Environmental Impact Assessment

1450 King Rd, Burlington, ON

Prepared for

Quantum Realty Management XII Inc.

2213 North Sheridan Way
Mississauga, ON
L5K 1A3

Amended Submission October 24, 2023
Project No. P2021-560

Prepared by

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October 24, 2023

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Ken Szekely
Quantum Realty Management
2213 North Sheridan Way
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Re: Environmental Impact Assessment
1450 King Rd., Burlington, ON

Dear Ken Szekely:

GeoProcess Research Associates Inc. (GeoProcess) is pleased to present the following Environmental Impact Assessment (EIA) for a stormwater pond relocation at 1450 King Rd., Burlington, Ontario. This EIA functions as an Environmental Evaluation Report, as required by the City of Burlington. It also serves as an Environmental Impact Assessment, as required by the Halton Region Official Plan Policy (3.1) c) for developments or site alterations within 120 m of the Regional Heritage System. This EIA reports the findings of various in-field assessments conducted in 2021 and provides the developable limits and restoration plan for the proposed development relative to the natural heritage and hydrological features and functions of the Study Area. A three-year monitoring plan is proposed for the vegetative 10 m buffer and invasive species management is recommended within the SWM Pond to address the common reed populations. This EIA has been amended to address the comments from Halton Region, received in June 2022 and September 2023.

Regards,

GEOPROCESS RESEARCH ASSOCIATES INC



Ken Glasbergen, MSc., ERPG
Senior Ecologist, Principal

Executive Summary

The following Environmental Impact Assessment (EIA) was completed by GeoProcess in accordance with the Halton Region Guidelines (2019) and the agreed upon Terms of Reference for the proposed development at 1450 King Rd., Burlington, Ontario. This Subject Property is the proposed site of an agreement where the land of existing City of Burlington storm pond is proposed to be purchased from the City of Burlington and relocated to the northern portion of the site, ultimately providing a development opportunity at the intersection of King Road and the North Service Road. The Subject Property is adjacent to a tributary of Indian Creek which is regulated by Halton Conservation. The need for an EIA is triggered by the presence of a potentially Significant Woodland with a ravine that extends along the western boundary of the Subject Property.

Natural heritage characterization surveys were completed for the Study Area in summer and fall 2021. A review of all relevant policies and applicable existing background information was included in the scope of the EIA. The results of the biophysical analysis indicate that with the appropriate buffers and recommended mitigation measures, the proposed development and relocation of the existing storm pond will not result in negative impacts on the NHS. This EIA has been amended to address the comments from Halton Region, received in June 2022 and September 2023.

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1. Introduction

GeoProcess Research Associates Inc. (GeoProcess) was retained by Quantum Realty Management (Quantum) to complete an Environmental Impact Assessment (EIA) for a landowner purchase and stormwater management (SWM) pond relocation (i.e., decommissioning and re-building) at 1450 King Rd, Burlington, Ontario. The current SWM pond is owned by the City of Burlington (the City) and is located on City-owned property immediately northwest of the North Service Road and King Road intersection. Quantum is proposing to purchase the property from the City and relocate the SWM pond from its current location to lands immediately north of the City's lands. This will allow for future development of the lands located in the northwest corner of the North Service Road and King Road intersection. Both properties (client-owned and City-owned lands) will be referred to as the "Subject Property", while the "Study Area" extends 120 m beyond the Subject Property and captures the natural heritage lands to the west (Map 1). The need for an EIA is triggered by the presence of a Natural Heritage System (NHS) woodland and watercourse that is regulated by Conservation Halton (Map 2).

1.1. Site Description

The Subject Property is approximately 3.1 hectares (ha) in size and consists of rolling topography and a dry SWM pond. The dry pond is comprised of two cells which have naturalized with a mix of vegetation. One cell is dominated by cattail (*Thypha spp.*), the other by common reed (*Phragmites australis*). The majority of the site is covered by mixed meadow vegetation, with a disturbed area in the northwest corner with sparse plant cover over bare soil. An Oak-Hickory woodland is located west along the top-of bank of the adjacent watercourse. A site visit was completed on November 1, 2017, with staff from Conservation Halton and Halton Region, to delineate and stake the ravine top-of-bank and woodland dripline.

2. Policy Context

2.1. Provincial Policy Statement

The Provincial Policy Statement (PPS), 2020 is administered under Section 3 of the *Planning Act*. It became effective May 1, 2020 and replaces the 2014 PPS. The PPS applies to planning decisions made on or after that date. It provides policy direction for land use and development within the Province of Ontario and provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment. The policies of the PPS may be complemented by provincial and municipal plans and policies.

The PPS defines eight natural heritage features and provides planning polices for each, listed below. The function of Natural Heritage Features and Areas is further clarified by the definition of a Natural Heritage System, which is *"a system made up of natural heritage features and areas, and linkages intended to provide connectivity (at the regional or site level) and support natural processes which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species, and ecosystems."*

- Significant wetlands
- Coastal wetlands

- Fish habitat
- Significant woodlands
- Significant valleylands
- Habitat of endangered species and threatened species
- Significant Wildlife Habitat
- Significant Areas of Natural and Scientific Interest (ANSIs)

Section 1.0, 2.0 and 3.0 of the PPS deal with development and site alteration, and where these activities shall not be permitted. Section 1.0 policies surround efficient land use and development changes that support sustainability by promoting strong, liveable, healthy and resilient communities, protecting the environment and public health and safety, and facilitating economic growth. Section 2.0 policies surround the conservation of biodiversity, and protection of the health of the Great Lakes, natural heritage, water, agricultural, mineral and cultural heritage and archaeological resources for their economic, environmental and social benefits. Section 3.0 directs development away from areas of natural or human-made hazards to mitigate risks to public health or safety, and property damage from natural hazards, including the risks that may be associated with the impacts of a changing climate.

Policies in Section 2.1 are particularly relevant as they surround development and site alteration in and adjacent to *natural heritage features*. These policies and select others are outlined below, in Table 1.

Table 1. Applicable Policies of the Provincial Policy Statement

Policy Number	Policy
1.1.1	Healthy, liveable, and safe communities are sustained by *h)* promoting development and land use patterns that conserve biodiversity; and *i)* preparing for the regional and local impacts of a changing climate.
1.7.1	*k)* minimizing negative impacts from a changing climate and considering the ecological benefits provided by nature;
1.8.1	*f)* promote design and orientation which maximizes energy efficiency and conservation, and considers the mitigating effects of vegetation and green infrastructure; and *g)* maximize vegetation within settlement areas, where feasible.
2.1.1	Natural features and areas shall be protected for the long term.
2.1.2	The diversity and connectivity of natural features in an area and the long-term *ecological functi*on and biodiversity of *natural heritage systems*, should be maintained, restored or where possible, improved, recognizing linkages between and among *natural heritage features and areas*, *surface water features* and *ground water features*.
2.1.3	*Natural heritage systems* shall be identified in Ecoregions 6E & 7E, recognizing that *natural heritage systems* will vary in size and form in *settlement areas, rural areas*, and *prime agricultural areas*.
2.1.4	*Development* and site alteration shall not be permitted in: a) *significant wetlands* in Ecoregions 5E, 6E and 7E; and, b) *significant coastal wetlands.*

Policy Number	Policy
2.1.5	Development and site alteration shall not be permitted in: a) *significant wetlands* in the Canadian Shield north of Ecoregions 5E, 6E and 7E; b) *significant woodlands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Marys River); c) *significant valleylands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Marys River); d) *significant wildlife habitat*; e) *significant areas of natural and scientific interest*; and f) *coastal wetlands* in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b) unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.
2.1.6	*Development* and *site alteration* shall not be permitted in *fish habitat* except in accordance with *provincial and federal requirements.*
2.1.7	*Development and site alteration* shall not be permitted in *habitat of endangered species and threatened species*, except in accordance with *provincial and federal requirements.*
2.1.8	*Development* and *site alteration* shall not be permitted on *adjacent lands* to the *natural heritage features and areas* identified in policies 2.1.4, 2.1.5 and 2.1.6 unless the *ecological function* of the *adjacent lands* has been evaluated and it has been demonstrated that there will be no *negative impacts* on the natural features or on their *ecological functions*.
2.2.2	*Development* and *site alteration* shall be restricted in or near *sensitive surface water features* and *sensitive ground water features* such that these features and their related *hydrologic functions* will be protected, improved or restored. Mitigative measures and/or alternative development approaches may be required in order to protect, improve or restore *sensitive surface water features*, *sensitive ground water features*, and their *hydrologic functions*.
3.1.1	Development shall generally be directed, in accordance with guidance developed by the Province (as amended from time to time), to areas outside of: a) *hazardous lands* adjacent to the shorelines of the *Great Lakes - St. Lawrence River System* and *large inland lakes* which are impacted by *flooding hazards, erosion hazards* and/or *dynamic beach hazards*; b) *hazardous lands* adjacent to *river, stream* and *small inland lake systems* which are impacted by *flooding hazards* and/or *erosion hazards*; and c) *hazardous sites.*
3.1.3	Planning authorities shall prepare for the impacts of a changing climate that may increase the risk associated with natural hazards

2.2. Endangered Species Act (2007)

The Endangered Species Act (ESA) (2007) protects habitat and individuals of wildlife species designated as Endangered, Threatened or Extirpated in Ontario. These designations are defined as:

- Endangered: A species shall be classified as an endangered species if it lives in the wild in Ontario but is facing imminent extinction or extirpation.
- Threatened: A species shall be classified as a threatened species if it lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address factors threatening to lead to its extinction or extirpation.
- Extirpated: A species shall be classified an extirpated species if it lives somewhere in the world, lived at one time in the wild in Ontario, but no longer lives in the wild in Ontario.

Activities that relate to SAR are regulated through the following subsections:

9 (1) No person shall,

kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;

10 (1) No person shall damage or destroy the habitat of,

a) a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species;

Or

b) a species that is listed on the Species at Risk in Ontario List as an extirpated species, if the species is prescribed by the regulations for the purpose of this clause. 2007, c. 6, s. 10 (1).

Provincial Species at Risk are identified and assessed by the Committee on the Status of Species at Risk in Ontario (COSSARO). The ESA protects species listed by COSSARO as Endangered, Threatened or Extirpated in Ontario and their habitats by prohibiting anyone from killing, harming, harassing, or possessing protected species, as well as prohibiting any damage or destruction to the habitat of the listed species. All listed species are provided with general habitat protection under the ESA aimed at protecting areas that species depend on to carry out their life processes, such as reproduction, rearing, hibernation, migration or feeding. In addition, specific habitat regulations for some species have been developed that specifically define the extent and character of their protected habitat beyond what is stated in the general habitat regulation.

Activities that may impact a protected species or its habitat require the prior issuance of a Permit from the Ministry of Environment, Conservation and Parks (MECP), unless the activities are exempted under Regulation. The current (June 29, 2020) Ontario Regulation 242/08 identifies activities which are exempt from the permitting requirements of the Act, these activities are subject to rigorous controls outside the permit process including registration of the activity and preparation of mitigation plans. Activities that are not exempt under O. Reg. 242/08 require a complete permit application process.

2.3. Growth Plan for the Greater Golden Horseshoe 2019

The Subject Property is part of the Greater Golden Horseshoe (GGH) (Regulation 416/05) and is identified as a Built-Up Area per Schedule 4-Urban Growth Centres. This Plan is issued under the authority of section 7 of the Places to Grow Act, 2005. It was approved through an Order in Council made under that Act to come into effect on July 1, 2017. The GGH contains many of Ontario's most significant ecological and hydrologic natural environments and scenic landscapes, including the Oak Ridges Moraine, the Niagara Escarpment, and the other natural areas in the Greenbelt Area and beyond. This Plan requires the identification of water resource systems and the protection of key hydrologic features and key hydrologic areas, similar to the level of protection provided in the Greenbelt Plan. Section 4.2.4 of the GGH identifies policies surrounding Lands Adjacent to Key Hydrologic Features and Key Natural heritage Systems.

2.4. Greenbelt Plan 2017

The Greenbelt Plan was originally enacted in 2005 and has since been updated (2017). It provides policies to protect the agricultural land base and the associated ecological and hydrological features and functions

within the Greater Golden Horseshoe. Lands included in the Greenbelt Area are defined by O. Reg 59/05. The Subject Property does not fall within the Greenbelt Area.

2.5. City of Burlington Official Plan 2020

The City's Official Plan (OP) was approved by the Ontario Municipal Board on Oct. 24, 2008, and text and maps were recently updated in November 2020. Per Schedule C: *Land Use-Urban Area,* the Subject Property is designated as a Business Corridor within Employment Lands that is adjacent to a watercourse. The Subject Property is located on the north side of North Service Road and west of King Road, therefore development or re-development of lands designated "Business Corridor" are required to undertake the following as per Section 3.4.3 Site Specific Policies:

(i) a site-specific Environmental Impact Assessment as described in Part II, Section 2.5 of this Plan to ensure that impacts on the natural environment are minimized through maximum impervious surface limits and setbacks from watercourses and natural features

(ii) a viewshed study and calculate maximum building heights to ensure views to the escarpment are maintained to the maximum extent

(iii) comply with the criteria of Part V, Section 2.4, Design, of this Plan

2.6. Halton Region Official Plan 2018

The Halton Region Official Plan (OP) has undergone a three-phase review process that began in 2014. Regional Council held a Special Meeting of Council on November 18, 2020, in connection with the Regional Official Plan Review. The Special Meeting was held pursuant to Section 26(3) of the Planning Act and provided the public an opportunity to discuss the revisions that may be required to the Regional Official Plan. For the purposes of this EIA the 2018 OP was consulted for policy definitions while the Regional Official Plan Review-Draft Mapping (2021) was referenced for Natural Heritage Systems (NHS).

The woodland located to the west of the Subject Property is under review and is proposed in the Draft Mapping as NHS woodland. Section 115.3 and 115.4 describes the Regional Natural Heritage Systems and as per the 2018 Regional Official Plan a significant woodland is defined as:

A Woodland 0.5 ha or larger determined through a Watershed Plan, a Sub-watershed Study or a site-specific Environmental Impact Assessment to meet one or more of the four following criteria:

(1) Woodland contains forest patches over 99 years old,

(2) the patch size of the Woodland is 2 ha or larger if it is located in the Urban Area, or 4 ha or larger if it is located outside the Urban Area but below the Escarpment Brow, or 10 ha or larger if it is located outside the Urban Area but above the Escarpment Brow,

(3) the Woodland has an interior core area of 4 ha or larger, measured 100m from the edge, or

(4) the Woodland is wholly or partially within 50 m of a major creek or certain headwater creek or within 150m of the Escarpment Brow.

2.7. Conservation Halton Regulation 162/06

In accordance with Ontario Regulation 162/06, Conservation Halton regulates all watercourses, valleylands, wetlands, shorelines of Lake Ontario and Hamilton Harbour and hazardous lands, as well as lands adjacent to these features. The Subject Property abuts Indian Creek which is regulated for stable top of bank hazard and floodplain. The stable top of bank regulated area extends 7.5 metre beyond the mapped top of bank. As such, a permit is required from Conservation Halton for any proposed work within the regulated area.

3. Background Review

3.1. Indian Creek

The watercourse adjacent to the Subject Property is classified as a second order stream and headwater of Indian Creek that originates approximately 0.5 km northwest of the Study Area. The watercourse flows southeast through a well-defined valley and riparian woodland before crossing under Highway 403 and confluences with the West Branch of Indian Creek. Indian Creek flows through a matrix of urban Aldershot neighborhoods before outletting into the Hamilton Harbour near the end of Indian Road in Burlington.

3.2. Woodland

The woodland located within the Study Area boundary is part of a larger riparian woodland following the watercourse valley. The woodland was characterized as FODM2-2 and contained mature white oak (*Quercus alba*) and regenerating shagbark hickory (*Carya ovata*) with a common buckthorn understory.

3.3. Physiography and Geology

Pleistocene geology indicates that the Study Area consists of Queenston red shale and siltstone, minor green shale and siltstone, and variable calcareous siltstone to sandstone and limestone interbeds (Chapman and Putnam, 1984). The Subject Property contains Halton Till (clay or silt) and shale and dolomite bedrock materials.

4. Biophysical Inventory

A biophysical inventory was completed to characterize the natural heritage system associated with the Study Area.

4.1. Survey Methodology

Survey methodology is provided for each of the studies included in the biophysical inventory, including floristic studies (ELC), tree inventory, incidental and formal wildlife surveys, and significant wildlife habitat screening and assessment.

4.1.1. Floristic Studies

An inventory of all floristic species within the Study Area was completed on October 7, 2021. Species nomenclature and ranking was determined provincially by the Ministry of Natural Resources Natural Heritage Information Database (S_Ranks). Vegetation communities were mapped and described according to the Ecological Land Classification (ELC) system for Southern Ontario (Lee et al., 2008). Vegetation community boundaries were determined using desktop analysis and further refined in the field.

4.1.2. Tree Inventory

Field studies were completed on September 10 and 16, 2021 to identify and assess the existing trees within the Study Area. An assessment of individual trees included all trees 10 cm Diameter at Breast Height (DBH) or greater for the Subject Property and 6 metres of adjacent lands. Trees were assessed for condition utilizing the following parameters:

- Tree # - numbers assigned to tree that corresponds to their surveyed/mapped location.
- Species - common and botanical names provided in the inventory table.
- DBH - diameter (centimeters) at breast height, measured at 1.4 m above the ground.
- Condition - condition of trees were assessed as follows:
- Trunk integrity (TI): conditions on trunk that might affect likelihood of failure based on factors including co-dominant stems, cracks, decay, poor taper, lean, response growth, abnormal or missing/dead bark, etc.
- Crown Structure (CS): condition on crown structure that might affect likelihood of failure including live crown ratio, presence of defects (including bark, weak attachments, cracks, decay, cavities), crown density.
- Crown Vigor (CV): an assessment of overall tree health classified as weak/under stress (poor), average vigor for its species and site condition with some signs of stress (fair), growing well and appears to be free of significant health stress factors (good).
- Canopy Dieback (CDB): extent dead branching and canopy cover loss measured as a percentage of the entire crown.

The location of trees within the vicinity of the proposed development were surveyed for location using a handheld GPS (+/- 3 m accuracy). Species nomenclature and ranking is based on the Ministry of Natural Resources and Forestry Natural Heritage Information Centre species list.

4.1.3. Incidental Wildlife Surveys

Formal surveys for mammals, reptiles, and insects were not completed, but incidental observations were completed during other survey times.

4.1.4. Species at Risk Screening and Assessment

An assessment and screening of potential Species at Risk was conducted for the Property based on Federal and Provincial status. Following the MECP (2019) Client's Guide to Preliminary SAR Screening, this screening was based on a review of the Natural Heritage Information Centre, the regional species list, atlases (breeding bird, butterfly and moth) citizen science databases (i.e., iNaturalist), and any additional lists provided by the MECP. The Species at Risk assessment results are found in Section 4.2.4.

4.1.5. Significant Wildlife Habitat Screening and Assessment

A screening for Significant Wildlife Habitat following the Ministry of Natural Resources and Forestry Significant Wildlife Habitat Technical Guide (2000) and Significant Wildlife Habitat Criteria Schedule for Ecoregion 7E (January 2015) was conducted for the Subject Property. Potential SWH identified was assessed during the complementary field studies. The results of this assessment are found in Section 4.2.5.

