 9.2**, a modified design approach (Option 2) is recommended as the preferred conservation strategy for the PW&PPR Corridor.

Retention in situ (Option 1), while representing the highest level of conservation, is not considered feasible due to the infrastructure, safety, and operational requirements of the Project. Conversely, proceeding with the Preliminary Design without modification (Option 3) would result in the permanent loss of identified heritage attributes and is therefore not preferred from a cultural heritage perspective.

The recommended strategy is to implement targeted design modifications that minimize impacts to key heritage attributes while allowing the Project to proceed. In particular, the following measures are recommended:

- **Retention of the pedestrian crossing alignment (Design Modification B)** to maintain the physical and visual continuity of the PW&PPR Corridor across Water Street and support its legibility as a historic transportation route; or if not feasible,
- **Maintenance of corridor connectivity and landscape continuity (Design Modification C)**, including:
  - Formalized pedestrian and cyclist connections between the corridor and adjacent multi-use pathways;
  - Implementation of wayfinding and interpretive signage; and
  - Strategic retention and planting of vegetation aligned with the historic corridor edges to reinforce its linear form.

These measures represent a balanced approach that reduces adverse impacts to the extent feasible while meeting the functional objectives of the Project.

Should the Town determine that Option 2 is not feasible, Option 3 (proceeding with the Preliminary Design) may be advanced, provided that a commemorative strategy is implemented to interpret and communicate the cultural heritage value of the PW&PPR Corridor.

Regardless of the conservation option ultimately selected, the incorporation of commemorative measures is strongly encouraged, as it represents a positive intervention that enhances public understanding, appreciation, and engagement with the history of the corridor. Commemoration should therefore be considered a

complementary component of the overall conservation strategy, rather than solely a response to adverse impacts.

Potential commemorative measures may include a range of interpretive installations, such as storyboards, pavement treatments marking the historic alignment, and digital interpretation tools, which can be implemented individually or in combination to provide a more comprehensive and engaging interpretation of the PW&PPR Corridor.

10. Conclusion and Recommendations

10.1 Conclusions

Based on a comprehensive review that included background historical research, field assessments, professional expertise, and the application of O. Reg. 9/06, it has been determined that the PW&PPR Corridor possesses CHVI at the local level and therefore qualifies for designation under the *Ontario Heritage Act*.

The PW&PPR Corridor holds historical value due to its association with the PW&PPR, a local railway company established by residents of the Town of Whitby. This railway played a significant role in the historical development of the town, particularly in connecting Port Whitby to Port Perry, Lindsay, and the broader railway network, including the Midland Railway, the Grand Trunk Railway and later the Canadian National Railway. The history of the PW&PPR Corridor also speaks to the anthropogenic transformation of the landscape in the Town of Whitby over the past two centuries. The construction of railways and other transportation infrastructure was instrumental in the formation of the town and the transformation of the Whitby waterfront from a natural landscape used by Indigenous peoples to an industrial harbour and, more recently, to a community-oriented recreational area. The vestiges of the corridor, and any remaining archaeological potential within the corridor, are considered to yield, or have the potential to yield information that contributes to an understanding of a community or culture, particularly as these relate to human land use in what is now the Town of Whitby. Despite its historical significance, the PW&PPR Corridor was found to lack physical and contextual value. The removal of railway tracks and ties, along with significant alterations to the waterfront of Port Whitby, has effectively eliminated the transportation and industrial functions and the historical context of the corridor.

In light of the CHVI of the PW&PPR Corridor documented in this report, and the anticipated impacts of the Project as outlined in **Section 8**, cultural heritage mitigation is required. Selection and implementation of mitigation measures should be done in consultation with a Town of Whitby Heritage Planner.

10.2 Recommendations

In consideration of the impacts outlined in **Table 3** of this report, it was determined that there will be direct, permanent, irreversible impacts to the PW&PPR Corridor, which will in turn directly impact the CHVI of the corridor. As a result, conservation and mitigation options were evaluated, and the following recommendations developed:

General Recommendations:

- **Designation under the Ontario Heritage Act**: Given the identified cultural heritage value or interest of the PW&PPR Corridor, the Town of Whitby should consider designation of the corridor under Part IV of the Ontario Heritage Act to formally recognize and protect its heritage attributes.
- **Indigenous Engagement:** Engagement with relevant Indigenous communities should be undertaken during the detailed design phase to identify and incorporate Indigenous values, interests, and perspectives into the Project, including opportunities for interpretation and commemoration.
- **Archaeological Assessment and Mitigation:** All required archaeological assessments shall be completed prior to construction in accordance with applicable provincial standards and guidelines. Any identified archaeological resources will be addressed through appropriate mitigation measures, including licensed archaeological investigation, documentation, and reporting.
- **Commemoration Strategy (Applicable to All Options):** Regardless of the conservation option selected, the incorporation of commemorative measures is strongly encouraged, as it represents a positive intervention that enhances public understanding, appreciation, and engagement with the history of the corridor. See **Section 9.2.3** for potential commemorative options.

Conservation Strategy Recommendations:

- **Preferred Conservation Strategy – Modified Design (Option 2):** A modified design approach (Option 2) is recommended as the preferred conservation strategy. This approach represents a balanced response that minimizes impacts to key heritage attributes while allowing the Project to proceed. In particular, the following measures are recommended:
  - Retention of the pedestrian crossing alignment (Design Modification B) to maintain the physical and visual continuity of the PW&PPR Corridor across Water Street and support its legibility as a historic transportation route; or if not feasible,
  - Maintenance of corridor connectivity and landscape continuity (Design Modification C), including:
    - Formalized pedestrian and cyclist connections between the corridor and adjacent multi-use pathways;
    - Implementation of wayfinding and interpretive signage; and
    - Strategic retention and planting of vegetation aligned with the historic corridor edges to reinforce its linear form

- **Alternative Approach – Preliminary Design with Commemoration (Option 3):** Should the Town determine that the modified design approach (Option 2) is not feasible, proceeding with the Preliminary Design (Option 3) may be undertaken, provided that a commemorative strategy is implemented to interpret and communicate the cultural heritage value of the PW&PPR Corridor. See **Section 9.2.3** for more detailed information.