4.2. Survey Results

The following sections present the results of the biophysical inventory.

4.2.1. Vegetation

Plant diversity within the Subject Property was generally reflective of disturbed sites that have naturally regenerated with common pioneer species. A forest community, representing a more mature and established unit, was present within the valley west of the property. Refer to Map 3 for the ecological land classification polygon locations.

Table 2. Ecological land classification communities

ELC Code and Classification		Vegetation	Comments
FODM2-2: Dry-Fresh Oak-Hickory Deciduous Forest Type	Canopy	White oak (*Quercus alba*), red oak (*Quercus rubra*), shagbark hickory (*Carya ovata*), sugar maple (*Acer saccharum ssp. saccharum*), American basswood (*Tilia americana*), black cherry (*Prunus serotina*)	Located along top-of bank, mid-age with some mature Oak. Invasive understory composed of common buckthorn. White-tailed deer tracks throughout feature. Minimal debris observed.
	Intermediate	Common buckthorn (Rhamnus cathartica), gray dogwood (*Cornus racemosa*), tartarian honeysuckle (*Lonicera tatarica*)	
	Ground	Regenerating common buckthorn, garlic mustard (*Alliaria petiolata*), poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus*	

ELC Code and Classification		Vegetation	Comments
		quinquefolia), blue-stemmed goldenrod (*Solidago caesia*)	
MAMM1/MEMM4: Graminoid Mineral Meadow Marsh Ecosite/Fresh-Moist Mixed Forb Ecosite	Canopy	Russian olive (*Elaegnus angustifolia*), white pine (*Pinus strobus*), willow species (*Salix sp.*)	Dry SWM pond composed of old field species, non-native invasive species and scattered planted juvenile tree species.
	Intermediate	Common buckthorn, narrow leaved cattail (*Typha angustifolia*), common reed (*Phargmites australis*), multi-flora Rose (*Rosa multiflora*), grey dogwood	
	Ground	Reed-canary grass (*Phalaris arundinacea*), Canada goldenrod (*Solidago canadensis)*, Kentucky bluegrass (*Poa pratensis*), common milkweed (*Asclepias syriaca*)	
MEMM3 Dry - Fresh Mixed Meadow Ecosite	Canopy	Reed canary grass, Kentucky blue grass, Canada goldenrod, common milkweed, chicory (*Cichorium intybus*), yellow hawkweed (*Hieracium caespitosum*), cow vetch (*Vicia cracca*), Canada thistle (*Cirsium arvense*)	This community occupies the majority of the site with two fill piles located in the northeast and southwest corner of the property
	Intermediate	n/a	
	Ground	n/a	
Naturalized Deciduous Hedgerow	Canopy	White oak, red oak, shagbark hickory	Single row of predominantly shagbark hickory. Large red oak has 85% crow die-back. Break from valley woodland. Understory of hedgerow is dominated by buckthorn.

4.2.2. Tree Inventory

The tree inventory documented a total of 93 trees, including 40 within the Subject Property, which includes the City of Burlington property and 53 within 6 m of the combined property boundary (Appendix B). The majority of trees were located along the western edge of the Subject Property where it abuts the woodland. The two most common species were shagbark hickory and white oak. Other trees associated with the dry SWM pond included white willow (*Salix alba*), red maple (*Acer rubrum*) and bur oak (*Quercus macrocarpa*). These trees were likely planted as part of the SWM pond construction. A number of dead trees were

observed, including white ash (*Fraxinus americana*) and white oak. Both species appeared to have died from insect damage. The emerald ash borer (*Agrilus planipennis*) has decimated ash populations, while the European gypsy moth (*Lymantria dispar dispar*) has defoliated several oak woodlands. Several trees contained remnant gypsy moth cocoons and egg masses. There was evident leaf defoliation on all the identified oaks. Additional trees were inventoried along the King Road edge. Refer to Appendix B and Map 4 for the full tree inventory.

4.2.3. Incidental Wildlife

Incidental wildlife was recorded during each site visit. All observations are provided in Table 3.

Table 3. Incidental Wildlife Summary

Scientific Name	Common Name	Evidence	Abundance
Danaus plexippus	Monarch	Observed	5
Colias philodice	Clouded sulphur	Observed	2
Buteo jamaicensis	Red-tailed hawk	Vocal	1
Leuconotopicus villosus	Hairy woodpecker	Vocal	1
Corvus brachyrhynchos	American crow	Observed	2
Odocoileus virginianus	White-tailed deer	Scat	unknown
Sciurus carolinensis	Gray squirrel	Observed	3

4.2.4. Species at Risk Screening

Using the Make-a-Map: Natural Heritage Areas application, a screening for potential Species at Risk on or within a 1-kilometer grid of the Subject Property (17NH9397 and 17NH9398) was completed in conjunction with the various sources of information that are detailed in Appendix D. The results are provided in Table 4.

Table 4. Screening Results

Common Name	Scientific Name	SRank	SARO Status	COSEWIC Staus
	Birds			
Peregrine Falcon	*Falco peregrinus*	S4	SC	NAR
Louisiana Waterthrush	*Parkesia motacilla*	S2B	THR	THR
Least Bittern	*Ixobrychus exilis*	S4B	THR	THR
Red-headed Woodpecker	*Melanerpes erythrocephalus*	S3	SC	END
Eastern Wood-pewee	*Contopus virens*	S4B	SC	SC
Wood Thrush	*Hylocichla mustelina*	S4B	SC	THR

Common Name	Scientific Name	SRank	SARO Status	COSEWIC Staus
Golden-winged Warbler	*Vermivora chrysoptera*	S4B	SC	THR
Bobolink	*Dolichonyx oryzivorus*	S4B	THR	THR
Eastern Meadowlark	*Sturnella magna*	S4B, S3N	THR	THR
Chimney Swift	*Chaetura pelagica*	S3B	THR	THR
Barn Swallow	*Hirundo rustica*	S4B	THR	THR
Golden Eagle	*Aquila chrysaetos*	S1B, S4N	END	NAR
Bald Eagle	*Haliaeetus leucocephalus*	S4	SC	NAR
Yellow-breasted Chat	*Icteria virens*	S1B	END	END
	Vegetation			
Butternut	*Juglans cinerea*	S2?	END	END
Spotted Wintergreen	*Chimaphila maculata*	S2	THR	THR
	Insects			
Monarch	*Danaus plexippus*	S2N,S4B	SC	SC
Mottled Duskywing	*Erynnis martialis*	S2	END	END

According to the above list, the Study Area may provide habitat for the Monarch and Mottled Duskywing. Using field data, habitat suitability was further assessed for these species.

Monarch

The Monarch was already assessed as Special Concern when the *Endangered Species Act* took effect in 2008. The Monarch is a showy orange and black butterfly with small white spots. These butterflies are relatively large with a wingspan reaching 93-105 millimetres. The Monarch's caterpillar is easily recognized: It has black, white, and yellow stripes and can be found feeding on milkweed plants. Throughout their life cycle, Monarchs use three different types of habitats. 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. Monarchs spend the winter in Oyamel Fir forests found in central Mexico. The largest threat to Ontario Monarchs is habitat loss and fragmentation at overwintering sites in central Mexico where forests are being logged and converted into agricultural fields and pastures. Widespread pesticide and herbicide use throughout the Monarch's range may also limit recovery.

Monarch butterflies were observed feeding on plants within the Study Area and a small population of Common milkweed (*Asclepias syriaca*) was present on the City of Burlington property in the dry SWM pond. The density of observed milkweed was low on the site and as a result would not be considered an important habitat area for Monarch.

Mottled Duskywing

The Mottled Duskywing is currently listed as Endangered and was added to the Species at Risk in Ontario on June 27, 2014. It is a medium-sized butterfly with a wingspan of 25-42 mm. It is dark grey with yellow-brown spots on its hind wings that give the species its mottled appearance. The wings of freshly emerged adults have a purplish iridescence that fades with age.

Although many butterflies typically thrive in profuse meadows, the Mottled Duskywing tends to live in dry habitats with sparse vegetation (i.e., open barrens, sandy patches among woodlands, and alvars). In Ontario, this species will only deposit their eggs on two closely-related plants: New Jersey tea and prairie redroot. Scattered populations of this butterfly occur throughout southern Ontario. They have recently been documented in the Burlington and Oakville areas, and in Marmora. Larvae build silk leaf-nests and spend the winter as mature larvae, emerging as adults between mid-May and late June. In southwestern Ontario, a second brood matures in early July and takes flight between mid-July and late August. The main threat to the Mottled Duskywing is the destruction of its habitat by human development.

The host plants New Jersey tea and prairie redroot where not found on the Subject Property, therefore the property is not consider an important habitat area for mottled duskywing.

4.2.5. Significant Wildlife Habitat Screening

Significant Wildlife Habitat (SWH) is protected as per Section 2.1 of the Provincial Policy Statement, 2014. The Significant Wildlife Habitat Technical Guide (OMNRF, 2000) aids in land use planning by providing the identification, description, and prioritisation of significant wildlife habitat in Ontario. The associated Ecoregion Criteria Schedules are used to further provide detailed criteria for assessing and confirming SWH within Ontario.

Based on field investigations and background review of Criteria Schedule for Region 7E, no candidate or conformed SWH, such as seasonal concentration areas of animals, rare vegetation communities, specialized habitat for wildlife, habitat for species of conservation concern, or animal movement corridors exists on the Subject Property or within the defined Study Area limits (OMNR 2000, MNRF 2015). Refer to Appendix E for the full assessment.

5. Biophysical Analysis

The following section provides an analysis of the biophysical components of the Study Area, specifically considering the relationship between the ecological services and the landscape form and setting of the Study Area.

5.1. Natural Heritage Systems

A natural heritage system is comprised of a network of interconnected natural heritage features that link across the landscape. Natural heritage systems are comprised of a mix of habitat units such as forest, rivers, wetland and meadows that support a variety of habitat and species. The larger and more complex the natural heritage system is, the greater the ecosystem services that it can provide and the more resilient it can be to

disturbances. Within the vicinity of the Study Area, there is a Regional Natural Heritage System that generally follows the base of the Niagara Escarpment.

5.1.1. Significant Woodland Assessment

Significant Woodlands are defined within the PPS (2020) as "*an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition or past management history. These are to be identified using criteria established by the Ontario Ministry of Natural Resources."*

Criteria for identifying and classifying Significant Woodlands are provided within the RHOP, which were derived by criteria set out by OMNRF. Criteria per section 277 of RHOP, Significant Woodlands are defined as "*Woodland* 0.5 ha or larger determined through a *Watershed Plan*, a Sub-watershed Study or a site-specific Environmental Impact Assessment to meet one or more of the four following criteria:

- the *Woodland* contains forest patches over 99 years old,
- the patch size of the *Woodland* is 2 ha or larger if it is located in the Urban Area, or 4 ha or larger if it is located outside the Urban Area but below the *Escarpment Brow*, or 10 ha or larger if it is located outside the Urban Area but above the *Escarpment Brow*,
- the *Woodland* has an interior core area of 4 ha or larger, measured 100m from the edge, or
- the *Woodland* is wholly or partially within 50 m of a *major creek or certain headwater creek* or within 150 m of the *Escarpment Brow*

The assessment of determining forest patches over 99 year of age was based on provincial definitions of a patch containing one or more mature or old growth woodland communities. For this assessment a mature community was determined to support trees with a DBH's greater than 80 cm. In general, the trees within the woodland had DBH less than 30 cm.

The size of the woodland was measured by the size of the woodland unit located within the Indian Creek tributary valley. The valley woodland community was measured to be approximately 2.1 ha in size. Interior habitat was mapped through a GIS exercise which set a 100 m internal off-set from the edge of the woodland community. The area of woodland remaining after the 100 m off-set was considered interior habitat and its area is measured. No interior habitat was identified within the valley woodland community.

The resulting assessment and evaluation indicate the woodland feature for the property meets two of the criteria and standards of a Significant Woodland per the criteria provided in the RHOP and OMNRF Natural Heritage Reference Manual. The woodland is greater than 2 ha in size and contains a watercourse/headwater drainage feature. Table 5 provides a comparison of the Study Area's woodland verses the RHOP criteria for Significant Woodlands.

Table 5 Significant Woodland Assessment

Criterial	Woodland Characteristics
Contains forest patches over 99 years old	No, all trees are under 99 years in age
2 ha or larger if it is located in the Urban Area	Yes, Woodland is larger than 2 ha in size
An interior core area of 4 ha or larger, measured 100 m from the edge	No interior core area
Wholly or partially within 50 m of a *major creek or certain headwater creek* or within 150 m of the *Escarpment Brow*	Yes, a watercourse is located within the feature.

5.1.2. Significant Woodland Limit Amendment

The woodland limit was staked with Halton Region and GEI Consultants Ltd. (Savanta) in 2017. At the time of the staking, the hedgerow extending from the valley was included within the woodland limits. As part of this EIA, GeoProcess reassessed whether the hedgerow should be considered to be included in the woodland. It was determined that the small hedgerow extension is not part of the larger woodland for the following reasons:

- The hedgerow is effectively only a single row of trees.
- It does not connect woodland habitats.
- It does not contribute to interior forest habitat.
- The subcanopy is dominated by European Buckthorn, which does not provide adequate food or shelter for wildlife.
- When the large white oak dies completely, there will be a gap in the canopy between the valley forest community and the hedgerow.

Figure 1 shows the condition of the hedgerow on September 20, 2022, and Map 3 shows the updated limit and woodland setback area.



Figure 1 Hedgerow and woodland limit

6. Proposed Development

The proposed development involves the relocation of the dry SWM pond from its existing location on the City's property to the Quantum property immediately north. The new dry SWM pond will be approximately 1.04 ha in size and will capture run-off from King Forest Court to the north and ultimately up to North Service Road. The SWM pond is setback 10 m from the staked woodland limit and 7.5 m from the staked top of bank limits. The SWM pond will discharge into the City's storm sewer located within the King Road right-of-way. An overflow spillway will direct flow west to the valley during events exceeding the 100-year storm. The flow path of the spillway will be 5 m in width and graded and protected with HydroTurf. This is an engineered revetment solution specifically designed to provide armoring for hydraulic structures against high velocity events and shear stress. The spillway flow path will be located within the woodland and top of bank setback. Map 5 provides the proposed site plan. A planting plan utilizing native plants was developed for the SWM pond block and includes a total of 62 trees and 275 shrubs.

The SWM pond is required to provide a spillway in the event of a regional storm. Alternatives to determine the best approached were assessed in conjunction with the MTO and Conservation Halton. A spillway directing flow towards the valley was determined to be the only viable option available to protect existing infrastructure such as roads (King Road, North Service Road and Highway 403 due to spill routes) and potential future development. The pond is not located within the RNHS or its setback however, as noted, grading within the setback has been proposed to help direct flow towards the valley and away from future development. Flow spilling from the pond is water that would be directed to the valley in an undeveloped condition, i.e. the water is going where it is intended to flow. It is also important to remember that this spill would only occur during a Regional or large event, so a very rare occurrence and when the spill is occurring the valley will be inundated with water.

6.1. Stormwater Management

Quality control is provided by a treatment train approach. The primary treatment is provided by the proposed oil/grit separator, which achieves 56% treatment. An exfiltration trench is proposed downstream which should be credited for 50% +\- TSS removal as well, such that the combined treatment rate achieves the City's requirements of Enhanced (80%). Note the existing pond only achieves Normal (70%) treatment.

During the interim condition, the newly constructed SWM pond would discharge to a storm sewer system, connected to the existing storm sewer system, and ultimately discharge to the existing pond. The existing pond discharges to a 500 mm diameter CSP under King Road which ties into a larger CSP culvert that drains into a tribute of Indian Creek east of King Road. During decommissioning, the existing pond would be removed, and a new storm sewer extension would be constructed to direct flow more directly to the same culvert.

The following excerpt was extracted from the WSP Stormwater Management Facility Report (May 2023) describing the pond storage and overflow condition:

The proposed SWMF indicates a peak 100-year water level of 120.50 m. This also provides 0.5 m of freeboard relative to the top of the facility (121.0 m). An emergency overflow spillway has also been proposed to allow for the relief flow of any storm events greater than a 100-year storm event westerly towards the ravine system. As noted in discussion with MTO and CH (refer to Appendix E), this is consistent with where spill flow would be expected under current conditions (spill towards North Service Road, and then westerly to the ravine) and also eliminates the potential for spill or ponding on North Service Road and potentially towards Highway 403.

6.2. Grading and Servicing

The site has an elevation drop of approximately 5 m from the north to the south. The grading plan proposes a cut of approximately 2.5 m for the implementation of the SWM facility. The existing stockpiled material will be added to the southwest portion of the Subject Property throughout the construction period. The existing SWM pond is proposed to be filled in with fill from the construction of the new SWM pond.

6.3. Buffer Enhancement

The top of bank of the adjacent watercourse was staked with Conservation Halton on November 1, 2017. Based on existing site conditions and field observations, a variable setback of 8.5 m was delineated from the staked top of bank. The woodland drip line was also staked on November 1, 2017, with Halton Region. Based on a reassessment of the drip line associated with the Significant Woodland, it was determined that the small hedgerow extension is not part of the larger woodland. A 10 m setback is provided from the limit of the woodland drip line (Map 5). It is recommended that the combined setback area be planted with native trees and shrubs suitable for the Study Area.

7. Impact Assessment

An impact assessment was completed to identify potential impacts that the construction of a new SWM pond may have on the surrounding natural environment. Direct, indirect, and cumulative impacts were identified and discussed separately. Primary impacts of concern include:

- Direct loss of vegetation through overprinting
- Disturbance to wildlife through loss of habitat
- Impacts the adjacent watercourse course valley from the SWM pond.

7.1. Impact Summary Table

Impacts to the various natural heritage features associated with and adjacent to the Subject Property were considered in the impact assessment. Table 6 outlines the potential construction-related impacts, their potential impact on the natural heritage system, recommended mitigation measures, and anticipated residual effects of the impact if not mitigated. Both short- and long-term impacts have been identified. Potential impacts were assessed using field collected data and secondary source information, including an overlay of the proposed site plan.

Table 6. Impact Assessment

Impact	Potential Impact	Mitigation Measures	Residual Effects
Short-term Impacts			
Noise from construction activity	Excessive noise could displace forest breeding birds within surrounding wooded areas. Noise may result in the avoidance of the adjacent areas during construction.	Since construction noise is very difficult to mitigate, the most effective measure is to limit construction activities during the breeding bird season when birds are most active, at sunrise and sunset (April to August).	Noise impacts to wildlife may occur when construction is active. It is anticipated that if wildlife avoids the area during construction, they will likely return to the area once construction activities end. Note that the majority of the wildlife found within the local landscape are tolerant to disturbances. No residual effects expected.
Dust from construction activity	Dust from construction activities could drift to areas adjacent to the Subject Property, coating plants, wildlife habitat (nest with young) and entering waterways.	Water suppression or other dust control measure should be implemented for all construction activities during site grading when conditions are dry or strong winds are anticipated.	Residual effects to the natural environment are anticipated to be minor and short-term with appropriate mitigation measures to reduce levels of dust due to construction.
Site clearing/tree removal	The proposed SWM pond installation requires the removal of six (6) trees within the Study Area, resulting in the loss of tree cover and wildlife habitats.	Vegetation clearing should not occur between April 1st and August 31st as per the Migratory Birds Convention Act (MBCA, 1994). If clearing is to occur during this time, a nest survey must be completed by a qualified avian biologist to identify any nests that are not to	Implementation of applicable mitigation measures is expected to reduce or eliminate direct impacts to migratory and nesting birds during the construction phase. Plantings within the setback zone will off-set tree removals.

Impact	Potential Impact	Mitigation Measures	Residual Effects
		be disturbed until the young have fledged.	
Sedimentation	Sediment from the site migrating into the watercourse. In-stream sedimentation (particularly fine-grained sedimentation) may impact water quality (i.e., turbidity and TSS) and habitat displacement through sediment deposition.	Installation, maintenance, and inspection of sediment control measures throughout the duration of site construction activities.	If proper sediment and erosion control measures are implemented and maintained there should be no residual impacts to the watercourse.
Damage to retained natural heritage features	Soil compaction and rutting outside of construction zone and damage to edge trees (i.e., outside of construction zone).	The work zone along the woodland setback and trees identified for preservation are to be clearly demarked with tree hording. Any roots encountered within the work zone are to be hand trimmed and backfilled with topsoil to ensure resiliency against damage.	Minimal residual effects expected.
Long-term Impacts			
Wildlife Species at Risk	Loss of potential pollinating plants and host plants (i.e., common milkweed).	Revegetation within the new SWM facility should incorporate Monarch pollinator and host plants such as common milkweed (*Aclepias syriaca*).	No residual effects will be expected with replacement planting.

The proposed development includes the construction of a dry SWM pond. In general, these types of features are considered suitable for placement adjacent to natural heritage systems as they are passively used. Further, they are typically vegetated and support many functions that a vegetated buffer would. It is anticipated that the SWM pond will be dry for the majority of the year, allowing vegetation to establish. Ideally, it will look and function similarly to the SWM pond currently located on the southern half of the property, which appears to be a naturalized meadow with small wetland inclusions. Native plantings within the SWM pond will complement the adjacent RNHS and functionally will support its ecological services. The SWM pond is providing a 10 m setback from the woodland dripline and greater than 7.5 m setback from the valley top of bank. One encroachment into the 10 m woodland setback is proposed for the construction of the overflow spillway. This feature will be a 5 m wide graded depression that will utilize HydroTurf as an erosion protection measure. HydroTurf is an engineered product which looks like artificial turf. This product will not cause wildlife impedance/movement issues that other measures (e.g., rip rap) may. Further, it will integrate naturally with the surrounding landscape. The SWM pond and setbacks will be planted with native species (Appendix C: Landscape Plan). In its final vegetative condition, no impacts to the adjacent RNHS are anticipated.

Discharge from the SWM pond spillway will be directed to the valley during greater than 100-year events. It is not anticipated that releases through the spillway will have a negative impact on the valley for the following reasons:

- Flows will occur infrequently, by definition, Flows will occur infrequently, by definition, with a 1% chance of occurring in any given year.
- The spillway is reinforced against high velocity and erosive forces through the installation of HydroTurf.
- The valley and the extent of the woodland setback is well vegetated.
- Flows within the valley will already be high, with the additional flows from the SWM pond only representing an incremental increase in overall flow conveyance within the valley. It is important to note that only the volume greater than the 100-year event is conveyed to the valley, which is a relatively small amount compared to the overall surface water that may be generated during the storm.

7.2. Direct Impacts

Construction activity that includes grading and servicing activities can cause short-term and direct impacts to surrounding habitats and possible local and migrating wildlife. The following potential impacts were considered, and appropriate mitigation measures were applied:

- The release of dust into the natural areas adjacent to the Subject Property. Implementing dust suppression is key to reducing off-site dust impacts, this is particularly important during dry and windy condition.
- Increase in short-term noise during construction activities, which can disrupt a bird's ability to hear calls. Construction activities should be limited as much a possible at dawn and dusk during the breeding bird season (April to August) in order to mitigate these impacts.
- The removal of trees within the wooded area will have direct impacts on breeding birds. As per the MBCA (1994), any vegetation should not be cleared during the breeding bird season (April 1-August 31) to mitigate these impacts. Should any clearing occur during this time, a nest survey must be completed by a qualified avian biologist to identify any nests that are not to be disturbed until the young have fledged.

Site clearing and tree removal for development has the potential to impact nests and nesting birds. It is understood that six trees are proposed for removal. The federal MBCA (1994) protects the nests, eggs and young of most bird species from harm or destruction. Environment Canada considers the primary nesting period of breeding birds in southern Ontario to be between April 1st and August 31st. Vegetation clearing should avoid these months. If clearing is to proceed within the breeding bird window, the Subject Property must be screened by a qualified avian biologist to determine if any migratory birds are nesting within the work zones. Nest surveys should be completed within 48 hours of the proposed works. If nesting is found, then vegetation clearing (within 30 m around the nest) must wait until nesting has concluded. It is also recommended that a detailed vegetation survey targeting the host plants for mottled duskywing, New Jersey

tea and prairie redroot, be conducted prior to vegetation removal. Any plants that are found should be relocated to the woodland setback.

The following tree removal measures are recommended:

- Trees identified for removal should be clearly marked with paint prior to their removal and felled into the proposed construction area. Impacts to adjacent vegetation should be avoided during the felling process.
- Pruning of low-lying branches may be required within the construction zone to accommodate construction equipment. Additionally, any branches broken during the construction process should be properly pruned by a certified arborist as soon as possible after the damage has occurred.
- Tree protection fencing should be installed where applicable to protect retainable trees during construction and monitored regularly by a qualified person(s) to ensure all tree protection and mitigation measures are implemented as intended.

7.3. Indirect Impacts

Indirect impacts are those which occur as a secondary result of the proposed activity, and not necessarily as a direct result of the activity. These are usually associated with effects such a population growth, density changes, or alterations or additions to road networks.

In terms of this proposed development, indirect impacts are likely minor as there are no proposed changes to road networks (increase road density or alignments) or population densities. The overall, indirect impacts to the adjacent NHS will be positive due to the increase in native plant diversity and an increase in structural wildlife habitat.

7.4. Cumulative Impacts

Cumulative impacts are changes to the environment due to past, present, and the reasonably foreseeable future impacts. The Subject Property and surrounding area have experienced on-going disturbance from historical and current land use related to commercial development and road networks.

Due to the nature of the project being minimally invasive, maintaining an existing use, and complementary to the local NHS, no cumulative impacts are anticipated as a result of the proposed development.

7.5. Mitigation Measures

The following mitigation measures are recommended to avoid and minimize impacts. The measures have two distinct intended outcomes: 1) mitigation to reduce the impact on the natural heritage system and 2) mitigation to reduce the impact of active construction.

7.5.1. Natural Heritage System Measures

Methods to mitigate impact on the natural heritage system include:

- Implementing setbacks to the woodland and top of bank (10 m and greater than 7.5 m respectively).
- Permanent fencing be erected at the outer boundary of the 10 m setback, between the extent of the setback and the remainder of the subject property, to ensure the long-term protection of the significant woodland and valleyland.
- Planting of the SWM pond with native vegetation and implementing a 3-year phragmites management plan.

7.5.2. Construction Measures

General construction related mitigation measures include the following:

- Clearing of vegetation within the Subject Property as part of site preparation should be conducted in late summer or winter months (September to March) so as not to coincide with breeding bird season. If clearing is to proceed within the breeding bird window, the Subject Property should be screened by a qualified bird biologist to determine if any migratory songbirds are nesting within work zone.
- Topsoil removed during stripping is recommended to be stockpiled for reapplication post-construction.
- A construction work plan should designate specific locations for stockpiling of soils and other material.
- Implementation of dust control measures is recommended to reduce dust impacts on the adjacent natural lands.
- Implement sediment and erosion control measures. Provide regular inspection and maintenance of the sediment control measures.

7.5.3. Enhancement Plantings

The dry SWM pond will temporarily store stormwater; therefore, plants accustomed to wet and dry conditions were considered in developing the restoration planting plan. Plants were also selected based on the recommendations of the Conservation Halton native plant list (2018). Plantings were proposed along the woodland edge, within the setback. The plantings are intended to reinforce the woodland edge and add plant diversity to the community. Refer to Appendix C, for the SWM pond and setback planting plan completed by *Adesso design inc.*

7.5.3.1. Monitoring Plan

Monitoring of planted species in the SWM pond and woodland buffer should occur post-construction to ensure survivorship of species and assess individual plant health. Pre-restoration monitoring is not necessary since the area to be planted is currently a disturbed meadow dominated by non-native species. This area is to be graded before plantings are implemented. Monitoring of the restoration areas is recommended to

track the success of ecological restoration initiatives and guide the short- and long-term maintenance of the restored features.

A monitoring schedule involving periodic site inspections by a qualified biologist or other environmental professional is recommended. Monitoring events should occur once during the summer growing season (July and August) for a minimum of three years following the implementation of restoration plantings and initiatives.

An annual report (three reports total) will be provided to Halton Region documenting the results of the restoration monitoring. Due to the size of the restoration areas, permanent plots or sample quadrants are not necessary for successful monitoring. Visual analysis incorporating detailed notes to address survivorship of plant species, individual plant health and potential growth of invasive species is recommended. Mortality of all planted individuals should be determined, and the causes of mortality identified (shade/sun intolerance, herbivory, drought, etc.). Removal and control of invasive species should be addressed during monitoring events and completed yearly for a period of no less than 3 years to prevent invasive species from becoming well established. Replanting more tolerant species are recommended if survivorship is less than 50% after the first year of monitoring.

7.5.3.2. Invasive Species Management Plan

The existing SWM pond contains pockets of common reed (*Phragmites australis*) that are to be managed before the decommissioning, filling, and grading of the pond. The patches of common reed are to be excavated with an excavator approximately 1 m below ground level to ensure proper root removal. The collected material is to be disposed of properly the day of excavation (dried and burned or disposed of in the garbage or at a landfill) or stored in a sealed container until disposal can be arranged. Mechanical removal is recommended to occur just before the end of July. Removal should not occur during the seeding period (after August) as this could facilitate spread into the adjacent natural features.

8. Policy Conformity

An outline of the applicable policies relative to the Study Area, including federal, provincial, and municipal protection and planning policies and regulations, were provided in Section 2. To assess conformance with the policies identified within the City of Burlington, Halton Region, Greenbelt Plan, Growth Plan for the Greater Golden Horseshoe and Conservation Halton regulations, an evaluation of how the proposed development adheres to these policies concludes that the proposed development will have a no impact on wildlife habitat and natural functions of the Study Area and the adjacent wooded valley. The proposed development is consistent with the aforementioned policies and regulations as the natural heritage system and its natural heritage features (woodland and top of bank) are being maintained with appropriately delineated setbacks. The impacts outlined in Section 7 can be mitigated through appropriate measures. Planning, design, offsetting, and construction measures identified for the Study Area will promote the protection of natural features outlined in this EIA.

Specific to the Region's Official Plan, Sections 117.1(12), 117.1(15) and 233, only "essential" utility facilities or watershed management and flood and erosion control projects either carried out or supervised by a public authority may be permitted in the RNHS. The SWM pond is located entirely outside of the RNHS and its 10 m setback. However, grading within the 10 m setback has been proposed to ensure water is directed towards

the watercourse and away from the existing road network and future development. The ROP does allow for Stormwater management components such as ancillary pipes, outlets, headwalls and other associated infrastructure required to convey flow from facilities outside of the NHS to receiving waterbodies within the NHS when deemed essential (as defined in Section 233 of the ROP), after all alternatives are explored and it is determined there are no negative impacts to the NHS. The spillway that has been proposed within the NHS setback has been determined to be the only viable flow path for water to reach the tributary of the Indian Creek in a safe and controlled manner. Alternative spill flow routes and piping solutions were considered in conjunction with the MTO and CH. It was determined that a piped solution was not a viable pond overflow option, and the spill should not flow onto any existing roads. As a result of the alternatives assessment, directing water to the valley immediately adjacent to the pond was considered the only viable option. Providing a graded flow route within the setback ensures flows are directed to the valley and do not unintentionally flow towards roads or future development. This EIA has demonstrated that the proposed grading of spillway flow path within the NHS setback will have no negative impact on the NHS, and as such, the inclusion of a graded SWM pond spillway flow path within the NHS conforms with ROP policies.

9. Conclusions

The Environmental Impact Assessment provides an analysis of the proposed development as it relates to the surrounding natural heritage system. The Subject Property is the proposed site of a landowner's exchange agreement where the existing SWM pond is proposed to be purchased from the City of Burlington and relocated to the northern portion of the site, ultimately increasing developable area. The Subject Property is adjacent to a tributary of Indian Creek which is regulated by Halton Conservation. Natural heritage characterization surveys and a review of all relevant policies and applicable existing background information were completed. The results of the biophysical analysis indicate that with the appropriate buffers and recommended mitigation measures, the proposed development and relocation of the existing SWM pond will not result in negative impacts on the NHS. A three-year monitoring plan is proposed for the vegetative 10 m buffer and invasive species management is recommended within the SWM Pond to address the common reed populations. This EIA has been amended to address the comments from Halton Region, received in June 2022 and September 2023.

9.0. References

Alan Macnaughton, Ross Layberry, Rick Cavasin, Bev Edwards and Colin Jones. Ontario Butterfly Atlas Accessed February 2020.

Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier (eds). 2007. Atlas of the Breeding Birds of Ontario 2001- 2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto. 706 pp.

Chapman, L.J., and D. F. Putnam. The Physiography of Southern Ontario . 3rd ed. Toronto: Ontario Ministry of Natural Resources, 1984. Print.

David Kaposi, Alan Macnaughton and Bev Edwards. Ontario Moth Atlas Accessed December 2020.

Fisheries and Oceans Canada. Available from https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html. Accessed December 2020.

iNaturalist. Available from https://www.inaturalist.org. Accessed December 2020.

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological land classification for Southwestern Ontario: first approximation and its application. Ontario Ministry of Natural Resources, South Central Region, Science Development and Transfer Branch. Technical Manual ELC-005.

MNRF. (2010). Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement. Second Edition. Toronto: Queen's Printer for Ontario. 248 pp

OMNRF. January 2009. Working Draft. Significant Wildlife Habitat Ecoregion 7E Criterion Schedule. Addendum to Significant Wildlife Habitat Technical Guide.

OMNRF. 2013. Southern Ontario Vascular Plant Species List 3rd Edition. Southern Science & Information Section.

Ontario Breeding Bird Atlas. 2001. Guide for Participants. Bird Studies Canada.

Ontario Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Section. Science Development and Transfer Branch, Southcentral Sciences Section.

Ontario Ministry of Natural Resources. 2009a. Draft Significant Wildlife Habitat Ecoregion Criteria Schedules. Addendum to Significant Wildlife Habitat Technical Guide.

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Environmental Impact Assessment
1450 King Rd. Burlington, ON

Prepared for Quantum Realty Management

October 24, 2023

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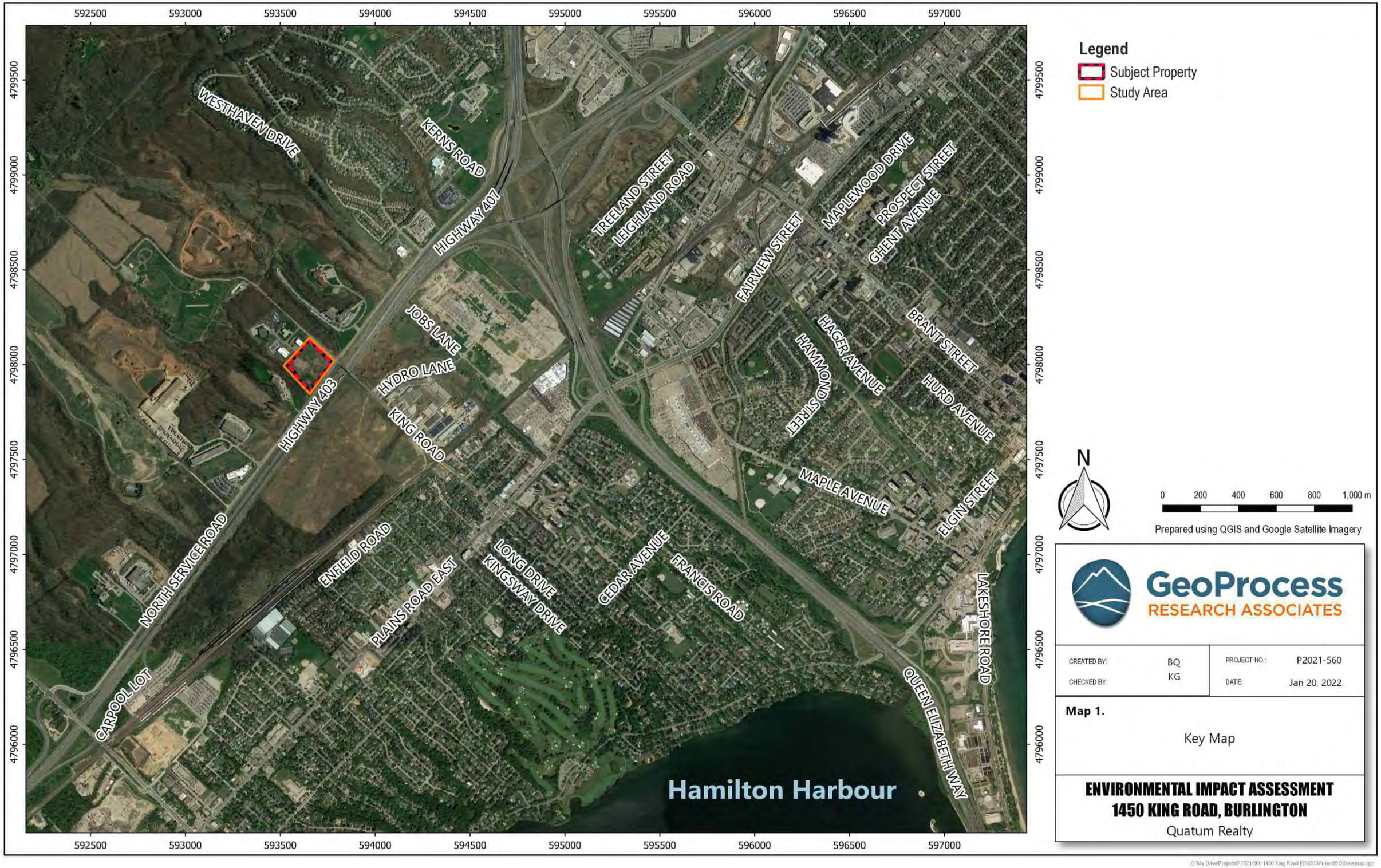
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Project Number P2021-560