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Appendix L

Notice of Completion 30-Day Comments and Responses

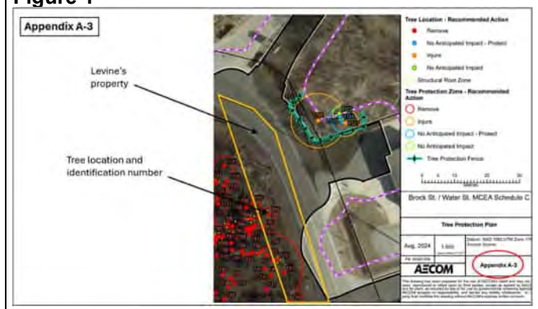
This document is not an accessible document. Please contact Engineering@whitby.ca for assistance with any accessibility issues.

Schedule 'C' MCEA Study for Water Street Improvements between Brock Street and South Blair Street
Master Consultation Tracking Table
Notice of Completion March 18, 2026 (Updated Aug. 2026)

Reference # and Date	To/From	Format (email, phone)	Topic / Reference	Comment / Question / Request	Response	Who Responded	Date Response Sent	Response Format (email, phone, fax)	Required Action
NOTICE OF COMPLETION									
CT74 20251103	**To:** K. Phillips (AECOM) **From:** **Harry Poch** LSO # 18936J Certified as a Specialist in Environmental Law harrypoch@rogers.com	Email	Concerns with property located at "0" Water Street.	**Email to H. Look sent Nov. 3, 2025 2:35 pm** As you may recall, I am counsel to the Estate of Isaac Levine, the owner of "0" Water Street. I've looked at the ESA and have difficulty in seeing from Figures 12 & 20 (even when enlarged) to what extent my client's property is included within the now proposed alignment. Kindly advise. A sketch would be preferable.	Thanks for the outreach. Noted about the pixelated images; the ESR report gets downscaled for the Town's website so that it is easier for download by interested parties. That said, if you download the separate Appendix PDF document for the ESR from the Town's website, and review Appendix G-Preliminary Design you will find a zoomed version of the preferred road design. That document is on the same Town webpage, but I've put the link below for you: https://connectwhitby.ca/36716/widgets/151609/documents/160467 Trust this helps!	K. Phillips (AECOM)	Nov. 3, 2025	Email	N/A
	To: K. Phillips (AECOM)	Email		**November 3, 2025 5:45 PM** Thanks, but still not clear where on Sheet 1 of Appendix	Could you kindly provide me any specifics on the property location? I do not have any information on '0' Water Street, so a location description or image would be very helpful.	K. Phillips (AECOM)	Nov. 4, 2025	Email	
	To: K. Phillips (AECOM)	Email		**November 4, 2025 11:49 AM** This is what Horace previously sent me (outlined in orange)….. Please see below your property highlighted in orange: 	Thanks for clarifying your client's lands. I have attached a cleaner copy of the page from the ESR appendix so that you can see better the lands and road design. The impacts to the lands are as depicted in the image you provided from Horace. Although redundant, below is a snip where I have hatched again the noted lands location on the Appendix G Design Plan.  I will also be on vacation starting tomorrow morning for a week, but our Environmental Planner Andrea Potter is also copied on this email.	K. Phillips (AECOM)	Nov. 4, 2025	Email	

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	To: A. Potter (AECOM) Cc: H. Look (Town) A. Cachola (Town) K. Phillips (AECOM)	Email		**November 5, 2025 9:31 AM** The ESA describes tree and vegetation loss and mitigation. My client's property as approximately outlined by Kevin in orange below is primarily woodland. Kindly provide all vegetation data related to that parcel, including assessment protocols, tree counts, benchmark criteria, and off-setting mitigation to replace any projected loss of vegetation, assuming my client's entire property is obtained for the project.	Thanks Harry for your comments in your email below. We will review the location and provide a response regarding the items noted.	A. Potter (AECOM)	20251105	Email	
	To: A. Potter (AECOM) Cc: H. Look (Town) A. Cachola (Town) K. Phillips (AECOM)	Email		**December 8, 2025 10:08 AM** Please advise accordingly.	Thank you for your comments. We understand that you are interested in all vegetation data related to your client's parcel, including assessment protocols, tree counts, benchmark criteria, and off-setting mitigation to replace any projected loss of vegetation. Please note that as part of this Class EA, an Arborist review was completed which included a tree inventory within the area of impact plus 6 m. The results were documented in an Arborist Report and Tree Protection Plan that were included with the ESR as Appendix C. Please refer to the Arborist Report for additional details regarding the methodology. You can also refer to the Natural Environment Report included as Appendix B as it provides a summary of the vegetation communities present within the study area using the Ecological Land Classification system as well as a discussion of impacts and potential mitigation. The ESR and appendices can be accessed on the Town's website via the following link…… connectwhitby.ca/WaterStreet We trust that the above referenced reports provide the additional details that you have requested regarding vegetation loss, but if you have any further questions, please feel free to reach out. Thank you.	A. Potter (AECOM)	20251209	Email	

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	To: A. Potter (AECOM) Cc: H. Look (Town) A. Cachola (Town) K. Phillips (AECOM) jeffreyilevine@gmail.com	Email		**December 12, 2025 1:33 PM** Unfortunately, that is not responsive. I'm looking for the data and analysis subset specific to my client's parcel; not related to the overall or generalized study area or area of impact + 6m.. Please provide. Thanks.	I hope the information below is helpful: Figures 1 and 2 below show Appendix A-3 of the attached Arborist Report, which identifies the locations and ID numbers of the trees on your property. Figure 3 shows Appendix B of the same report which outlines the existing condition of each tree, referenced by the corresponding tree ID numbers. **Figure 1**  **Figure 2**  **Figure 3**	H. Look (Town)	20251216	Email	

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					 Regarding tree compensation, due to the extensive tree removals required for this project, more than 300 boulevard trees will be planted as part of the road reconstruction to help offset the overall impact. Compensation related to tree removals on private properties will be addressed through discussions with the respective property owners during the detailed design process, at which time the exact road alignment and associated tree impacts will be confirmed. If an entire property is to be acquired for the road reconstruction work, compensation will be handled as part of the property acquisition process, which will be initiated following completion of the EA. Please let me know if this is helpful or if you require any additional information.				
	To: H. Look (Town) Cc: A. Cachola (Town) K. Phillips (AECOM) A. Potter (AECOM) jeffreyilevine@gmail.com	Email		**<u>December 16, 2025 4:20 PM</u>** Thanks Horace. That's helpful. I'll be back to you in due course.	N/A	N/A	N/A	N/A	N/A

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CT75 20251105	**To:** K. Phillips (AECOM) H. Look (Town of Whitby) **From:** Dillon Bickell, C.E.T. Community Consultation Worker, Legal **Chippewas of Rama First Nation** T: 705-325-3611 x 1633 C: 705-238-7111 dillonb@ramafirstnation.ca consultation@ramafirstnation.ca	Email	Updated contact info. and request for future notification to be sent digitally Questions why RFN not included in preliminary circulation of Draft ESR. As Stage 2 AA complete, RFN would like to participate on site and review draft reports.	Aaniin Kevin and Horace, My name is Dillon Bickell and I am the community consultation worker here at the Chippewas of Rama First Nation. Ben Benson sat in this role prior, but has been gone since Jan 2024. We received two mailed notices for this project, one addressed to Ben Benson and the other to Chief Ted Williams. I am hoping that all future notices and consultation can be sent digitally, to myself at dillonb@ramafirstnation.ca as well as consultation@ramafirstnation.ca. This will ensure timely response and is a bit more environmentally friendly. In regards to the project itself, it is noted in the ESR on page 25: Town of Whitby completed a preliminary circulation of the draft document on May 5, 2025 to Indigenous Communities that included Curve Lake, Alderville, Hiawatha, and Mississaugas of Scugog Island First Nations as well as key stakeholders that included the Central Lake Ontario Conservation Authority and Durham Region. My question is why where the Chippawa nations of the Williams Treaties not initially included in this list? We support Hiawatha's suggestion of participating in the detailed design phase to explore the potential incorporation of First Nation cultural elements within the road design, and would like to included as well. Additionally, as the Stage 2 archaeology assessment is completed, we would like to be made aware and have the ability to participate on site and review the draft reports.	Apologies for the delayed response as I was on vacation, and I am now getting caught up with emails. Thank you very much for the response and the comments. Our team will review and get back to you with an update to address your query.	K. Phillips (AECOM)	20251117	Email	
					Update Email Thank you for your email in response to the Notice of Completion issued for the Town of Whitby's Water Street MCEA Study to complete improvements to Water Street between Brock Street South and South Blair Street. As requested, we will update our Contact List to reflect your request that future notices and consultation be sent digitally (and not also via regular mail) to dillonb@ramafirstnation.ca and consultation@ramafirstnation.ca Please note that at the start of the project, MECP was contacted to confirm the Indigenous communities to be consulted as part of the EA process. The MECP's original list was used to determine the communities included in the preliminary circulation of the draft ESR. However, this list was subsequently updated to include additional Indigenous communities, such as Rama First Nation, as well as others who had expressed an interest in the project up to that point. The ESR has been finalized following the 30-day public review period after issuance of the Notice of Completion, incorporating comments received and our responses to them. The final ESR and its associated appendices can be accessed at the link below: www.connectwhitby.ca/WaterStreet The Town of Whitby has also initiated the detailed design of the Water Street reconstruction project based on the EA recommendations. We will continue to keep the Chippewas of Rama First Nation engaged to explore opportunities for incorporating First Nation cultural elements into the road design, and to support participation in the Stage 2	H. Look (Town)	20260821	Email	Updated Contact List Continue to engage with Rama FN during Detailed Design & extend invitation to participate in St. 2 AA

Reference # and Date	To/From	Format (email, phone)	Topic / Reference	Comment / Question / Request	Response	Who Responded	Date Response Sent	Response Format (email, phone, fax)	Required Action
					Archaeological Assessment, including fieldwork and report review. In the meantime, should you have any questions or concerns, please let me know. I look forward to our continued collaboration as the project progresses.				
CT76 20251105	**To:** K. Phillips (AECOM) **From:** Mathieu Larivière Nation Wendat **Wendat First Nation** 255, plac Chef Michel Laveau Wendake (Quebec) G0A 4V0 T: 819-692-3861 mathieu.lariviere@wendake.ca	Email	Request to participate in St. 2 Archaeological Assessment	The Wendat Nation would like to thank you for the consultation process regarding water street improvements between Brock Street South and South Blair Street. The project in question is rooted in the heart of the Wendat Nation's ancestral lands. In this context, the protection of ancestors and the preservation of archaeological heritage are priorities for the Nation. We have noted that a Stage 2 archaeological assessment will be conducted as part of this project. The Nation wishes to participate in any potential archaeological work that could be planned in the future as part of this project. Also, if any bones or artifacts are discovered during the development work, the Wendat Nation asks to be informed immediately. We look forward to hearing from you regarding this project. For any other consultation process, please do not hesitate to contact us. Tiawenhk inenh chia' entïio'! (Thank you very much and have a good day!)	Apologies for the delayed response as I was on vacation, and I am not now getting caught up with emails. Thank you very much for the response and the comments. Our team will review and get back to you with an update to address your query.	K. Phillips (AECOM)	20251117	Email	N/A
					Update Email Thank you for your email in response to the Notice of Completion issued for the Town of Whitby's Water Street MCEA Study to complete improvements to Water Street between Brock Street South and South Blair Street. The ESR has been finalized following the 30-day public review period after issuance of the Notice of Completion, incorporating comments received and our responses to them. The final ESR and its associated appendices can be accessed at the link below: www.connectwhitby.ca/WaterStreet The Town of Whitby has also initiated the detailed design of the Water Street reconstruction project based on the EA recommendations. We will continue to keep the Wendat First Nation engaged to support participation in the Stage 2 Archaeological Assessment, including fieldwork and report review. Certainly, if any bones or artifacts are discovered during the development work, the Wendat Nation will be informed immediately. In the meantime, should you have any questions or concerns, please let me know. I look forward to our continued collaboration as the project progresses.	H. Look (Town)	20260821	Email	Extend invitation to participate in St. 2 AA during detailed design.