Maps



GeoProcess RESEARCH ASSOCIATES

CREATED BY:	BQ	PROJECT NO.:	P2021-560
CHECKED BY:	KG	DATE:	Jan 20, 2022

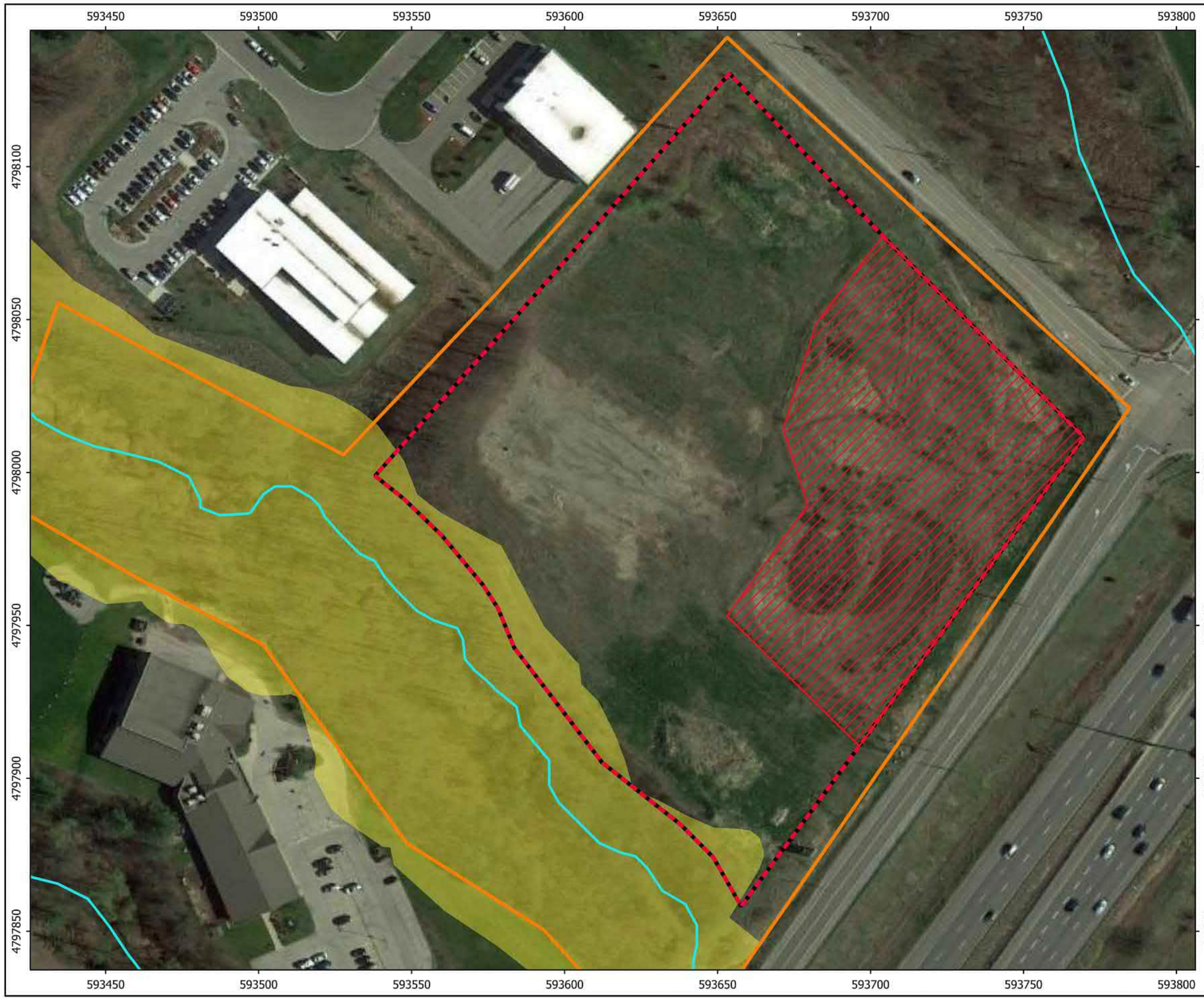
Map 1.

Key Map

ENVIRONMENTAL IMPACT ASSESSMENT
1450 KING ROAD, BURLINGTON

Quatum Realty

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Legend

- Subject Property
- Study Area
- City of Burlington Property
- Halton Conservation Regulated Area
- Watercourse

N

0 15 30 45 60 75 m

Prepared using QGIS and Google Satellite Imagery

GeoProcess RESEARCH ASSOCIATES

CREATED BY:	MD	PROJECT NO.:	P2021-560
CHECKED BY:	KG	DATE:	Sep 15, 2021

Map 2.

Existing Conditions

ENVIRONMENTAL IMPACT ASSESSMENT
1450 KING ROAD, BURLINGTON

Quantum Realty

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Legend

- Subject Property
- Ecological Land Classification
- Fill Pile
- Watercourse

ELC Codes

FODM2-2: Dry- Fresh Oak-Hickory Deciduous Forest Type

MAMM1/MEMM4: Graminoid Mineral Meadow Marsh Ecosite/Fresh-Moist Mixed Forb Ecosite

MEMM3: Dry- Fresh Mixed Meadow Ecosite

THDM3: Naturalizing Deciduous Hedgerow

N

0 10 20 30 40 50 m

Prepared using QGIS and Google Satellite Imagery

GeoProcess RESEARCH ASSOCIATES

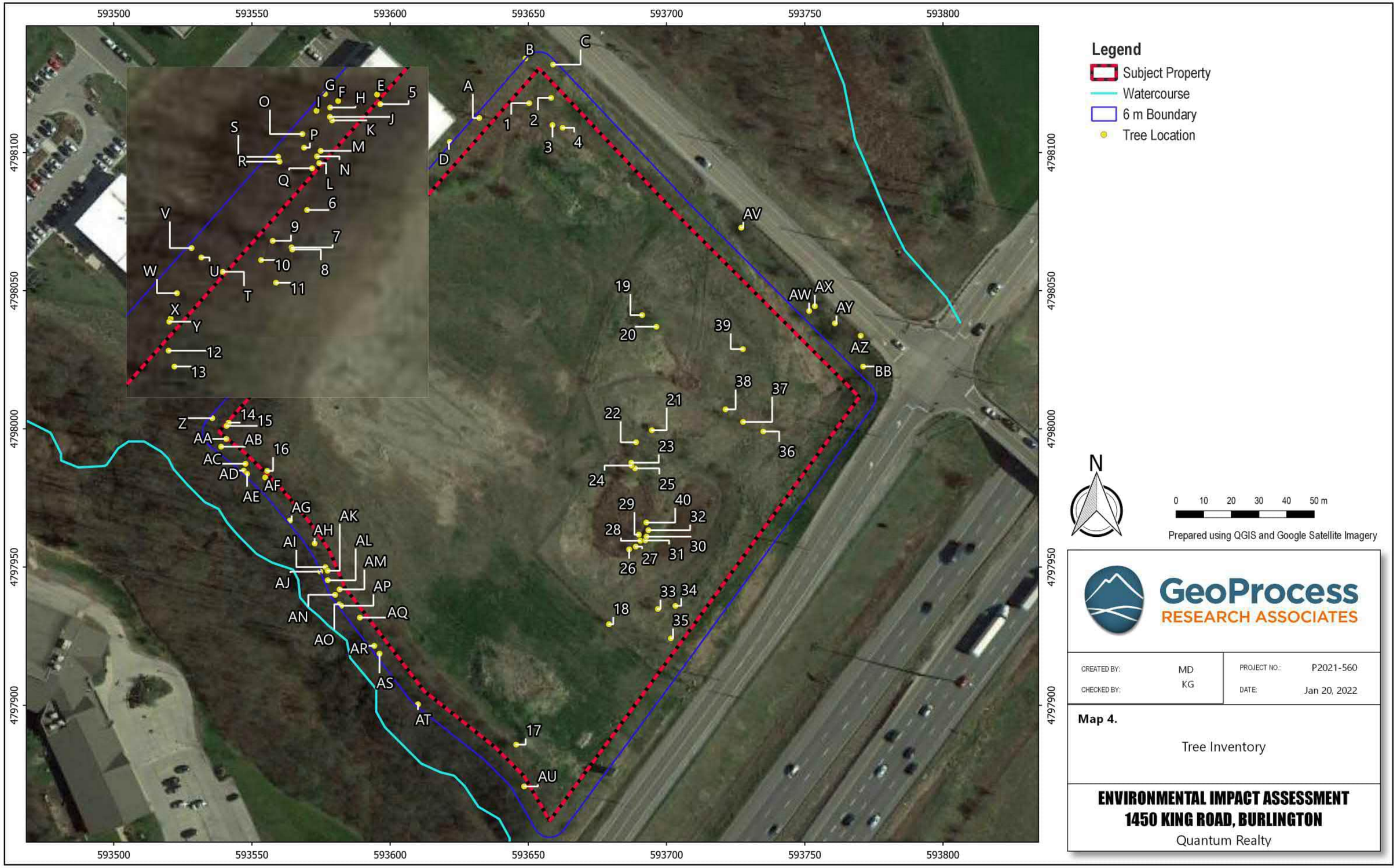
CREATED BY:	DH	PROJECT NO.:	P2021-560
CHECKED BY:	KG	DATE:	May 03, 2023

Map 3.

Ecological Land Classification

ENVIRONMENTAL IMPACT ASSESSMENT
1450 KING ROAD, BURLINGTON
Quantum Realty

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GeoProcess RESEARCH ASSOCIATES

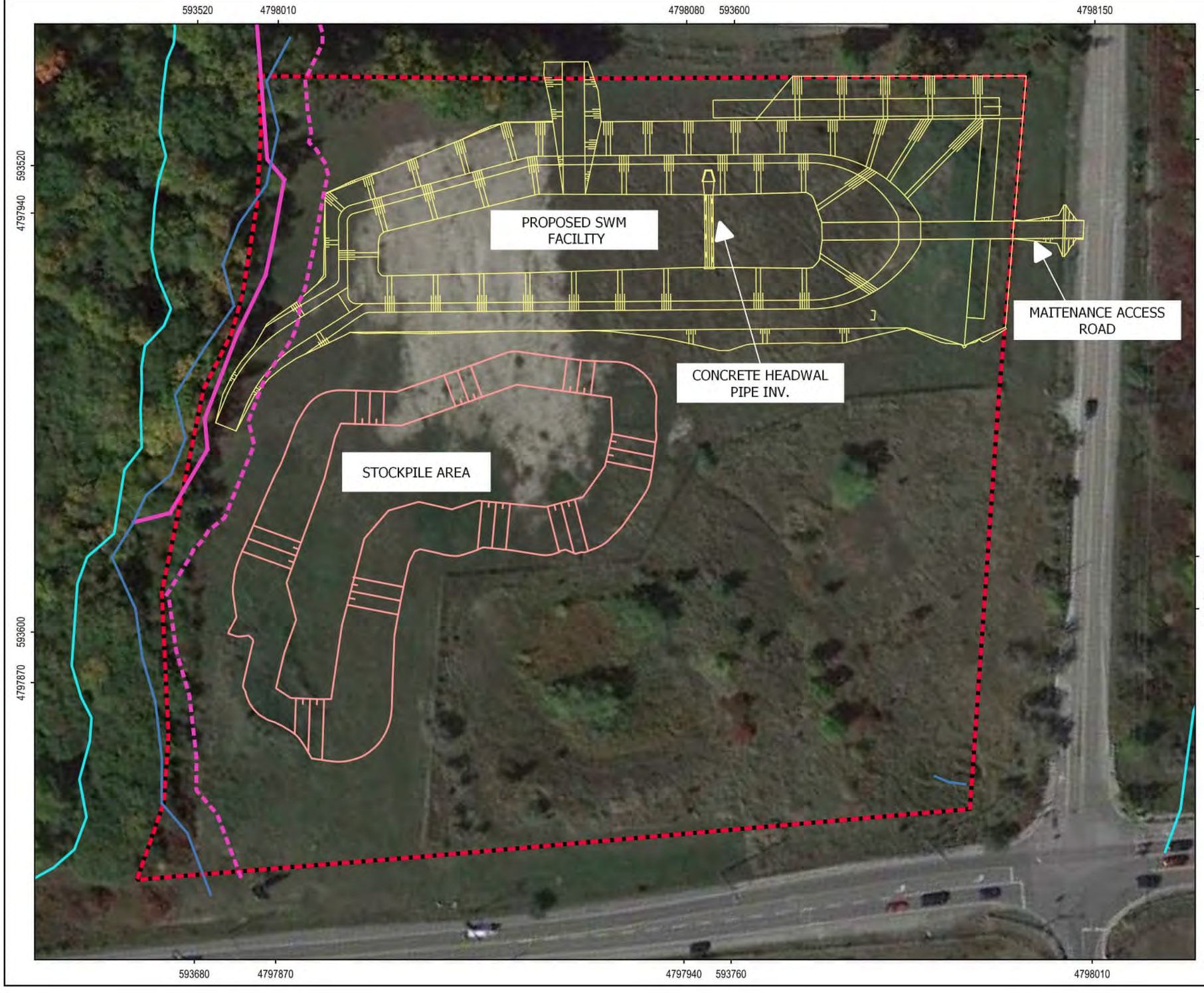
CREATED BY:	MD	PROJECT NO.:	P2021-560
CHECKED BY:	KG	DATE:	Jan 20, 2022

Map 4.

Tree Inventory

ENVIRONMENTAL IMPACT ASSESSMENT
1450 KING ROAD, BURLINGTON
Quantum Realty

G:\My Drive\Projects\P2021-560 1450 King Road EIS\GIS\Project\MD\Basemap\MD.qgz



Legend

- Subject Property
- Watercourse
- Proposed SWM Pond
- Interim Stockpile Area

Limits Staked with Conservation Halton (Nov. 1, 2017)

- Woodland Dripline
- Top of Bank
- Combined Setback for Dripline (10 m) and Top of Bank (> 7.5 m)

0 6 12 18 24 30 m

Prepared using QGIS and Google Satellite Imagery

GeoProcess RESEARCH ASSOCIATES

CREATED BY:	DH	PROJECT NO.:	P2021-560
CHECKED BY:	KG	DATE:	May 02, 2023

Map 5.

Site Plan

ENVIRONMENTAL IMPACT ASSESSMENT
1450 KING ROAD, BURLINGTON
Quantum Realty

G:\Shared drives\Projects-2021\P2021-560 1450 King Road EIS\GIS\Project\MD\Basemap\MD.qgz

Appendix A

Approved Terms of Reference

GeoProcess RESEARCH ASSOCIATES

Knowledge
Research
Consulting

EIS Terms of Reference

September 17, 2021

Heather Ireland
Halton Region
Environmental Planner
1151 Bronte Rd
Oakville, ON L6M 3L1

Re: Environmental Impact Assessment Terms of Reference
1450 King Road, Burlington, ON

GeoProcess Research Associates Inc. (GRA) has been retained by Quantum Realty to complete an Environmental Impact Assessment (EIA) for lands located on and adjacent to 1450 King Road, in the City of Burlington. It is GRA's understanding that the property is adjacent to lands owned by the City of Burlington and Quantum Realty has proposed to purchase these lands. Both properties will be referred to as the "Subject Property", while the "Study Area" includes" includes a 120 m buffer around the property extending into the natural lands located west (Map 1). Quantum Realty would like to relocate the existing stormwater pond located in the southeast corner of the Subject Property to the northeast corner.

The Subject Property was visited on November 1, 2017, by staff from Conservation Halton and Halton Region to preliminary assess the existing natural heritage features and to delineate and stake the ravine top-of-bank and woodlot dripline. The western edge of the property, defined by an Indian Creek tributary valley top of bank, is regulated by Conservation Halton.

The Subject Property is subject to Ontario Regulation 162/06 and the City of Burlington and Halton Region policies. As per *Schedule A: Settlement Pattern* of the City of Burlington Official Plan the Subject Property is designated as Employment Lands. Halton Region designates the property as Urban and Employment Area (Map 1- Regional Structure).

1. EIS Study Elements

The following provides the proposed study elements required to complete the EIA. The EIA will define the boundaries of the local natural heritage features, and the extent and treatment of the required buffers. This will determine an appropriate development limit and recommended mitigation measures to reduce/eliminate predicted impacts to the natural heritage system. Overall, the EIA is intended to demonstrate that the proposed development will not result in any negative impacts to the previously outlined features.

PO Box 65506 Dundas
DUNDAS, ON, L9H 6Y6
905.466.6721
www.geoprocessresearch.com

1.1. Background Review

A review of the existing background information will be completed. This will include a review of all relevant Federal, Provincial and Municipal Act, Policies and Regulations (i.e. Provincial Policy Statement, Places to Grow Plan, 2019, Greenbelt Plan, 2017, Halton Region, City of Burlington, Conservation Halton Regulations, etc.) and any existing reports associated with the Subject Property or adjacent lands, if accessible. Existing ecological databases such as Bird Studies Canada, the Ontario Reptile and Amphibian Atlas, and Ontario Ministry of Natural Resources Natural Heritage Information Centre (NHIC) will be reviewed. A desktop Species at Risk (SAR) and Significant Wildlife Habitat (SWH) screening will be completed using all available background documents, including information acquired from the Ministry of Environment Conservation and Parks (MECP). All species identified through the field inventories will be ranked using federal, provincial and local rankings.

1.2. Ecological Studies

Characterization of the natural heritage features and functions of the Study Area will include:

Floristic Studies: Vegetation characterization of the vegetation within and 120 m from the proposed development will be completed following the Ontario Ministry of Natural Resources Ecological Land Classification (ELC) protocol. The characterization will include a single season inventory, was completed in Fall 2021. A full botanical species list, and where applicable, a map showing rare or uncommon vegetation communities or species will be provided.

Tree Management Plan: An assessment of tree resources with a diameter at breast height of 10 cm or greater on the Subject Property and within 6 metres of the property limits will be completed in the context of the proposed development plan. The TPP will identify potential impacts, associated preservation measures, and tree replacement, where applicable. The TPP will follow the City of Burlington Specifications Index for Tree Protection and Preservation (SPEC NO. SS12A (amended September 2020) and the Tree Inventory and Compensation Form Appendix B.

Species at Risk Screening: An assessment and screening of potential Species at Risk will be conducted for the Property based on Federal and Provincial status. Following the MECP (2019) *Client's Guide to Preliminary SAR Screening,* this screening will be based on a review of the Natural Heritage Information Centre, the regional species list, citizen science databases (i.e. iNaturalist), and any additional lists provided by the MECP. When the preliminary screening is prepared, it will be submitted as a memo to sar@ontario.ca for assignment to a management biologist for review. It is our experience that assignment to a management biologist can be a lengthy process, and we intend to submit the screening as soon as possible to mitigate delays.

Significant Wildlife Habitat Assessment: A desktop analysis of Significant Wildlife Habitat following the Ministry of Natural Resources and Forestry Significant Wildlife Habitat Technical Guide (2000) and significant Wildlife Habitat Criteria Schedule for Ecoregion 7E (January 2015) will be conducted for the Study Area. Potential SWH will be assessed during field studies.

Incidental Wildlife Surveys: Formal surveys for mammals, reptiles and insects are not proposed but incidental observations of these species will be recorded.

Non-Ecological Studies: In addition to the ecological characterization of the site, the EIS will include a discussion regarding stormwater management, servicing, and site grading plans.