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CT77 20251107	**To:** K. Phillips (AECOM) **From:** Elise Haley Coordinator #7888 Office of the Chief of Police **Durham Regional Police Service** T: 905-579-1520 x 4300 ehaley@drps.ca	Email	Updated Contact info.	Thank you for the correspondence dates October 29, 2025, regarding Notice of Study Completion - Municipal Class Environmental Assessment Study - Water Street Improvements between Brock Street South and South Blair Street. Could we ask that you update the contact information from Chief Todd Rollauer to Chief Peter Moreira please. Chief Moreira assumed this role in March 2023.	Apologies for the delayed response as I was on vacation, and I am not now getting caught up with emails. Thank you very much for the response and the comment. Our team will update the contact info.	K. Phillips (AECOM)	20251117	Email	Update contact list
CT78 20251109	**To:** A. Potter (AECOM) **From:** Dr. Julie Kapyrka Consultation Manager **Alderville First Nation** 11696 Second Line Rd. Roseneath, ON K0K 2X0 T: 905-352-2662 jkapyrka@alderville.ca	Email	Request to participate in archaeological field work	Thank you, Andrea. Please notify us when the archaeological assessments are planned for the project. Alderville First Nation expects to be engaged when the Stage 1 assessment is being scheduled.	**Update Email** Thank you for your email in response to the Notice of Completion issued for the Town of Whitby's Water Street MCEA Study to complete improvements to Water Street between Brock Street South and South Blair Street. Please note that a Stage 1 archaeological assessment was completed as part of the MCEA process and the draft report was forwarded to your community for review and comment on May 5, 2025 as part of the preliminary circulation of the draft ESR. The ESR has been finalized following the 30-day public review period after issuance of the Notice of Completion, incorporating comments received and our responses to them. The final ESR and its associated appendices can be accessed at the link below: www.connectwhitby.ca/WaterStreet The Town of Whitby has also initiated the detailed design of the Water Street reconstruction project based on the EA recommendations. We will continue to keep the Alderville First Nation engaged to support participation in the Stage 2 Archaeological Assessment, including fieldwork and report review. Certainly, if any bones or artifacts are discovered during the development work, the Alderville First Nation will be informed immediately. In the meantime, should you have any questions or concerns, please let me know. I look forward to our continued collaboration as the project progresses.	H. Look (Town of Whitby)	20260821	Email	Extend invitation to participate in St. 2 AA during detailed design.

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CT079 20251125	**To:** H. Look (Town of Whitby) **From:** Charles McVety **Canada Christian College**	Email		When does the public process end, where do we find the details and what do we need to know? Thanks	According to our consultant's records, we emailed you the Notice of Study Completion for this project on November 3. This notice confirms the completion of the Environmental Assessment process, the availability of the Environmental Study Report (ESR) for public review, and the start of the 30-day public comment period. I've attached the same notice again for your reference. You can also download the notice and the full ESR — which outlines the problem definition, evaluation of alternatives, preferred solution, and assessment of environmental impacts and mitigation measures — at the link below. This webpage also allows you to submit your comments directly. Alternatively, feel free to email your comments to me. www.connectwhitby.ca/WaterStreet If you need any further information about this study, please let me know.	H. Look (Town)	20251125	Email	
CT080 20251205	**To:** H. Look (Town of Whitby) K. Phillips (AECOM) A. Potter (AECOM) **From:** Chunmei Lui Regional Environmental Planner, Environmental Assessments Branch **Ministry of the Environment, Conservation and Parks** (MECP) 7th Flr, 135 St Clair Ave W, Toronto, ON M4V 1P5			Ministry staff have reviewed the Environmental Study Report (ESR) and its appendices for the above noted project. The following comments are shared with your team for consideration: **Stormwater Management** 1. The cumulative impact of stormwater resulting from the road widening should be considered with higher emphasis placed on the protection of the environmental receptors. 2. The MECP's 'Enhanced Water Quality Protection' Level 1 should be applied to all stormwater management facilities. When a stand-alone SWM control cannot achieve Level 1 protection, a treatment train approach that includes vegetative buffers, bioswales, OGSs and/or other measures should be considered in suitable areas. 3. It seems that only two OGSs are proposed to be installed to treat stormwater from the southern street side sewers (Figure 7.1: Proposed Stormwater Management System). It is recommended to install two additional OGSs to treat stormwater from the northern street side sewers or direct their flow towards the proposed OGSs. 4. Section 7.2.4 – Road Runoff Treatment states that an oil-grit separator can be used only for drainage areas that are less than 2 ha in size. It should be noted that OGSs can be used to treat stormwater runoff from much larger catchment areas.	Thank you for your email comments in response to the Notice of Completion issued for the Town of Whitby's Water Street MCEA Study to complete improvements to Water Street between Brock Street South and South Blair Street. The ESR has been finalized following the 30-day public review period after issuance of the Notice of Completion, incorporating comments received and our responses to them. The final ESR and its associated appendices can be accessed at the link below: www.connectwhitby.ca/WaterStreet Please find below our response to your comments: **Stormwater Management** 1. The Town has initiated the detailed design phase of this project. During this phase, the cumulative stormwater impacts and the protection of environmental receptors will be further assessed. 2. A treatment train approach that includes vegetative buffers, bioswales, OGSs and other measures will be considered during the detailed design phase of this project. 3. Additional OGS's will be considered during the detailed design phase of this project. 4. Comment noted. 5. Comment noted. MECP will be consulted at the 60% design stage regarding the configuration and final design of the stormwater management system. At 100% design, the final CLI-ECA permit will be applied for through the Town.	H. Look (Town)	20260821	Email	