2. Proposed EIS Structure

1. Introduction
    1.1. Study Area Description
2. Planning Context
    2.1. Context
        2.1.1. Provincial Policy Statemen 2020
        2.1.2. Endangered Species Act 2007
        2.1.3. Greenbelt Plan 2017
        2.1.4. Growth Plan for Greater Golden Horseshoe 2019
        2.1.5. City of Burlington Official Plan
        2.1.6. Halton Regional Official Plan
        2.1.7. Conservation Halton Regulation 162/06
3. Background Review
    3.1. Natural Heritage Information
        3.1.1. Indian Creek
    3.2. Physiography
4. Biophysical Inventory
    4.1. Survey Methodology
    4.2. Survey Results
        4.2.1. Vegetation
        4.2.2. Tree Inventory
        4.2.3. Incidental Wildlife
        4.2.4. Species at Risk (SAR) Screening
        4.2.5. Significant Wildlife Habitat Assessment
5. Biophysical Analysis
    5.1. Natural Heritage Systems
    5.2. Enhancement Area
    5.3. Buffer Assessment
6. Impact Assessment
    6.1. Alternative Assessment
    6.2. Impact Summary
        6.2.1. Direct Impacts
        6.2.2. Indirect Impacts
        6.2.3. Cumulative Impacts
    6.3. Mitigation Measures
        6.3.1. Natural Heritage System Measures
        6.3.2. Construction Measures
        6.3.3. Enhancement Opportunities
7. Monitoring Plan **If Required*
    7.1. Pre-Construction
    7.2. During-construction
    7.3. Post-construction

8. Conclusions
9. References
10. Appendices

3. Closing

The proposed EIA will characterize and assess the natural heritage features, and their functions, located on and adjacent to the Subject Property. Further, the EIA is intended to demonstrate that the proposed development will not result in any negative impacts to the natural heritage features that occur on and adjacent to the site. An assessment of the impacts and recommended mitigation measures will be provided within the context of the proposed development at 1450 King Rd., Burlington, ON. The EIA will provide an analysis of the required buffers and the developable limit of the Subject Property. Detailed mapping of the Study Area and results of the biophysical assessment will also be included. This Terms of Reference provides the approach and study elements which will be followed throughout the study process.

If you have any questions regarding this submission, please do not hesitate to contact us.

Regards,

GEOPROCESS RESEARCH ASSOCIATES INC



Ken Glasbergen, MSc., ERPG
Senior Ecologist, Principal

Appendix B

Tree Inventory

Arborist Report

1450 King Rd., Burlington, ON

Prepared for

Quantum Realty Management XII Inc.
2213 North Sheridan Way
Mississauga, ON
L5K 1A3

~~February 18, 2022~~
May 6, 2022

Project No. P2021-560

Prepared by

GeoProcess
RESEARCH ASSOCIATES

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   4.1. Trees Recommended for Preservation 5
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1. Introduction

GeoProcess Research Associates Inc. (GRA) has been retained by Quantum Realty Management (the 'client') to complete an Arborist Report as per the City of Burlington Specifications Index for Tree Protection and Preservation (SPEC NO. SS12A).

The Subject Property is located at 1450 King Road, Burlington and comprises both city and privately owned property. The client is proposing to purchase the City of Burlington property and decommission the existing stormwater management (SWM) pond to allow for future development of the lands in the north-west corner of the North Service Road and King Road intersection. Through the land exchange, the client will rebuild a better functioning SWM facility north of the City's lands.

The proposed works include excavation, grading, and landscaping to install the new dry-pond SWM facility and the existing SWM facility will be decommissioned, filled in, and regraded.

This report is an amendment to the Arborist Report and Tree Preservation Plan that was submitted on February 18, 2022, and addresses the comments made by the City of Burlington that were received by email on April 11, 2022.

2. Methods

GRA conducted field studies on September 10th and 16th, 2021 to inventory and assess the existing trees for the Subject Property. An assessment of individual trees included all trees 10 cm in Diameter at Breast Height (DBH) or greater for the Subject Property, and trees within 6 metres from the property limit. GRA surveyed the location of trees using a handheld GPS tablet (+/- 3 m in accuracy).

Trees were assessed for condition using the following parameters:

- **Tree #** - numbers assigned to trees that correspond to their surveyed/mapped location;
- **Species** - common and botanical names provided in the inventory table;
- **DBH** - diameter (centimetres) at breast height, measured at 1.4 m above the ground;
- **Condition** - condition of trees was assessed as follows:
    - **Trunk integrity (TI)**: conditions on trunk that might affect likelihood of failure based on factors including co-dominant stems, cracks, decay, poor taper, lean, response growth, abnormal or missing/dead bark, etc.
    - **Crown Structure (CS)**: condition on crown structure that might affect likelihood of failure, including live crown ratio, presence of defects (including bark, weak attachments, cracks, decay, cavities), crown density.
    - **Crown Vigor (CV)**: an assessment of overall tree health classified as weak/under stress (poor), average vigor for its species and site condition with some signs of stress (fair), growing well and appears to be free of significant health stress factors (good).
- **Comments** - additional relevant detail.

For this report, tree ownership is defined as:

- "Subject Property Tree ": Trees with stem(s) on the subject property;
- "Neighboring Tree": Trees with stem(s) on adjacent private property; and,
- "Public Tree": Trees with stem(s) situated on City-owned land adjacent the subject property.

This report has been prepared under the following applicable municipal by-laws and guidelines of the City of Burlington:

- By-Law to conserve and protect trees on private land within the Urban Planning Area Boundary of City of Burlington (02-2020);
- By-law to regulate planting, maintenance and preservation of trees on or affecting public property (68-2013); and
- City of Burlington Specifications Index for Tree Protection and Preservation (SPEC NO. SS12A).

3. Inventory Results

The tree inventory documented fourteen different tree species (Table 1) with dbh ranging from 10 cm to 128 cm (Table A1). Of the fourteen species observed, two are non-native. The native species observed are common and secure within Ontario (S4 -S5) [1].

Table 1. Tree Inventory Results

Common Name	Scientific Name	S-Rank[1]	Inventory Count
American elm	*Ulmus americana*	S5	1
basswood	*Tilia americana*	S5	6
black walnut	*Juglans nigra*	S4?	2
bur oak	*Quercus macrocarpa*	S5	2
Manitoba maple	*Acer negundo*	S5	1
red maple	*Acer rubrum*	S5	2
red oak	*Quercus rubra*	S5	2
Russian olive	*Elaeagnus angustifolia*	SNA	6
shagbark hickory	*Carya ovata*	S5	19
trembling aspen	*Populus tremuloides*	S5	4
white ash	*Fraxinus americana*	S4	7
white oak	*Quercus alba*	S5	25
white pine	*Pinus strobus*	S5	2
white willow	*Salix alba*	SNA	14
		Total	**93**

[1] The NHIC assigns subnational ranks (S-Ranks) for species and plant communities in Ontario using the best information and considering factors such as abundance, distribution, population trends, and threats.

Trees were located predominantly along the western edge of the Subject Property where it abuts the natural heritage feature. The two most common species were shagbark hickory and white oak. Other trees were associated with the City of Burlington dry stormwater pond and included white willow, red maple and bur oak. These trees were likely planted as part of the pond construction. Dead trees comprised white ash and white oak, which have both been affected by invasive insects. The emerald ash borer (*Agrilus planipennis*) has decimated southern Ontario ash populations, while the European gypsy moth (*Lymantria dispar dispar*) has defoliated several oak woodlands. Several trees had remnant gypsy moth cocoons and egg masses on their trunks. There was evidence of leaf defoliation on all the identified oaks. Additional trees were inventoried along the edge of King Road. These trees were identified as the non-native and invasive Russian Olive (*Elaeagnus angustifolia*) and removal is advised to avoid further spread into the adjacent natural heritage feature.

4. Proposed Development and Impacts

The proposed development is a dry-pond facility that will be owned and controlled by the City of Burlington post development. The proposed dry pond is approximately 1.04 ha and is setback 10 m from the woodland limit which was staked on November 1, 2017, with staff from Conservation Halton and Halton Region. The pond will discharge into the City of Burlington storm sewer located within the King Road right-of-way (ROW). Landscape designs were provided by Adesso Design Inc. for both the SWM pond and setback area (Appendix B).

4.1. Trees Recommended for Preservation

Trees recommended for preservation have been assessed using one or more of the following criteria:

- Location sufficiently distanced from proposed site works and/or construction related stresses;
- Current health condition is acceptable;
- Tree poses a low hazard level to person or property; and
- General species tolerance to construction-related and other expected stressors.

Trees recommended for preservation are summarized in Table 2. All trees to be preserved are to be protected to the satisfaction of the City of Burlington prior to the commencement of construction. All tree protection measures are to remain in place during all stages of construction, as specified in City of Burlington Specifications Index for Tree Protection and Preservation (SPEC NO. SS12A). Refer to the Tree Protection and Mitigation measures in Section 5, Drawing No. 1-4 and Appendix C.

Table 2. Summary of Trees Recommended for Preservation

Tree Ownership	Quantity and Species	Count
Subject Property Trees	1 black walnut 1 Manitoba maple 7 shagbark hickory 1 trembling aspen 1 white ash 3 white oak 1 white willow	15
Neighboring Trees	1 red oak 10 shagbark hickory 1 white ash 11 white oak	23
Public Trees- ROW	2 trembling aspen	2
Public Tree- Natural heritage woodland	1 American elm 6 basswood 1 shagbark hickory 3 white ash 10 white oak	21
	Total	**61**

Sixty-one (61) trees are recommended for preservation. Twenty-two (22) neighboring trees (538 and 598 King Forest Court), 23 private and 13 subject property trees are to be preserved with non-fatal injury due to the minimum Tree Protection Zone (mTPZ) and/or Critical Root Zone (CRZ) encroachment.

Tree A (white oak) which is a neighboring tree (598 King Forest Court) is anticipated to sustain a nonfatal injury due to 15% mTPZ encroachment and 28% CRZ encroachment. Tree 2 (trembling aspen) is anticipated to sustain an 8% CRZ encroachment with no mTPZ encroachment and tree 4 (black walnut) is anticipated to sustain 20% mTPZ and 31% CRZ. Trees 2 and 4 are both less than 12.5 cm DBH, therefore the above instances of injury are expected to be even less as the DBH range for a 1.8 m mTPZ and 4.0 m CRZ is 11-40 cm.

Refer to Table A1 for the summary of the tree preservation plan and Drawing No. 1-4 for the preservation specifications. As per City of Burlington By-law 68-2013 and 02-2020, any work within the mTPZs of trees (i.e., Tree Injuries) will require a Tree Permit prior to the commencement of work.

4.2. Trees Recommended for Removal

Trees recommended for removal have been assessed using one or more of the following criteria:

- Location conflicts with proposed works to a degree that would compromise the long term structural and/or health integrity;
- Current health condition suggests tree is undergoing significant decline and/or death;
- Potential impacts from proposed works will cause the tree to become a hazard to person or property; and
- General species intolerance of construction-related and other expected stressors.

Table 3. Summary of Trees Recommended for Removal

Tree Ownership	Quantity and Species	Count
Subject Property Trees	1 black walnut 1 shagbark hickory 1 trembling aspen	3
Neighboring Trees	1 white oak	1
Public Trees- ROW	6 Russian olive	6
Public Tree- SWM Pond	2 burr ok 2 red maple 1 red oak 2 white ash 2 white pine 13 white willow	22
	Total	**32**

There are thirty-two (32) trees (3 subject property, 1 neighboring, 28 public) recommended for removal due to direct conflict with the proposed works and grading (Drawing No. 1). The degree of mTPZ encroachment for the trees summarized in Table 3 is expected to cause irreversible and fatal damage, and therefore they are recommended for removal.

Private

As per City of Burlington By-law 68-2013 and 02-2020, a Tree Permit is required prior to the removal of Tree # 5 as it meets the minimum 20 cm DBH threshold; the remaining two trees are not subject to the above By-laws as they are below the threshold size limit. Grading and installation of the new SWM facility encroaches 100% of mTPZ and CRZ of these trees.

Neighboring

Tree E is on the neighboring property 538 King Forest Court and requires removal for the installation of the 5.0 m wide hydro turf lined spill wall that connects the two properties. The adjacent property owners are to be consulted and made aware of the proposed development and potential impacts to Tree E and written consent that there are no concerns with the proposed treatment of the existing tree will need to be provided.

Public

There are six Russian olive trees along the King Road ROW that are proposed for removal. These trees are non-native and invasive, and removal is beneficial to the biodiversity of the adjacent natural heritage feature east of the property limit.

After the new SWM facility has been built, the land exchange agreement will facilitate the decommissioning of the existing SWM pond. This pond is to be filled and graded for future development. Therefore, the existing 22 trees, two of which are dead, will require removal. A Tree Permit is required for all works around City trees, under Public Tree Bylaw 68-2013, including the payment of the Tree Permit fee. Removal of City trees will require council approval.

4.3. Compensation

Compensation for private tree removals can be in the form of replacement trees or cash-in-lieu payment or both. The total amount of replacement trees is based on the tree size. Refer to Table 4 for the compensation amounts required as per Bylaw 40-2022.

Table 4. Compensation Summary

Trunk Diameter of Tree Removed	Compensation Ratio	Removal Trees within DBH Range	Compensation Amount
20-35 cm	2:1	2	4
36- 74 cm	3:1	1	3
> 75 cm	4:1	0	0
		Total	**7**

There are 29 trees proposed for removal that are less than 20 cm in DBH. The proposed replacement plantings are included in the Landscape Plan(s) for the Subject Property (Appendix B). The planting schedule for the naturalized setback area includes 36 trees and 224 shrubs. The planting schedule for the proposed SWM pond includes 58 trees, 259 shrubs. Seven (7) replacement trees are required, and the proposed landscape plan is planting 94 trees. Therefore, the proposed development enables a net benefit for the reduction of air pollution, water attenuation, moderation of the urban heat island effect, carbon sequestration, shade, habitat for wildlife, neighborhood character and health benefits.

5. Tree Protection and Mitigation Measures

The following section identifies recommended mitigation measures to avoid and minimize effects of the proposed works on the trees identified for preservation. The impacts to trees from the construction process can be severe and are often latent. Mechanical damage to tree structures (i.e., trunk, roots, and branches) as well as soil compaction from equipment, staging, material storage, and altered drainage patterns can cause potentially fatal impacts that may not become apparent until long-after construction is completed.

For these reasons, all trees to be preserved shall be afforded adequate protection measures in accordance with City of Burlington Specifications Index for Tree Protection and Preservation (Appendix C). Tree protection measures are to be installed prior to and remain throughout all stages of construction. The location of temporary tree protection hoarding is depicted graphically on the Tree Protection Plan (Drawing No. 1-4) accompanying this report. The following measures will ensure short- and long-term preservation of trees identified for preservation.

Construction Measures:

- A construction work plan should designate specific locations for stockpiling of soils and other material;
- Upon completion of construction works, site grading should ensure proper drainage of surface water to maintain original/pre-construction soil moisture regime conditions;
- Where root systems of protected trees are exposed directly adjacent to or damaged by construction work, they shall be trimmed neatly, and the area immediately backfilled with appropriate material to prevent desiccation; and,
- Trees to be preserved that have died or have been damaged beyond repair shall be replaced by the developer at his own expense with trees of a size and species approved by the City.

Tree Protection Measures:

Minimum tree protection zones (mTPZ) provide an approximation of the tree's critical root zone and are used for protection guidelines. The mTPZ is measured from the outside edge of the base of tree to the dripline. Table 5 provides a summary of the mTPZ and CRZ distances per DBH class for the City of Burlington.

Table 5. Minimum Tree Protection Zones per DBH Class

Diameter of Trunk (DBH)[1] in centimetres	mTPZ[2]	CRZ[2]
<10 cm	1.8 m	1.8 m
11-40 cm	2.4 m	4.0 m
41-50 cm	3.0 m	5.0 m
51-60 cm	3.6 m	6.0 m
61-70 cm	4.2 m	7.0 m
71-80 cm	4.8 m	8.0 m
81-90 cm	5.4 m	9.0 m
91-100+ cm	6.0 m	10.0 m

1 Diameter at breast height (DBH) measurement of tree stem taken at 1.4 m above the ground.

2 Tree Protection Zone & Critical Root Zone distances are to be measured from the outside edge of the tree base.

- Tree protection barriers are to be erected prior to the commencement of any construction or grading activities on the site and are to remain in place throughout the entire duration of the project. The barriers shall be maintained erect and in good repair throughout the duration of construction operations with breaks and unsupported sections repaired immediately. Tree protection may be not be removed prior to the completion of construction without written authorization from the Manager of Urban Forestry or designate;
- The required barrier is a 1.2 metre (4 ft) high orange plastic web snow fencing on 2" x 4" frame. Where orange plastic web snow fencing creates a restriction to sightlines, page wire fencing with reflective tape can be used;
- All supports and bracing used to safely secure the barrier should be located outside the mTPZ. All supports and bracing should minimize damage to roots;
- Where some fill or excavated material must be temporarily located near a mTPZ, a wooden barrier with silt fencing must be used to ensure no material enters the mTPZ;
- No materials or fill may be stored within the mTPZ;
- Equipment or vehicles shall not be operated, parked, repaired, or refueled within the mTPZ;

- No construction activity, grade changes, surface treatment or excavations of any kind is permitted within the mTPZ without written authorization from the Manager of Urban Forestry or designate; and,
- A laminated Minimum Tree Protection Zone sign must be attached to the side of the Tree Protection where it will be visible by persons entering the site. Minimum size must be 10"x14".

Wildlife Disturbance Measures:

- Tree removal and clearing of vegetation should occur outside breeding bird season (March 31st to August 31st). If clearing of vegetation is to occur during breeding bird season, or if birds are suspected of nesting within this area, an ecologist should undertake detailed nest searches immediately prior (within 48 hours) to site alteration to ensure no active nests are present, and Trees identified for removal should be clearly marked with paint prior to their removal and felled into the proposed construction area. Effects on adjacent vegetation should be avoided during the felling process.

6. Conclusions

A total of 93 trees have been inventoried and assessed for possible preservation in the context of the proposed works. Sixty-one trees (61) are recommended for preservation. A Tree Permit is required to perform any work within the mTPZs of trees to be injured as per City of Burlington By-law 68-2013 and 02-2020. Thirty-two (32) trees (3 Subject Property, 1 neighboring, and 28 public) are recommended for removal due to direct conflict with the proposed works. Proposed replacement plantings are included in the Landscape Plan (s) for the Subject Property (Appendix B). The planting schedule for the naturalized setback area includes 36 trees and 224 shrubs. The planting schedule for the proposed SWM pond includes 58 trees, 259 shrubs.

If you have any questions regarding this submission, do not hesitate to contact us.

Respectfully submitted,
GeoProcess Research Associates Inc.



Meghan Douglas, B.Sc., ERPG
Wildlife Ecologist, ISA Certified Arborist #ON-2826A

Appendix A: Tree Preservation Summary

Table A1. Tree Preservation Plan Summary

Tree #	Common Name	Scientific Name	DBH	Trunk Integrity	Crown Structure	Crown Vigor	Overall Condition (%)	Condition Rating	mTPZ	mTPZ m^2	mTPZ encroachment (m^2)	mTPZ encroachment (%)	CRZ	CRZ m^2	CRZ encroachment (m^2)	CRZ encroachment (%)	Comments	Potential Impacts from Construction	Ownership	Recommendation
1	trembling aspen	*Populus tremuloides*	18	0.75	0.80	0.65	75%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	fissure in trunk/lower stems dead	Encroachment into mTPZ due to proposed SWM grading and facility installation	Private	Remove
2	trembling aspen	*Populus tremuloides*	12.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	3.95	8%		Potential disturbance within the TPZ is unavoidable, therefore place ¾ in thick plywood over an 8-in deep mulch in the TPZ to avoid or reduce soil compaction	Private	Save
3	black walnut	*Juglans nigra*	10	0.80	0.80	0.80	80%	Good	2.4	18.1	12.5	70%	4.0	50.3	30.9	61%	fruiting/growing beside berm	Encroachment into mTPZ due to proposed SWM grading and facility installation	Private	Remove
4	black walnut	*Juglans nigra*	11	0.80	0.80	0.80	80%	Good	2.4	18.1	3.7	20%	4.0	50.3	15.8	31%	fruiting/thicket creeper	Potential disturbance within the TPZ is unavoidable, therefore place ¾ in thick plywood over an 8-in deep mulch in the TPZ to avoid or reduce soil compaction	Private	Save
5	shagbark hickory	*Carya ovata*	38	0.80	0.80	0.80	80%	Good	2.4	18.1	7.5	41%	4.0	50.3	21.7	43%		Encroachment into mTPZ due to proposed SWM grading and facility installation	Private	Remove
6	shagbark hickory	*Carya ovata*	26	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	Gypsy Moth eggs	None	Private	Save
7	shagbark hickory	*Carya ovata*	10.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Private	Save
8	shagbark hickory	*Carya ovata*	28	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Private	Save
9	white oak	*Quercus alba*	32	0.80	0.80	0.65	75%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	leaf defoliation	None	Private	Save
10	shagbark hickory	*Carya ovata*	11	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Private	Save
11	white oak	*Quercus alba*	67	0.80	0.80	0.75	80%	Good	4.2	55.4	0.0	0%	7.0	153.9	0.0	0%	leaf defoliation from Gypsy Moth	None	Private	Save
12	shagbark hickory	*Carya ovata*	23,25.5	0.75	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	Codominant, included bark at base	None	Private	Save
13	white oak	*Quercus alba*	105	0.75	0.40	0.40	50%	Fair	6.0	113.1	0.0	0%	10.0	314.2	0.0	0%	dead canopy, epic br from lower larger limbs	None	Private	Save
14	shagbark hickory	*Carya ovata*	49	0.80	0.80	0.80	80%	Good	3.0	28.3	0.0	0%	5.0	78.5	0.0	0%	Gypsy Moth (GM) eggs	None	Private	Save
15	shagbark hickory	*Carya ovata*	18	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Private	Save
16	white ash	*Fraxinus americana*	12	0.65	0.75	0.65	75%	Fair	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	EAB holes but live canopy	None	Private	Save
17	Manitoba maple	*Acer negundo*	16	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Private	Save
18	white willow	*Salix alba*	10	0.75	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, inlcuded bark at base	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
19	white willow	*Salix alba*	19	0.75	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	growing in line with pipe outlet	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
20	white willow	*Salix alba*	13/15.5/33	0.75	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
21	white pine	*Pinus strobus*	14	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
22	white pine	*Pinus strobus*	12	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
23	white willow	*Salix alba*	28	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
24	white willow	*Salix alba*	11.5	0.75	0.75	0.80	75%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	dead larger oak on tr	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
25	white willow	*Salix alba*	19	0.75	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	slight lean	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
26	white willow	*Salix alba*	14	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	beside standing water	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
27	white willow	*Salix alba*	10	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
28	white willow	*Salix alba*	9,12	0.75	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, inlcuded bark at base	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
29	white willow	*Salix alba*	18	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
30	white willow	*Salix alba*	14	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove

Tree #	Common Name	Scientific Name	DBH	Trunk Integrity	Crown Structure	Crown Vigor	Overall Condition (%)	Condition Rating	mTPZ	mTPZ m²	mTPZ encroachment (m²)	mTPZ encroachment (%)	CRZ	CRZ m²	CRZ encroachment (m²)	CRZ encroachment (%)	Comments	Potential Impacts from Construction	Ownership	Recommendation
31	white willow	*Salix alba*	18	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
32	white willow	*Salix alba*	13.5,10	0.75	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Codominant, included bark at base	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
33	red maple	*Acer rubrum*	12	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
34	white ash	*Fraxinus americana*	16.5	0.00	0.00	0.00	0%	Dead	-	-	-	-	-	-	-	-		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
35	white ash	*Fraxinus americana*	14	0.00	0.00	0.00	0%	Dead	-	-	-	-	-	-	-	-	suckering	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
36	red oak	*Quercus rubra*	18.5	0.80	0.80	0.75	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	some defoliation	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
37	burr oak	*Quercus macrocarpa*	18.5	0.80	0.80	0.75	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	some defoliation	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
38	burr oak	*Quercus macrocarpa*	13	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
39	red maple	*Acer rubrum*	11	0.65	0.75	0.65	68%	Fair	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	open wound on trunk	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
40	white willow	*Salix alba*	10	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Private	Save
A	white oak	*Quercus alba*	115.5	0.80	0.80	0.80	80%	Good	6.0	113.1	17.1	15%	10.0	314.2	87.3	28%	lower branches pruned	Potential disturbance within the TPZ is unavoidable, therefore place ¾ in thick plywood over an 8-in deep mulch in the TPZ to avoid or reduce soil compaction	Neighboring	Save
B	trembling aspen	*Populus tremuloides*	15	0.80	0.65	0.75	73%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	canopy die back	None	Public - ROW	Save
C	trembling aspen	*Populus tremuloides*	10,16	0.65	0.75	0.65	68%	Fair	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	smaller trunk stem is dead	None	Public - ROW	Save
D	shagbark hickory	*Carya ovata*	27	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
E	white oak	*Quercus alba*	19	0.80	0.80	0.80	80%	Good	2.4	18.1	11.4	62%	4.0	50.3	21.7	43%			Neighboring	Remove
F	shagbark hickory	*Carya ovata*	25,17	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
G	shagbark hickory	*Carya ovata*	19.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
H	shagbark hickory	*Carya ovata*	18	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
I	shagbark hickory	*Carya ovata*	10	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
J	shagbark hickory	*Carya ovata*	20	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
K	shagbark hickory	*Carya ovata*	20	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
L	white oak	*Quercus alba*	23	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
M	white oak	*Quercus alba*	33	0.80	0.80	0.65	75%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	Dead branched (minor)	None	Neighboring	Save
N	shagbark hickory	*Carya ovata*	14.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
O	white oak	*Quercus alba*	13.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
P	white oak	*Quercus alba*	27.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
Q	red oak	*Quercus rubra*	44,65	0.80	0.80	0.80	80%	Good	4.2	55.4	0.0	0%	7.0	153.9	0.0	0%	some lower branch dieback. two trunks fused. Gypsy moth eggs	None	Neighboring	Save
R	shagbark hickory	*Carya ovata*	18	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
S	white oak	*Quercus alba*	20,30	0.00	0.00	0.00	0%	Dead	-	-	0.0	0%	-	-	-	-	snag habitat, loose bark	None	Neighboring	Save
T	shagbark hickory	*Carya ovata*	45	0.80	0.80	0.80	80%	Good	3.0	28.3	0.0	0%	5.0	78.5	0.0	0%	bat roosting habitat	None	Neighboring	Save
U	white ash	*Fraxinus americana*	16	0.00	0.00	0.00	0%	Dead	-	-	0.0	0%	-	-	-	-	EAB	None	Neighboring	Save
V	white oak	*Quercus alba*	31.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
W	white oak	*Quercus alba*	32	0.80	0.80	0.75	78%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	defoliation	None	Neighboring	Save
X	white oak	*Quercus alba*	27.5	0.80	0.80	0.75	78%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	GM defoliation	None	Neighboring	Save
Y	white oak	*Quercus alba*	28	0.80	0.80	0.75	78%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	GM eggs, defoliation	None	Neighboring	Save
Z	white oak	*Quercus alba*	57	0.80	0.80	0.80	80%	Good	3.6	40.7	0.0	0%	6.0	113.1	0.0	0%		None	Neighboring	Save
AA	white oak	*Quercus alba*	32	0.00	0.00	0.00	0%	Dead	-	-	0.0	0%	-	-	-	-		None	Public- NH Feature	Save
AB	white oak	*Quercus alba*	15	0.80	0.80	0.65	75%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	defoliation, GM eggs	None	Public- NH Feature	Save
AC	white oak	*Quercus alba*	21	0.80	0.80	0.65	75%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	GM defolation	None	Public- NH Feature	Save
AD	white ash	*Fraxinus americana*	17	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	EAB	None	Public- NH Feature	Save
AE	white ash	*Fraxinus americana*	10	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	EAB	None	Public- NH Feature	Save
AF	white oak	*Quercus alba*	15,22	0.80	0.80	0.75	78%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	GM defoliation	None	Public- NH Feature	Save
AG	white oak	*Quercus alba*	30	0.80	0.80	0.60	73%	Fair	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	dieback and defoliation	None	Public- NH Feature	Save
AH	white oak	*Quercus alba*	32x2	0.00	0.00	0.00	0%	Dead	-	-	0.0	0%	-	-	-	-		None	Public- NH Feature	Save
AI	basswood	*Tilia americana*	15,24,32	0.80	0.80	0.75	78%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	some insect defoliation	None	Public- NH Feature	Save
AJ	basswood	*Tilia americana*	12,17	0.75	0.80	0.80	78%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	epicormic branching at base	None	Public- NH Feature	Save
AK	white oak	*Quercus alba*	34	0.80	0.80	0.65	75%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	leaf defoliation, GM eggs	None	Public- NH Feature	Save

Tree #	Common Name	Scientific Name	DBH	Trunk Integrity	Crown Structure	Crown Vigor	Overall Condition (%)	Condition Rating	mTPZ	mTPZ m^2	mTPZ encroachment (m^2)	mTPZ encroachment (%)	CRZ	CRZ m^2	CRZ encroachment (m^2)	CRZ encroachment (%)	Comments	Potential Impacts from Construction	Ownership	Recommendation
AL	shagbark hickory	*Carya ovata*	17.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	GM eggs. note ash regen, lots of Buckthorn not much evidence of oak or hickory regen	None	Public- NH Feature	Save
AM	basswood	*Tilia americana*	13	0.00	0.00	0.00	0%	Dead	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Public- NH Feature	Save
AN	white oak	*Quercus alba*	23	0.65	0.40	0.40	48%	Poor	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	lower trunk epicormic branching	None	Public- NH Feature	Save
AO	basswood	*Tilia americana*	25	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Public- NH Feature	Save
AP	basswood	*Tilia americana*	23,28	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	GM eggs	None	Public- NH Feature	Save
AQ	white oak	*Quercus alba*	29	0.80	0.80	0.65	75%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	dieback, defoliation	None	Public- NH Feature	Save
AR	basswood	*Tilia americana*	13,30	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	ravine edge	None	Public- NH Feature	Save
AS	white oak	*Quercus alba*	28	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	healthy com to others less defoliation	None	Public- NH Feature	Save
AT	white ash	*Fraxinus americana*	11	0.75	0.40	0.40	52%	Poor	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	EAB,top canopy dead	None	Public- NH Feature	Save
AU	American elm	*Ulmus americana*	18	0.80	0.65	0.40	62%	Poor	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	Sparse canopy branches, Common buckthorn competition	None	Public- NH Feature	Save
AV	Russian olive	*Elaeagnus angustifolia*	14,18,10.5	0.75	0.80	0.80	78%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, included bark	Encroachment into mTPZ due to proposed future site developement	Public- ROW	Remove
AW	Russian olive	*Elaeagnus angustifolia*	2*10	0.75	0.80	0.80	78%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, included bark	Encroachment into mTPZ due to proposed future site developement	Public- ROW	Remove
AX	Russian olive	*Elaeagnus angustifolia*	16,15	0.75	0.80	0.80	78%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, included bark	Encroachment into mTPZ due to proposed future site developement	Public- ROW	Remove
AY	Russian olive	*Elaeagnus angustifolia*	15,14,20,15,23	0.75	0.80	0.80	78%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, included bark	Encroachment into mTPZ due to proposed future site developement	Public- ROW	Remove
AZ	Russian olive	*Elaeagnus angustifolia*	14,14	0.75	0.80	0.80	78%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, included bark	Encroachment into mTPZ due to proposed future site developement	Public- ROW	Remove
BB	Russian olive	*Elaeagnus angustifolia*	2*13	0.75	0.80	0.80	78%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, included bark	Encroachment into mTPZ due to proposed future site developement	Public- ROW	Remove

Legend

DBH Diameter at Breast Height (cm)

TPZ Tree Protection Zone

GOOD Dead branches less than 10%; good compartmentalization on any wounds, no structural defects

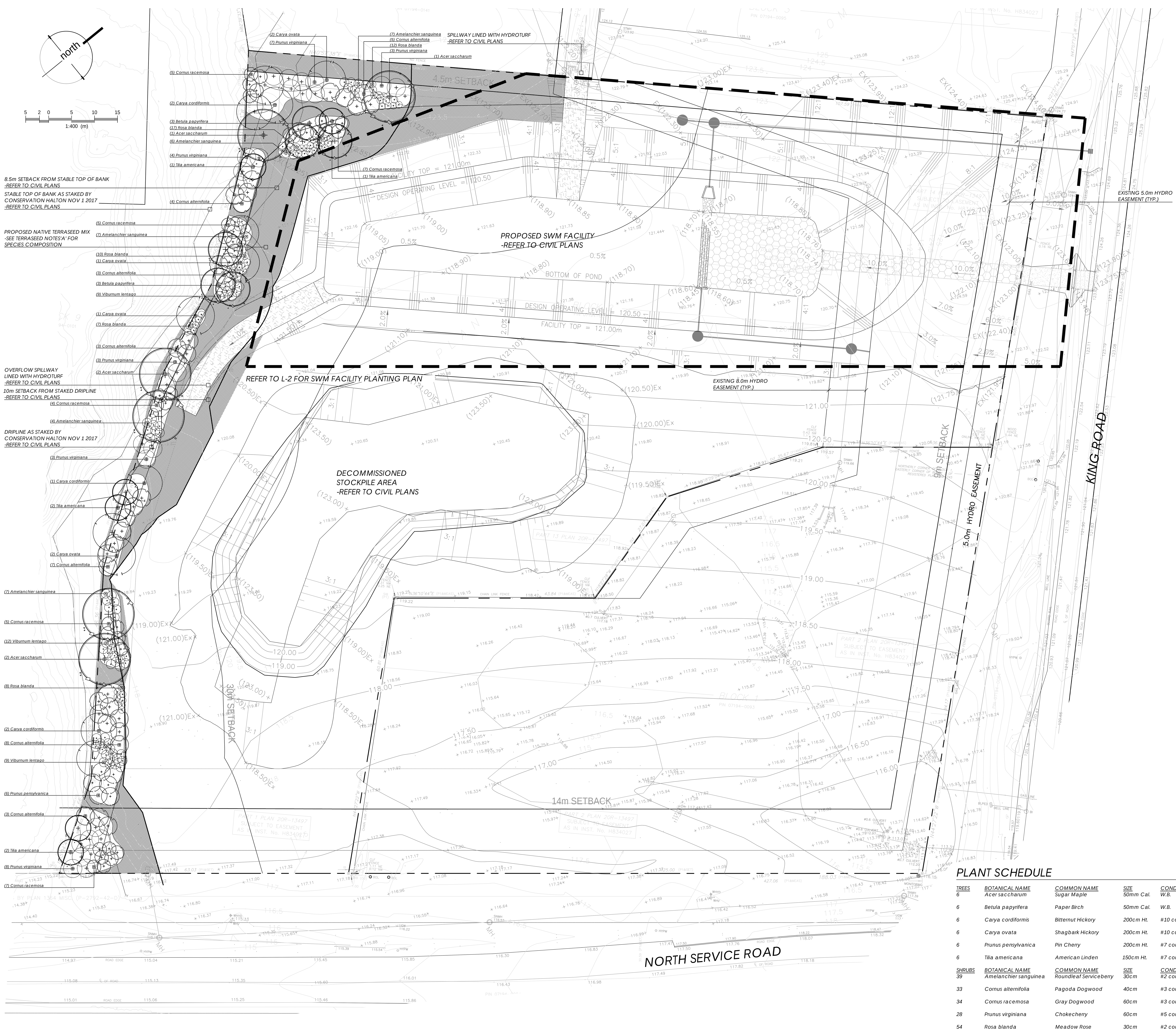
FAIR 10-30% dead branches, size or occurrence of wounds present some concerns, minor structural defects.

POOR More than 30% dead branches, weak compartmentalization, early leaf drop, presence of insects or disease, major structural defects.

DEAD Tree shows no signs of life

Appendix B: Landscape Plans

project #: 21-219



TERRASEED NOTES 'A':

1. Areas to be seeded with naturalization mix shall receive an application of naturalization seed at the rate of 25-30 kg/hectare or 2 kg/100m² for spot applications, in the following mixture:

Native Woodland Edge Seed Mix*

Black Eyed Susan (Rudbeckia hirta)	1%
Evening Primrose (Oenothera biennis)	1%
Canada Anemone (Anemone canadensis)	1%
Canada Goldenrod (Solidago caesia)	1%
Woodland Sunflower (Helianthus divaricatus)	1%
Heart-leaved Aster (Aster cordifolius)	1%
Hairy Beardtongue (Penstemon hirsutus)	5%
Grass-leaved Goldenrod (Euthamia graminifolia)	5%
Big Blue Stem (Andropogon gerardii)	10%
Pennsylvania Sedge (Carex pensylvanica)	10%
Bottle Brush Grass (Elymus hystrix)	30%
Canada Rye (Elymus canadensis)	30%

*apply with Annual Oats (Avena sativa) nursecrop at 22kg/hectare.

Supplied by:
St. Williams Nursery & Ecological Centre (or approved equal)
P: 1-519-586-9116
W: www.stwilliamsnursery.com

2. Contractor responsible for soil test to determine fertilizer rates. Results of soil test shall be provided to the Landscape Architect for review and approval.
3. Hydraulic mulch to be approved by the Landscape Architect shall be applied at the rate of 2100kg per hectare.
4. The contractor shall not carry out the work under adverse weather conditions such as high wind, frozen ground or ground covered with snow, ice or standing water.
5. Grade sub-grade, eliminate uneven areas and low spots, ensure positive drainage. Remove debris, roots, branches, stones in excess of 50mm diameter and other deleterious materials. Remove subsoil that has been contaminated with oil, gasoline or calcium chloride, dispose of removed material as directed by Landscape Architect.
6. Grade seed bed for terraseeding to a uniform surface and remove vegetation which may interfere with seeding operations. Loosen soil to depth of 25mm minimum and remove stones and foreign material which protrude more than 75mm above the surface.
7. All areas to be terraseeded to receive 150mm of topsoil.
8. Seeded areas to be maintained by contractor ensuring adequate water, fertilizer, maintenance and repair until seeded areas are properly established. Areas seeded in fall will be accepted in following spring, one month after start of growing season provided acceptance conditions are fulfilled.