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				5. On several occasions, the reports refer to the detailed design phase, where the final number, type and capacity of OGSs will be selected as well as other stormwater measures. Therefore, the Ministry must be consulted regarding the configuration and final design of the stormwater management system in the detailed design plan. **Indigenous Consultation Records** It is recommended that consultation records for all the communities identified are filed in Appendix A as follows: ▪ A tracking log for each community should show the method of communication, day, what was shared, etc. ▪ All records (emails, Notices, PICS, call logs, meeting minutes, etc) must be included and separated by community in chronological order (should follow the tracking log order) ▪ A summary of emails, calls, interactions, etc, between the Town of Whitby and the Indigenous community highlighting concerns and how they have been addressed in the EA process. Additionally, it is understood that the public comment period is still open until December 19, 2025, and as such comments may still be received from Indigenous communities. The tracking log (once created) should show that the Notice of Completion was sent to the identified communities and should note any comments or questions received. Please ensure these comments and consultation records have been updated in the final ESR and Appendix A. **Climate Change** We acknowledge that a qualitative review of climate change considerations has been completed and understand that the scope of this project is relatively minor. If the Town of Whitby wishes to further strengthen the assessment, additional resources are available that may provide useful regional context. These include Ontario Provincial Climate Change Impact Assessment | ontario.ca and associated report, as well as regional climate data available through the Ontario Climate Data Portal and other datasets hosted by the Climate Risk	**Indigenous Consultation Records** Please find attached an Indigenous Community Consultation Log that documents the communication completed with Indigenous Communities during the MCEA process including the method of communication (i.e. emails, call, interactions, etc.), the timing completed as well as a summary of key Indigenous concerns and how these were addressed during the Class EA process. This information is presented chronologically and by key notification milestone as it better illustrates the Town's diligent efforts to involve Indigenous Communities, keep them informed, and to provide opportunity to participate in the Class EA process. In addition to the above, all records of Indigenous consultation (emails, calls, interactions etc.) are included in Appendix A.6 Indigenous Consultation of the final ESR. In addition to the above, all records of Indigenous consultation (emails, calls, interactions etc.) are included in **Appendix A.6 Indigenous Consultation** of the final ESR. **Climate Change** Please note that the Town considers the qualitative review of climate change, as completed, sufficient for the works proposed. We thank you for the additional resources as identified and we will take these into consideration for future projects. We trust that the above responses and the noted revisions to the ESR sufficiently address the MECP's comments; however, if anything further is required, please advise.				

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				Institute found at https://climateriskinstitute.ca/climate-data/ These resources may help refine the understanding of future climate conditions and potential implications for infrastructure planning and adaptation. In conclusion, we expect the Town of Whitby's response will demonstrate how our comments be addressed in the final ESR and its appendices.					
CT081 20251208	**To:** Andrea Potter (AECOM) **From:** Ameer Idreis Planning Manager aidreis@scugogfirstnation.ca Minogi Corp. **Mississaugas of Scugog Island First Nation**	Email		Thank you for your email. While we have nothing further to share currently, we request to continue receiving future updates on this work. Additionally, can you kindly update your contact information for MSIFN to be consultation@scugogfirstnation.com removing Chief, Erin, and Thomas from future communications.	Hello Ameer, we will update your contact information accordingly and continue to keep you informed. Thank you!	A. Potter (AECOM)	20251208	Email	Update Contact List Continue to keep informed during detailed design
					Update Email Further to the emails below, please note that the ESR has been finalized following the 30-day public review period after issuance of the Notice of Completion, incorporating comments received and our responses to them. The final ESR and its associated appendices can be accessed at the link below: www.connectwhitby.ca/WaterStreet The Town of Whitby has also initiated the detailed design of the Water Street reconstruction project based on the EA recommendations, and we will continue to keep the Mississaugas of Scugog Island First Nation engaged in the process. In the meantime, should you have any questions or concerns, please let me know. I look forward to our continued collaboration as the project progresses.	H. Look (Town)	20260821	Email	
CT082 20251105	**To:** Town Website **From:** **Durham Region Cycling Coalition (DRCC)**	Sub. Via Town website	Active Transportation	Although not necessarily a component of the EAR, has any thought been given to how two MUPs and a cycle track will merge to a single MUP (the Waterfront Trail) at Brock St.? Also, at South Blair St. how will the MUPs and cycle track terminate? At present, a grassy, gravel trail connects to the Waterfront Trail but it is gated at Water St.?	**To:** ron@durhamsafecycling.ca The Town has initiated the detailed design phase of this project. During this stage, the merging and termination of cycling facilities will be determined, taking into account relevant standards, practicality, and the timing of adjacent development projects at both ends. DRCC will be consulted as part of this ongoing design process.	H. Look (Town)	20260821	Email	