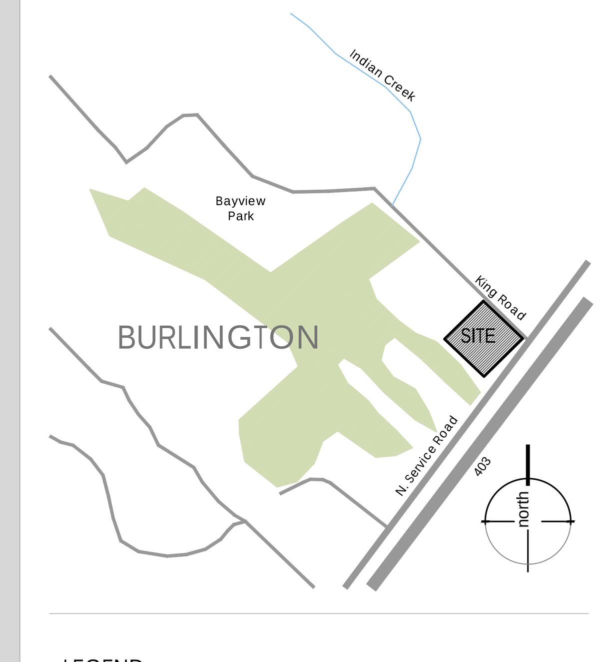
LANDSCAPE NOTES:

1. All work to be carried out in accordance with by-laws and codes having jurisdiction over site location.
2. Complete all work to the satisfaction of the Landscape Architect.
3. Report any changes, discrepancies or substitutions to the Landscape Architect for review. Obtain approval from the Landscape Architect before proceeding.
4. It is the contractor's responsibility to determine existing service locations.
5. Exact locations of plant material will be determined by placement of site services such as hydro vaults, meters, utilities roof rain water leaders, driveways, light standards, etc.
6. All plant material locations to be staked or marked out and approved by Landscape Architect prior to installation.
7. Supply all plant material in accordance with the Canadian Standards for Nursery Stock (8th ed.).
8. Install plant material according to details shown.
9. Supply and place mulch in accordance with Canadian Landscape Standard (Section 10, Mulching). Disturbed soil areas around trees and shrubs are to be covered with shredded conifer bark mulch such as 'Cedar Bark Mulch' by All Treat Farms or 'Classic Cedar Mulch' by Gro-Bark, or approved equivalent. Alternative mulches must be approved by the Landscape Architect.
10. Contractor to utilize layout dimensions where provided
11. Provide planting bed area as noted on the drawing or to accommodate mature size of plant material.
12. All support systems must be removed by the contractor at time of final acceptance. No extras will be paid to complete this work
13. Supply and place topsoil in accordance with Canadian Landscape Standard (Section 4, Grading & Drainage and Section 6, Growing Medium) to a minimum depth of 150mm unless otherwise specified.
14. Supply and place sod in accordance with Canadian Landscape Standard (Section 7, Lawns & Grass and Section 8, Turfgrass Sod)unless otherwise specified.
15. Supply and place seed in accordance with Canadian Landscape Standard (Section 4, Grading & Drainage and Section 6, Growing Medium) unless otherwise specified. All 5:1 or greater slopes to be seeded with tacifier. Contractor to provide necessary erosion control protection as required to ensure soil stabilization and proper seed germination.
16. All dimensions in meters unless otherwise noted.
17. If discrepancies arise between plant material count shown on drawing and plant list, the drawing shall be considered correct.
18. Contractor to provide minimum one (1) year warranty (including trees on municipal property) from date accepted on all work unless otherwise specified.
19. Any site plan or grading and servicing shown is for information only. Refer to approved drawings.
20. Not for construction unless stamped, signed and dated by Landscape Architect.
21. Drawings not to be reproduced without written consent from Landscape Architect.
22. Approval of landscape plan to be obtained from municipality.
23. All plant material to be planted a minimum of 1.0m from any swales or ditches.
24. For grading and servicing information refer to the consulting Engineer's drawings.
25. For lighting information and power distribution refer to the electrical consultant's drawings.

PLANT SCHEDULE

TREES	BOTANICAL NAME	COMMON NAME	SIZE	COND.	MATURE HT. (M)	MATURE SPR. (M)	O.C. (M)	REMARKS
6	Acer saccharum	Sugar Maple	50mm Cal.	W.B.	30.0	18.0	As Shown	Native to Ontario
6	Betula papyrifera	Paper Birch	50mm Cal.	W.B.	15.0	11.0	As Shown	Native to Ontario
6	Carya cordiformis	Bitternut Hickory	200cm Ht.	#10 cont.	20.0	15.0	As Shown	Native to Ontario
6	Carya ovata	Shagbark Hickory	200cm Ht.	#10 cont.	25.0	17.0	As Shown	Native to Ontario
6	Prunus pensylvanica	Pin Cherry	200cm Ht.	#7 cont.	10.0	4.0	As Shown	Native to Ontario
6	Tilia americana	American Linden	150cm Ht.	#7 cont.	25.0	15.0	As Shown	Native to Ontario
SHRUBS	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**COND.**	**MATURE HT. (M)**	**MATURE SPR. (M)**	**O.C. (M)**	**REMARKS**
39	Amelanchier sanguinea	Roundleaf Serviceberry	30cm	#2 cont.	6.0	4.0		
33	Cornus alternifolia	Pagoda Dogwood	40cm	#3 cont.	4.0	7.0	As Shown	Native to Ontario
34	Cornus racemosa	Gray Dogwood	60cm	#3 cont.	3.0	3.0	2.5	Native to Ontario
28	Prunus virginiana	Chokecherry	60cm	#5 cont.	6.0	6.0	3.5	Native to Ontario
54	Rosa blanda	Meadow Rose	30cm	#2 cont.	1.3	1.5	1.4	Native to Ontario
36	Viburnum lentago	Nannyberry	50cm	#3 cont.	5.0	2.0	1.5	Native to Ontario

KEY MAP - N.T.S.



LEGEND

(dashed line)	property line
(circle symbol)	proposed deciduous tree
(small circle symbol)	proposed shrub
+ 125.20	existing elevation
+(118.90)	proposed elevation
(hatched area)	min. 150mm topsoil, fine grade & native woodland edge seed mixture - see terraseed notes 'A'

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REVISIONS/ SUBMISSIONS

#	DATE	DESCRIPTION
1	2022-02-14	Issued for review
2	2022-02-18	Issued for submission
3	2023-05-02	Issued for submission

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ONTARIO ASSOCIATION OF LANDSCAPE ARCHITECTS
SCOTT PB HENDERSON
OALA
MEMBER

CLIENT
Quantum Realty Management

MUNICIPALITY
City of Burlington

PROJECT
1450 King Road

MUNICIPAL FILE NUMBER

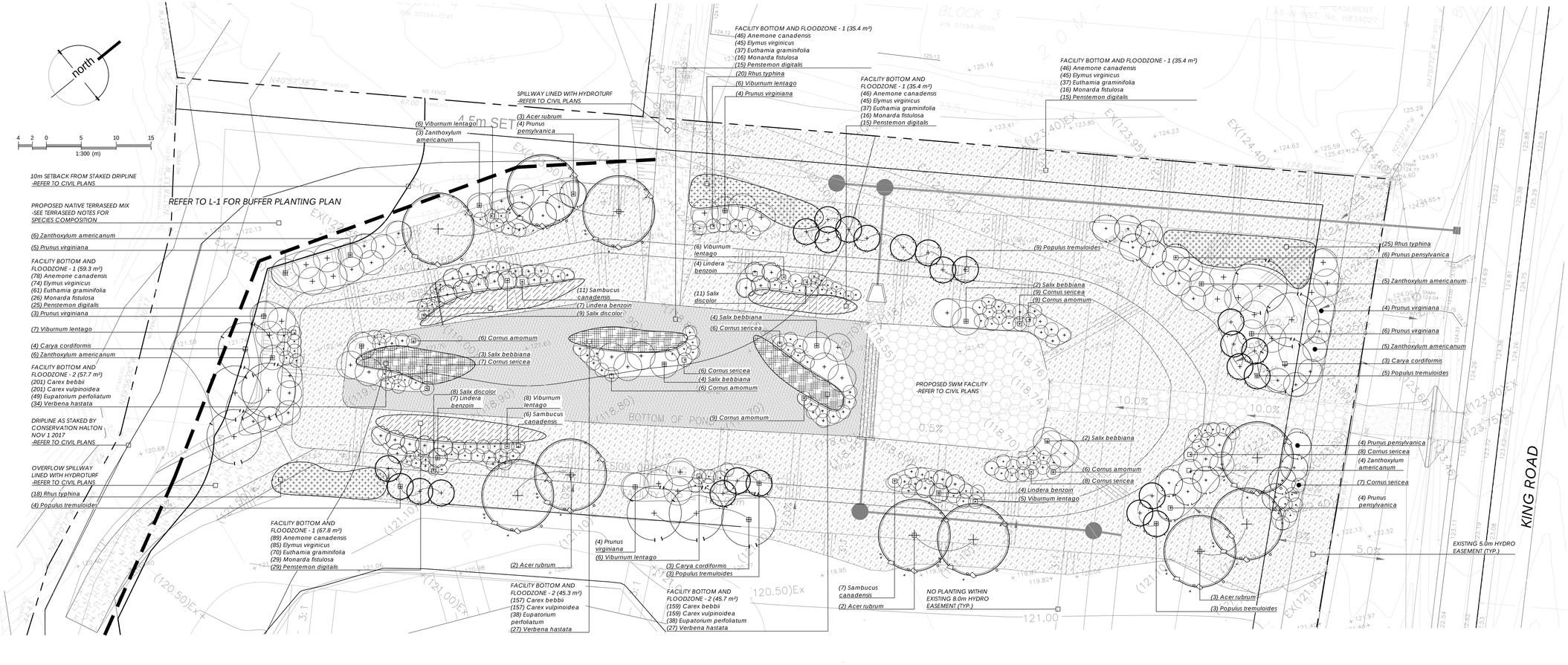
SHEET
Buffer Planting Plan
L-1

adesso design inc.
landscape architecture

69John Street South, Suite 250
Hamilton, ON L8N 2B9
t. 905.526.8876
www.adessodesigninc.ca

FILE:Z:\Project_files\Projects_2021\21-219_1450 King Road_Burlington\01-Current_Drawings\21-219L.dwg LAYOUT:1_Landscape
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project #: 21-219



PLANT SCHEDULE SWMF

TREES	BOTANICAL NAME	COMMON NAME	SIZE	COND.	MATURE HT. (M)	MATURE SPR. (M)	O.C. (M)	REMARKS
10	Acer rubrum	Red Maple	50mm Cal.	W.B.	15.0	12.0	As Shown	Native to Ontario
10	Carya cordiformis	Bitternut Hickory	200cm Ht.	#10 cont.	20.0	15.0	As Shown	Native to Ontario
24	Populus tremuloides	Trembling Aspen	50mm Cal.	W.B.	12.0	5.0	As Shown	Native to Ontario
18	Prunus pensylvanica	Pin Cherry	200cm Ht.	#7 cont.	10.0	4.0	As Shown	Native to Ontario
SHRUBS	BOTANICAL NAME	COMMON NAME	SIZE	COND.	MATURE HT. (M)	MATURE SPR. (M)	O.C. (M)	REMARKS
36	Cornus amomum	Silky Dogwood	30cm	#3 cont.	2.0	2.0	1.75	Native to Ontario
51	Cornus sericea	Red Osier Dogwood	50cm	#3 cont.	1.75	2.0	1.75	Native to Ontario
22	Lindera benzoin	Spicebush	40cm	#3 cont.	4.0	3.0	2.5	Native to Ontario
26	Prunus virginiana	Chokecherry	60cm	#5 cont.	6.0	6.0	3.5	Native to Ontario
15	Salix bebbiana	Beaked Willow	60cm	#3 cont.	5.0	10.0	5.0	Native to Ontario
28	Salix discolor	Pussy Willow	40cm	#3 cont.	5.0	1.5	1.1	Native to Ontario
24	Sambucus canadensis	Elderberry	50cm	#3 cont.	2.5	2.0	1.75	Native to Ontario
44	Viburnum lentago	Nannyberry	50cm	#3 cont.	5.0	2.0	1.5	Native to Ontario
29	Zanthoxylum americanum	Common Prickly Ash	30cm	#3 cont.	6.0	4.0	3.5	Native to Ontario
GROUND COVERS	BOTANICAL NAME	COMMON NAME	SIZE	COND.	MATURE HT. (M)	MATURE SPR. (M)	O.C. (M)	REMARKS
213	Anemone canadensis	Canadian Anemone	--	#1 cont.	0.50	0.50	--	Native to Ontario
517	Carex bebbii	Bebb's Sedge	--	Plug	0.80	0.20		Native to Ontario
517	Carex vulpinoidea	Fox Sedge	--	Plug	0.90	0.50		Native to Ontario
204	Elymus virginicus	Virginia Wild Rye	--	Plug	1.5	0.60		Native to Ontario
125	Eupatorium perfoliatum	Common Boneset	--	#1 cont.	1.25	0.90		Native to Ontario
168	Euthamia graminifolia	Grass-leafed Goldenrod	--	Plug	1.0	0.60		Native to Ontario
71	Monarda fistulosa	Bergamot	--	#1 cont.	1.1	0.90		Native to Ontario
69	Penstemon digitalis	Beardtongue	--	#1 cont.	0.60	0.60		Native to Ontario
63	Rhus typhina	Staghorn Sumac	50cm	#3 cont.	2.5	2.5	2.0	Native to Ontario
88	Verbena hastata	Blue Vervain	--	#1 cont.	2.0	0.90		Native to Ontario

TERRASEED NOTES 'B':

1. *Areas to be seeded with naturalization mix shall receive an application of naturalization seed at the rate of 25-30 kg/hectare or 2 kg/100m² for spot applications, in the following mixture:*

OCS Shoreline Native Seed Mixture 8250*	
Green Bulrush (Scirpus atrovirens)	1%
Spotted Joe Pye Weed (Eupatorium maculatum)	1%
Purple Stemmed Aster (Aster puniceus)	2%
Swamp Milkweed (Asclepias incarnata)	2%
Blue Vervain (Verbena hastata)	9%
Blunt Broom Sedge (Carex scoparia)	10%
Sweet Flag (Acorus americanus)	10%
Fox Sedge (Carex vulpinoide)	25%
Virginia Wild Rye (Elymus virginicus)	40%

*apply with Annual Oats (Avena sativa) nursecrop at 22kg/hectare.

Supplied by:
OSC - Ontario Seed Co. Limited
P: 1-519-886-0557
W: www.oscseeds.com

2. *Contractor responsible for soil test to determine fertilizer rates. Results of soil test shall be provided to the Landscape Architect for review and approval.*
3. *Hydraulic mulch to be approved by the Landscape Architect shall be applied at the rate of 2100kg per hectare.*
4. *The contractor shall not carry out the work under adverse weather conditions such as high wind, frozen ground or ground covered with snow, ice or standing water.*
5. *Grade sub-grade, eliminate uneven areas and low spots, ensure positive drainage. Remove debris, roots, branches, stones in excess of 50mm diameter and other deleterious materials. Remove subsoil that has been contaminated with oil, gasoline or calcium chloride, dispose of removed material as directed by Landscape Architect.*
6. *Grade seed bed for terraseeding to a uniform surface and remove vegetation which may interfere with seeding operations. Loosen soil to depth of 25mm minimum and remove stones and foreign material which protrude more than 75mm above the surface.*
7. *All areas to be terraseeded to receive 150mm of topsoil.*
8. *Seeded areas to be maintained by contractor ensuring adequate water, fertilizer, maintenance and repair until seeded areas are properly established. Areas seeded in fall will be accepted in following spring, one month after start of growing season provided acceptance conditions are fulfilled.*

TERRASEED NOTES 'C':

1. *Areas to be seeded with naturalization mix shall receive an application of naturalization seed at the rate of 25-30 kg/hectare or 2 kg/100m² for spot applications, in the following mixture:*

OCS Stormwater Pond Native Mixture 8190*	
New England Aster (Aster navae-anglaie)	2%
Black Eyed Susan (Rudbeckia hirta)	3%
Canada Wild Rye (Elymus canadensis)	15%
Fox Sedge (Carex vulpinoide)	15%
Indiangrass (Sorghastrum nutans)	15%
Fowl Bluegrass (Poa palustris)	25%
Virginia Wild Rye (Elymus virginicus)	25%

*apply with Annual Oats (Avena sativa) nursecrop at 22kg/hectare.

Supplied by:
OSC - Ontario Seed Co. Limited
P: 1-519-886-0557
W: www.oscseeds.com

2. *Contractor responsible for soil test to determine fertilizer rates. Results of soil test shall be provided to the Landscape Architect for review and approval.*
3. *Hydraulic mulch to be approved by the Landscape Architect shall be applied at the rate of 2100kg per hectare.*
4. *The contractor shall not carry out the work under adverse weather conditions such as high wind, frozen ground or ground covered with snow, ice or standing water.*
5. *Grade sub-grade, eliminate uneven areas and low spots, ensure positive drainage. Remove debris, roots, branches, stones in excess of 50mm diameter and other deleterious materials. Remove subsoil that has been contaminated with oil, gasoline or calcium chloride, dispose of removed material as directed by Landscape Architect.*
6. *Grade seed bed for terraseeding to a uniform surface and remove vegetation which may interfere with seeding operations. Loosen soil to depth of 25mm minimum and remove stones and foreign material which protrude more than 75mm above the surface.*
7. *All areas to be terraseeded to receive 150mm of topsoil.*
8. *Seeded areas to be maintained by contractor ensuring adequate water, fertilizer, maintenance and repair until seeded areas are properly established. Areas seeded in fall will be accepted in following spring, one month after start of growing season provided acceptance conditions are fulfilled.*

LANDSCAPE NOTES:

1. *All work to be carried out in accordance with by-laws and codes having jurisdiction over site location.*
2. *Complete all work to the satisfaction of the Landscape Architect.*
3. *Report any changes, discrepancies or substitutions to the Landscape Architect for review. Obtain approval from the Landscape Architect before proceeding.*
4. *It is the contractor's responsibility to determine existing service locations.*
5. *Exact locations of plant material will be determined by placement of site services such as hydro vaults, meters, utilities roof rain water leaders, driveways, light standards, etc.*
6. *All plant material locations to be staked or marked out and approved by Landscape Architect prior to installation.*
7. *Supply all plant material in accordance with the Canadian Standards for Nursery Stock (8th ed.).*
8. *Install plant material according to details shown.*
9. *Supply and place mulch in accordance with Canadian Landscape Standard (Section 10, Mulching). Disturbed soil areas around trees and shrubs are to be covered with shredded conifer bark mulch such as 'Cedar Bark Mulch' by All Treat Farms or 'Classic Cedar Mulch' by Gro-Bark, or approved equivalent. Alternative mulches must be approved by the Landscape Architect.*
10. *Contractor to utilize layout dimensions where provided*
11. *Provide planting bed area as noted on the drawing or to accommodate mature size of plant material.*
12. *All support systems must be removed by the contractor at time of final acceptance. No extras will be paid to complete this work*
13. *Supply and place topsoil in accordance with Canadian Landscape Standard (Section 4, Grading & Drainage and Section 6, Growing Medium) to a minimum depth of 150mm unless otherwise specified.*
14. *Supply and place sod in accordance with Canadian Landscape Standard (Section 7, Lawns & Grass and Section 8, Turfgrass Sod)unless otherwise specified.*
15. *Supply and place seed in accordance with Canadian Landscape Standard (Section 4, Grading & Drainage and Section 6, Growing Medium) unless otherwise specified. All 5:1 or greater slopes to be seeded with tacifier. Contractor to provide necessary erosion control protection as required to ensure soil stabilization and proper seed germination.*
16. *All dimensions in meters unless otherwise noted.*
17. *If discrepancies arise between plant material count shown on drawing and plant list, the drawing shall be considered correct.*
18. *Contractor to provide minimum one (1) year warranty (including trees on municipal property) from date accepted on all work unless otherwise specified.*
19. *Any site plan or grading and servicing shown is for information only. Refer to approved drawings.*
20. *Not for construction unless stamped, signed and dated by Landscape Architect.*
21. *Drawings not to be reproduced without written consent from Landscape Architect.*
22. *Approval of landscape plan to be obtained from municipality.*
23. *All plant material to be planted a minimum of 1.0m from any swales or ditches.*
24. *For grading and servicing information refer to the consulting Engineer's drawings.*
25. *For lighting information and power distribution refer to the electrical consultant's drawings.*

KEY MAP - N.T.S.