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					Should you have any further questions or concerns regarding this study or the ongoing detailed design phase of the project, please let me know.				
CT082 20251219	**To:** H. Look (Town) Cc: A. Cachola (Town) P. Angelo (Town) H. Khan (Durham Region) M. Hubble (Durham Region) N. Andres (Durham Region) D. Waechter (Durham Region) K. Phillips (AECOM) R. Bilevicius (AECOM) A. Potter (AECOM) **From:** **Durham Region Works Dept.** 605 Rossland Rd. E. Level 5, PO Box 623 Whitby, ON L1N 6A3 905-668-7711 1-800-372-1102 Michael Harris, P. Eng. on behalf of Hammad Khan, P. Eng.	Letter via email	Durham Region supports intent of project. Region's Whitby Water Supply Plant expansion program is planned along same Water Street corridor. close coordination will be essential	Thank you for providing the Notice of Study Completion regarding the Municipal Class Environmental Assessment (MCEA) for the Water Street Improvements between Brock Street South and South Blair Street. We have reviewed the document and appreciate the Town's efforts in addressing road alignment, drainage, and active transportation needs along the Whitby waterfront. We fully support the intent of this project and recognize its importance to Whitby's long-term vision. At the same time, it is important to note that the Region's Whitby Water Supply Plant (WWSP) expansion program is planned along the same Water Street corridor. This overlap means that close coordination will be essential to avoid conflicts, protect critical infrastructure, and ensure both projects can proceed successfully. The WWSP expansion program involves multiple contracts over an extended timeframe, with many design details still evolving. Close alignment between the Town's improvements and the Region's infrastructure plans is essential to avoid conflicts, ensure safety, and maintain operational reliability. To ensure this coordination is effective and that both projects can proceed successfully, we have outlined several comments and considerations below that highlight potential impacts and areas requiring further discussion as part of the detailed design process: **Section 3.3.4.1 – Municipal Comments - Durham Region** (1) The EA drawings show the roundabout design but do not confirm critical elements needed for access. The roundabout must be mountable to allow large vehicles to reach the Breakwater Sewage Pumping Station (SSPS) and the future Energy Center for operations, and maintenance. The Town and the Region must work collaboratively during the detailed design stage of the Water Street Reconstruction project to confirm design elements, resolve potential conflicts, and ensure both projects are delivered successfully without compromising safety, access, or future infrastructure needs. (2) The report notes raising the Water Street road profile in multiple sections but does not provide any ranges or	Thank you for your comments regarding the Water St. MCEA currently being undertaken by the Town to complete improvements to Water St. between Brock Street South and South Blair Street. Please note that the Town is aware of the Region's Whitby Water Supply Plant (WWSP) expansion program being planned within the Water Street corridor and the Town is in agreement that continued coordination between the Town and the Region will be essential to ensure both projects can proceed successfully. The Town is committed to working with the Region as both projects proceed. **ESR Section 3.3.4.1 Region Comments 1, 2, & 3:** (1) As part of the ongoing detailed design of the Water Street Reconstruction Project, the Town and the Region's design teams are working collaboratively to confirm design elements. Coordination meetings have been and will continue to be held to resolve potential conflicts and ensure both projects are delivered without compromising safety, access, or future infrastructure needs. The proposed roundabouts will include sufficient turning radii and mountable curbs to accommodate oversized vehicles accessing the SSPS and the future Energy Centre for operations and maintenance. Detailed design drawings will be provided to the Region's design team for review and comment.	H. Look (Town)	20260821	Email	Continued coordination with Durham Region WWSP during Water St. detailed design

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				preliminary revised profiles. The report should recognize that any increase in road elevation would significantly affect the existing WWSP property and planned expansion, and that the Town and Region will coordinate during detailed design to address these impacts. (3) Please include a commitment to develop a detailed schedule in coordination with the Region's Design team and aligned to the WSP Expansion/Energy Centre milestones. **Section 4.1.4 – Durham Region – Water Supply Plant Expansion and 270 Water Street Redevelopment** (4) This section should include reference to the ongoing technical coordination with the Region of Durham and confirm that the Water Street design project will work closely with the Region's Design team to maintain safe, continuous access to the WWSP and the Energy Centre during both construction and future operation / maintenance. (5) This section should address the need to accommodate oversized vehicles and hazardous material deliveries to the WWSP and Energy Centre for long-term continued operations. This includes designing appropriate turning radii and implementing safety measures to ensure secure and efficient access for these critical deliveries. (6) Acknowledgement that construction sequencing will align with the Region's Water Supply Plant Expansion project timeline to ensure integration and avoid conflicts during implementation. **Section 9.2 – Preliminary Design Alignment** (7) The EA report states that the section between 270 Water Street and South Blair Street was shifted 3.0 metres south due to property discussions with Durham Region. The Region's design for the Whitby WSP Plant Expansion (Contract 4) is at a conceptual stage, we cannot commit to any property acquisition discussions at this time. Detailed design coordination will be required before any decisions are finalized. We will reiterate that any grade changes at the Water St. road level, including the widening of the road platform south, will increase	(2) As part of the ongoing detailed design of the Water Street Reconstruction Project, the Town will provide 30%, 60% and 90% road design plan and profile drawings to the Region's design team to coordinate the two designs and confirm there are no conflicts, including road and building elevations and grading. (3) The Region's design team is aware of the Town's project schedule through previous coordination meetings. The Town will continue to provide schedule updates as required and keep the Region informed throughout the ongoing coordination process. (4) **ESR Section 4.1.4** revised to include reference to continued technical coordination between the Town and the Region to maintain safe, continuous access to the WWSP and the Energy Centre during both construction and future operation / maintenance. (5) **ESR Section 4.1.4** revised to note that during detailed design consideration will be given to accommodating oversized vehicles and hazardous material deliveries to the WWSP and Energy Centre for long-term continued operations including the provision of appropriate turning radii and implementing safety measures to ensure secure and efficient access for these critical deliveries. (6) **ESR Section 4.1.4** revised to acknowledge that construction sequencing will align with the Region's Water Supply Plant Expansion project timeline to ensure integration and avoid conflicts during implementation. (7) **ESR Section 9.2** revised to note that the 30 m road allowance is required to achieve the overall EA objectives; as such, the 3 m widening on the south side is required. As part of the detailed design process, the Town will provide 30%, 60%, and 90% road design plan and profile submissions to the Region's design team to coordinate the two designs and address any potential grading or access issues.				

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				already steep grades for road accesses and boulevards across the frontage of the Plant. Access to the Plant is imperative for large delivery trucks and construction equipment. (8) Any changes to alignment or property boundaries could affect critical infrastructure, including feedermains as well as future high voltage duct banks which will provide power to the WSP. These impacts must be assessed and addressed during detailed design to avoid conflicts. (9) This section should address the need for adequate cover for existing, future utilities that the Region will be installing as part of their project. Coordination with the Region during detailed design will be critical to ensure these changes do not negatively impact WSP operations or expansion plans. We note that adding fill on top of watermains, sanitary sewers, feedermains and sanitary forcemains may also be impactful to the structural integrity of these pipes and their associated appurtenances (i.e. valve chambers). **Section 9.7.1 – Whitby WSP Expansion Stormwater Management Plan** (10) The EA report references a proposed 0.45 m sewer as part of the WSP Expansion Phase 2 plan; however, based on the Stormwater Management Report for 270 Water Street (June 2023), this sewer work is part of the Town's Water Street improvements, not the WSP expansion. This discrepancy should be clarified in the EA document. **Section 10.1.1 – Utilities** (11) While the report notes that coordination with Elexicon will be required during detailed design, coordination with the Region on this topic will also be essential. Relocating hydro poles to the north side of Water Street could impact the Energy Center's current design and operations. These impacts must be reviewed jointly to ensure adequate clearances and to maintain safe access. **Section 10.1.2 – Traffic Detours and Road Closures** (12) The Region will require the Traffic & Transportation Management Plan to include the construction sequence and access windows aligned to Region operations and delivery schedules (including hazardous materials).	(8) **ESR Section 9.2** revised to acknowledge that any changes to alignment or property boundaries could affect critical infrastructure, including feedermains as well as future high voltage duct banks which will provide power to the WSP. These impacts will need to be assessed and addressed during detailed design to avoid conflicts. (9) **ESR Section 9.2** revised to clarify that continued coordination with the Region will be completed during detailed design to make certain that adequate cover will be provided for existing and future utilities that the Region will be installing as part of the WSP project. (10) **ESR S. 9.7.2** revised to clarify that the proposed 0.45 m sewer is part of the Town's Water Street improvements and not part of the WSP Expansion Phase 2 plan. This wording aligns with the current Stormwater Management Report for 270 Water Street (June 2023). (11) **ESR Section 10.1.1** revised to note that hydro pole relocation will also be coordinated with the Region given that there is the potential to impact the Energy Center's current design and operations. These impacts will be reviewed jointly to ensure adequate clearances and to maintain safe access. (12) **ESR Section 10.1.2** revised to note that as requested by the Region, the Traffic & Transportation Management Plan is to also include the construction sequence and access windows aligned to the Region's operations and delivery schedules (including hazardous materials).				

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				We appreciate the Town's commitment to improving Water Street and recognize the benefits this project will bring to the community. Both projects need to be successfully planned and coordinated as the end product is Whitby's waterfront. We look forward to continuing our partnership and welcome further discussions as the project advances.					
CT084 20251219	To: H. Look (Town) Cc: A. Cachola (Town) H. Lin (Town) K. Phillips (AECOM) A. Potter (AECOM) C. Hawkins (AECOM) **From:** Dan Minkin, Heritage Planner Heritage Operations Branch **Ministry of Citizenship and Multiculturalism** 416-786-7553 dan.minkin@ontario.ca	Letter via Email		Thank you for providing the Ministry of Citizenship and Multiculturalism (MCM) with the Notice of Study Completion for the above-referenced project. MCM's interest in this project relates to its mandate of conserving Ontario's cultural heritage, which includes: ▪ archaeological resources, including land and marine; ▪ built heritage resources, including bridges and monuments; and ▪ cultural heritage landscapes. We have reviewed the Environmental Study Report (ESR) dated May 2023, prepared by AECOM, and offer the following comments. **Project Summary** The Town of Whitby has completed the Municipal Class Environmental Assessment Schedule 'C' Study initiated in the Fall of 2018 to explore possible road modifications and improvements along Water Street (in south Whitby) from Brock Street South to South Blair Street. This study was undertaken to identify opportunities to enhance the corridor experience along the Whitby Waterfront; accommodate active transportation and travel needs within the area; and address road alignment and drainage deficiencies. These improvements are part of the Town's ongoing efforts and partnerships to transform the Whitby waterfront into a destination of choice for all to enjoy. The Recommended Plan will maintain the existing road alignment with a 130-metre curve correction. A roundabout will be provided on Water Street east of Brock Street South, and another one at the intersection of Water Street and South Blair Street. The Preferred Cross-section provides a 3.0 metre multi-use path on both sides of the road, and a two-way cycle track on the	Thank you for your comments regarding the Water St. MCEA currently being undertaken by the Town of Whitby to complete improvements to Water St. between Brock Street South and South Blair Street. Please see our response to your comments as follows: **Archaeological Resources** **C1** – ESR text has been revised to clarify that the completion of any subsequent stages of archaeological assessment recommended by the Stage 2 report will be completed during detailed design in advance of ground-disturbing activities. **C2** – Section 10.4.1 and Table 13 have been revised to include the following: ▪ In the event that previously unknown or unassessed deeply buried archaeological resources are uncovered during construction, the contractor shall immediately notify the Contract Administrator. Work shall remain suspended within the subject area until otherwise directed by the Contract Administrator in writing. The CA will contact the Town of Whitby representative who will confirm the need to engage a licensed consultant archaeologist to carry out any archaeological fieldwork, in compliance with Section 48 (1) of the Ontario Heritage Act. ▪ In the event that human remains are encountered during construction, the contractor shall immediately notify the Contract Administrator. Work shall remain suspended within the subject area until otherwise directed by the Contract Administrator in writing. The CA will contact the Municipal representative who will notify the police, coroner and the Registrar of the Bereavement Authority of Ontario. **Built Heritage Resources and Cultural Heritage Landscapes** **C3** - Please note that, in consideration of your comments, a CHER has been completed for the Port Whitby & Port Perry	A. Potter (AECOM)	20260616	Email	

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				south side. Streetscaping opportunities will also be provided through the planting of street trees in the boulevards and in the median. **Comments** **Archaeological Resources** We acknowledge that the Stage 1 Archaeological Assessment report carried out under PIF number P316-0533-2023 has been submitted, reviewed and entered into the Ontario Public Register of Archaeological Reports. **C1** - Section 10.4.1 and Table 13 commit to the completion of a Stage 2 Archaeological Assessment during detailed design, pursuant to the findings of the Stage 1 assessment. This commitment should also include the completion of any subsequent stages of archaeological assessment recommended by the Stage 2 report, during detailed design and well before the commencement of ground-disturbing activities. **C2** - Section 10.4.1 and Table 13 should also include a commitment for the case of archaeological material being unexpectedly encountered during construction, in spite of the completion of archaeological assessment. Should this occur, work impacting the archaeological resources should cease immediately, MCM should be notified, and an archaeologist licensed under the Ontario Heritage Act should be engaged to assess the site as necessary. If the archaeological resources include human remains, the police or coroner should also be notified.	Railway (PW&PPR) Corridor. The report was reviewed by Town staff and the Town's Heritage Committee. Based on their feedback, a HIA has also been completed and incorporated into the CHER. A copy of the CHER/HIA is attached for your review. It would be greatly appreciated if you could provide any comments on the report by **July 14th, 2026** at the latest. Once the CHER/HIA is reviewed and approved by MCM, the Town will include the document as an appendix in the final ESR (updated to reflect comments received during 30-day comment period) which will be made available on the Town's project website at the following link… www.connectwhitby.ca/WaterStreet We trust that the above responses and the noted revisions to the ESR sufficiently address your comments. Should you have any further questions or concerns regarding this study or the ongoing detailed design phase of the project, please let me know.				

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				Built Heritage Resources and Cultural Heritage Landscapes **C3 -** As discussed during the course of the study, the EA process requires a description of the affected environment and at least preliminary impacts and mitigation commitments. In this case, the Cultural Heritage Screening Report (CHSR) in Appendix F identified that there may be cultural heritage resources impacted by the undertaking, but does not provide analysis, even at the preliminary level, as to what their affected attributes may be or what mitigation measures may be appropriate, the way a Cultural Heritage Report would. This being the case, the Cultural Heritage Evaluation Report (CHER) recommended in the CHSR and committed to for detailed design would be the first opportunity to address these questions. As a matter of EA compliance, the CHER should therefore have been carried out during the EA stage. At this time, we recommend that once the CHER is completed its results be incorporated into the ESR by way of an addendum. Thank you for consulting MCM on this project and please continue to do so throughout the EA process. If you have any questions or require clarification, please do not hesitate to contact me.	**FOLLOW UP with D. Minkin (MCM)** **July 17, 2026 11:38 AM** I hope you're doing well. I wanted to follow up on Andrea's email regarding the CHER/HIA that was provided for your review, as the requested July 14 deadline has now passed. Could you please let us know whether you have any comments, or if we may proceed on the basis that no further comments will be forthcoming? We are looking to finalize the ESR and would appreciate your confirmation at your earliest.	K. Phillips (AECOM)	20260726	Email	
					D. Minkin (MCM) Final Response **July 17, 2026 5:36 PM** Apologies for not getting back sooner. I am comfortable with the CHER and the responses in the email.				

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	To: Tom Cowie. Consultation Indigenous Knowledge Lead **Hiawatha First Nation** 431 Hiawatha Line Hiawatha, ON K9J 0E6 705 295-4421 Ext. 216 tcowie@hiawathafn.ca			No comment received during 30-day Comment Period – refer to Indigenous Community Consultation Record and Tracking Log for full Indigenous consultation throughout Class EA process.	**Update to Hiawatha First Nation** We would like to provide an update on the Town of Whitby's Water Street MCEA Study for improvements to Water Street between Brock Street South and South Blair Street. A 30-day public review period, in accordance with the EA Act, was carried out from November 3, 2025 to December 19, 2025. Notification was also provided to Hiawatha First Nation on November 3, 2025. During this review period, the project team received valuable comments from the public, review agencies, First Nations and stakeholders. The ESR has now been finalized following the issuance of the Notice of Completion, incorporating all comments received and our responses. The final ESR and associated appendices can be accessed at the link below: www.connectwhitby.ca/WaterStreet The Town of Whitby has also initiated the detailed design phase of the Water Street reconstruction project based on the EA recommendations. We will continue to engage Hiawatha First Nation to explore opportunities to incorporate First Nation cultural elements into the road design and to support participation in archaeological assessments, including fieldwork and report review. In the meantime, should you have any questions or concerns, please let me know. I look forward to our continued collaboration as the project progresses.	H. Look (Town)	20260821	Email	

Schedule 'C' MCEA Study for Water Street Improvements between Brock Street and South Blair Street
Master Consultation Tracking Table
Notice of Completion March 18, 2026 (Updated Aug. 2026)

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	To: Paige Williams (paigew@curvelake.ca) & Kaitlin Hill (kaitlinh@curvelake.ca) **Curve Lake First Nation**			No comment received during 30-day Comment Period – refer to Indigenous Community Consultation Record and Tracking Log for full Indigenous consultation throughout Class EA process.	**Update to Curve Lake First Nation:** We would like to provide an update on the Town of Whitby's Water Street MCEA Study for improvements to Water Street between Brock Street South and South Blair Street. A 30-day public review period, in accordance with the EA Act, was carried out from November 3, 2025 to December 19, 2025. Notification was also provided to Curve Lake First Nation on November 3, 2025. During this review period, the project team received valuable comments from the public, review agencies, First Nations and stakeholders. The ESR has now been finalized following the issuance of the Notice of Completion, incorporating all comments received and our responses. The final ESR and associated appendices can be accessed at the link below: www.connectwhitby.ca/WaterStreet The Town of Whitby has also initiated the detailed design phase of the Water Street reconstruction project based on the EA recommendations. We will continue to engage Curve Lake First Nation to explore opportunities to incorporate First Nation cultural elements into the road design and to support participation in archaeological assessments, including fieldwork and report review. In the meantime, should you have any questions or concerns, please let me know. I look forward to our continued collaboration as the project progresses.	H. Look (Town)	20260821	Email	