LEGEND

- property line
- proposed deciduous tree
- proposed shrub
- existing elevation (+125.20)
- proposed elevation (+(118.90))
- min. 150mm topsoil, fine grade & shoreline native seed mixture - see terraseed notes 'B'
- min. 150mm topsoil, fine grade & stormwater pond native seed mixture - see terraseed notes 'C'

DRAFT
ISSUED FOR REVIEW & COMMENTS ONLY

REVISIONS/ SUBMISSIONS

#	DATE	DESCRIPTION
1	2022-02-14	Issued for review
2	2022-02-18	Issued for submission
3	2023-05-02	Issued for submission

STAMP

ONTARIO ASSOCIATION OF LANDSCAPE ARCHITECTS
SCOTT P.B. HENDERSON
MEMBER
2023

CLIENT
Quantum Realty Management

MUNICIPALITY
City of Burlington

PROJECT
1450 King Road

MUNICIPAL FILE NUMBER

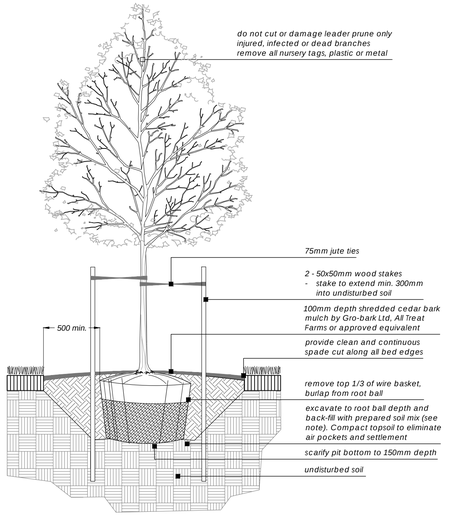
SHEET
SWM Facility Landscape Plan
L-2

adesso design inc.
landscape architecture

69John Street South, Suite 250
Hamilton, ON L8N 2B9
t. 905.526.8876
www.adessodesigninc.ca

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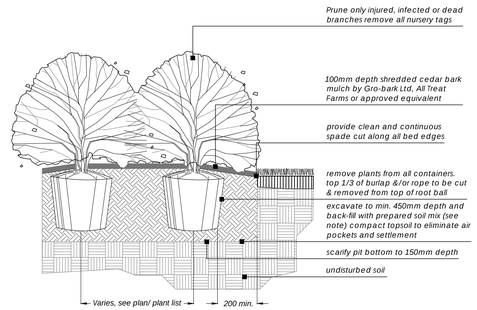
project #: 21-219



Balled & Burlapped/ Wire Basket Deciduous Tree

1
L-3

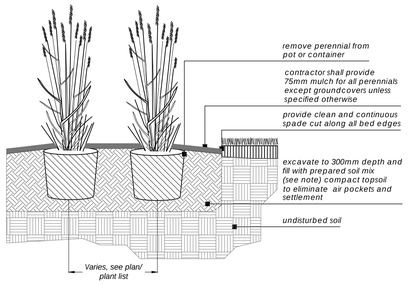
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Container Grown Shrub

2
L-3

SCALE: NTS



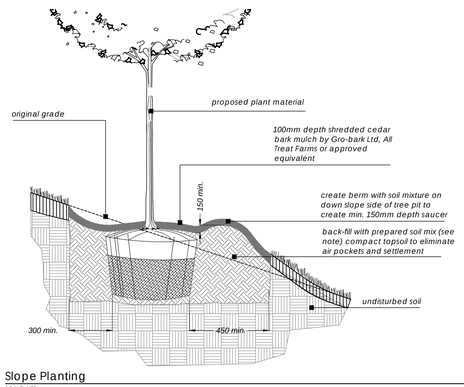
Container Grown Perennial

3
L-3

SCALE: NTS

PLANTING NOTES:

1. Soil mixture: four (4) parts native soil, one (1) part well rotted compost.If existing soil is not suitable provide triple mix topsoil or approved equal.
2. Saucer shall be soaked with water and mulched immediately following planting.
3. Massed shrubs shall be planted in continuous mulched beds unless otherwise noted.
4. Staking schedule;
   - < 30mm caliper size/ 2500mm ht. - one stake
   - > 30mm caliper size/ 2500mm ht. - two stakes
   - > 70mm caliper - three stakes
5. All support systems must be removed once tree is established.
6. All trees to be straight and planted vertically regardless of slope.
7. Top of root flare shall be positioned 50mm above grade.
8. The following depths of soil are required for planting;
   - 15cm topsoil for sod;
   - 30cm of topsoil for perennials;
   - 45cm of topsoil for shrubs;
   - 90cm of topsoil for trees



Slope Planting

4
L-3

SCALE: NTS

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SCOTT PB HENDERSON
MEMBER

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Quantum Realty Management

MUNICIPALITY
City of Burlington

PROJECT
1450 King Road

MUNICIPAL FILE NUMBER

SHEET
Details

L-3

adesso design inc.
landscape architecture

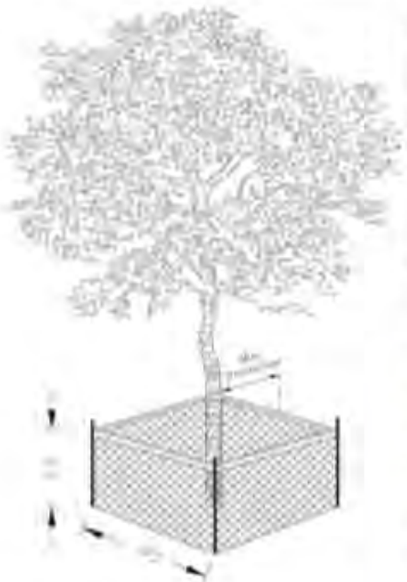
69John Street South, Suite 250
Hamilton, ON L8N 2B9
t. 905.526.8876
www.adessodesigninc.ca

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Appendix C:

City of Burlington Tree Preservation Details

Tree Protection and Preservation
Specification No.: SS12A



Detail TP-1 – Tree Protection Detail.

Trunk Diameter (DBH) [2]	Minimum Tree Protection Zone (MTPZ) Distances Required [3]	Critical Root Zone (CRZ) Distances Required [3&4]
< 10 cm	1.8 m	1.8 m
11 - 40 cm	2.4 m	4.0 m
41 - 50 cm	3.0 m	5.0 m
51 - 60 cm	3.6 m	6.0 m
61 - 70 cm	4.2 m	7.0 m
71 - 80 cm	4.8 m	8.0 m
81 - 90 cm	5.4 m	9.0 m
91 - 100+ cm	6.0 m	10.0 m

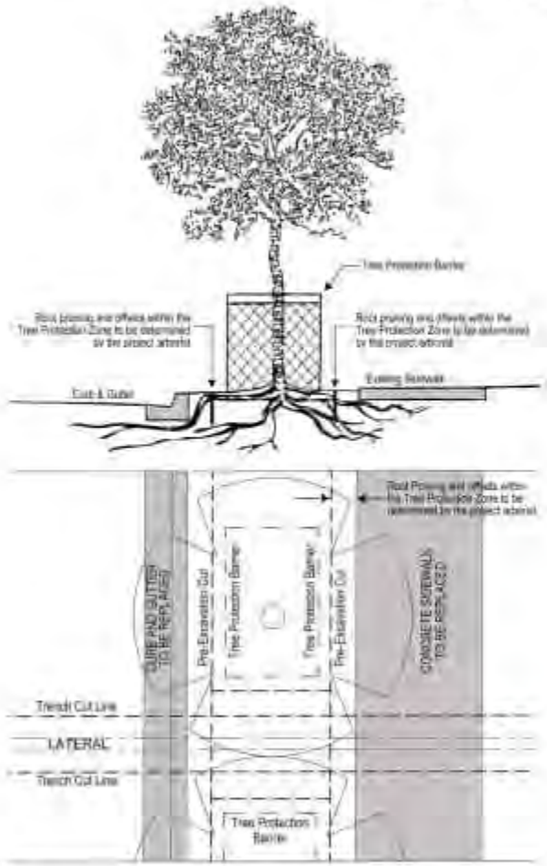
NOTES:
[1] The roots of a tree can extend from the trunk to approximately 2-3 times the distance of the drip line.
[2] Diameter at breast height (DBH) is the measurement of tree trunk taken at 1.4 metres above ground.
[3] Minimum Tree Protection Zone and Critical Root Zone distances are to be measured from the outside edge of the tree base towards the drip line and may be limited by an existing paved surface, provided the existing paved surface remains intact throughout the construction work and is subject to Section 6 of this specification.
[4] Where work is being performed beyond the Minimum Tree Protection Zone but within the Critical Root Zone the works are subject to Section 8 of this specification.

TREE PROTECTION BARRIER

1. The required barrier is a 1.2 metre (4 ft) high orange plastic web snow fencing on 2" x 4" frame. Where orange plastic web snow fencing creates a restriction to sightlines, page wire fencing with reflective tape can be used.
2. Tree protection barriers are to be erected prior to the commencement of any construction or grading activities on the site and are to remain in place throughout the entire duration of the project. The barriers shall be maintained erect and in good repair throughout the duration of construction operations with breaks and unsupported sections repaired immediately. Tree protection may be not be removed prior to the completion of construction without written authorization from the Manager of Urban Forestry or designate.
3. All supports and bracing used to safely secure the barrier should be located outside the MTPZ. All supports and bracing should minimize damage to roots.
4. Where some fill or excavated material must be temporarily located near a MTPZ, a wooden barrier with silt fencing must be used to ensure no material enters the MTPZ.
5. No materials or fill may be stored within the MTPZ.
6. Equipment or vehicles shall not be operated, parked, repaired, or refueled within the MTPZ.
7. No construction activity, grade changes, surface treatment or excavations of any kind is permitted within the MTPZ without written authorization from the Manager of Urban Forestry or designate.
8. A laminated Minimum Tree Protection Zone sign (See Detail TP-3 – Minimum Tree Protection Zone Sign) must be attached to the side of the Tree Protection where it will be visible by persons entering the site. Minimum size must be 10"x14".

Tree Protection and Preservation
Specification No.: SS12A

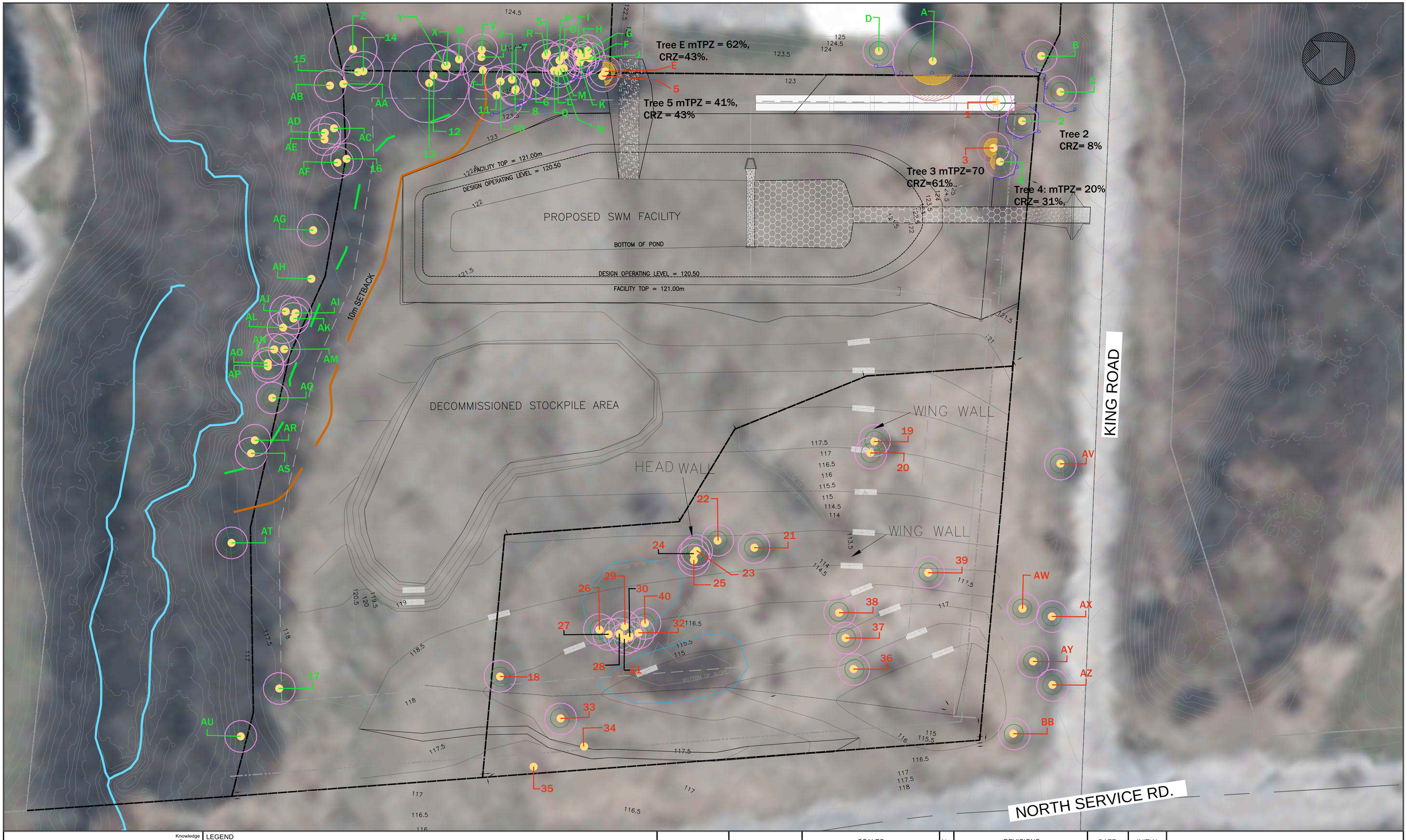
Detail TP-2 – Root Pruning Detail



NOTE:
For excavations perpendicular to to the curbing (ie. sidewalk, curbing, water or sewer laterals renewal)

(a) The contractor is to use a trench box to minimize the width of the open cut.
(b) When the lateral replacement is within the Tree Protection Zone of a tree, the contractor is to complete the works using trenchless technologies.

Drawing Figures



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LEGEND

- Tree Location
- Tree Protection Fence
- Tree Protection Zone
- TPZ Encroachment
- 1 Tree Identified for Preservation
- 34 Tree Identified for Removal
- CRZ

DRAFT
NOT FOR CONSTRUCTION

SEAL

SCALES

0 10 20 Meters
1:400

No.	REVISIONS	DATE	INITIAL
01	ISSUED FOR REVIEW	05/06/2022	K.G.

Arborist Report
1450 King Road, Burlington
Tree Protection Plan

Scale: 1:400 | Drawn By: S.G. | Drawing No. 01
Date Issued: 05/06/2022 | Checked By: K.G.

Tree #	Common Name	Scientific Name	DBH	Trunk Integrity	Crown Structure	Crown Vigor	Overall Condition (%)	Condition Rating	mTPZ	mTPZ m²	mTPZ encroachment (m²)	mTPZ encroachment (%)	CRZ	CRZ m²	CRZ encroachment (m²)	CRZ encroachment (%)	Comments	Potential Impacts from Construction	Ownership	Recommendation
1	trembling aspen	*Populus tremuloides*	18	0.75	0.80	0.65	75%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	fissure in trunk/lower stems dead	Encroachment into mTPZ due to proposed SWM grading and facility installation	Private	Remove
2	trembling aspen	*Populus tremuloides*	12.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	3.95	8%		Potential disturbance within the TPZ is unavoidable, therefore place ¾ in thick plywood over an 8-in deep mulch in the TPZ to avoid or reduce soil compaction	Private	Save
3	black walnut	*Juglans nigra*	10	0.80	0.80	0.80	80%	Good	2.4	18.1	12.5	70%	4.0	50.3	30.9	61%	fruiting/growing beside berm	Encroachment into mTPZ due to proposed SWM grading and facility installation	Private	Remove
4	black walnut	*Juglans nigra*	11	0.80	0.80	0.80	80%	Good	2.4	18.1	3.7	20%	4.0	50.3	15.8	31%	fruiting/thicket creeper	Potential disturbance within the TPZ is unavoidable, therefore place ¾ in thick plywood over an 8-in deep mulch in the TPZ to avoid or reduce soil compaction	Private	Save
5	shagbark hickory	*Carya ovata*	38	0.80	0.80	0.80	80%	Good	2.4	18.1	7.5	41%	4.0	50.3	21.7	43%		Encroachment into mTPZ due to proposed SWM grading and facility installation	Private	Remove
6	shagbark hickory	*Carya ovata*	26	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	Gypsy Moth eggs	None	Private	Save
7	shagbark hickory	*Carya ovata*	10.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Private	Save
8	shagbark hickory	*Carya ovata*	28	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Private	Save
9	white oak	*Quercus alba*	32	0.80	0.80	0.65	75%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	leaf defoliation	None	Private	Save
10	shagbark hickory	*Carya ovata*	11	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Private	Save
11	white oak	*Quercus alba*	67	0.80	0.80	0.75	80%	Good	4.2	55.4	0.0	0%	7.0	153.9	0.0	0%	leaf defoliation from Gypsy Moth	None	Private	Save
12	shagbark hickory	*Carya ovata*	23,25.5	0.75	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	Codominant, included bark at base	None	Private	Save
13	white oak	*Quercus alba*	105	0.75	0.40	0.40	50%	Fair	6.0	113.1	0.0	0%	10.0	314.2	0.0	0%	dead canopy, epic br from lower larger limbs	None	Private	Save
14	shagbark hickory	*Carya ovata*	49	0.80	0.80	0.80	80%	Good	3.0	28.3	0.0	0%	5.0	78.5	0.0	0%	Gypsy Moth (GM) eggs	None	Private	Save
15	shagbark hickory	*Carya ovata*	18	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Private	Save
16	white ash	*Fraxinus americana*	12	0.65	0.75	0.65	75%	Fair	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	EAB holes but live canopy	None	Private	Save
17	Manitoba maple	*Acer negundo*	16	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Private	Save
18	white willow	*Salix alba*	10	0.75	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, inlcuded bark at base	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
19	white willow	*Salix alba*	19	0.75	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	growing in line with pipe outlet	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
20	white willow	*Salix alba*	13/15.5/33	0.75	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
21	white pine	*Pinus strobus*	14	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
22	white pine	*Pinus strobus*	12	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
23	white willow	*Salix alba*	28	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
24	white willow	*Salix alba*	11.5	0.75	0.75	0.80	75%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	dead larger oak on tr	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
25	white willow	*Salix alba*	19	0.75	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	slight lean	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
26	white willow	*Salix alba*	14	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	beside standing water	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
27	white willow	*Salix alba*	10	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
28	white willow	*Salix alba*	9,12	0.75	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, inlcuded bark at base	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
29	white willow	*Salix alba*	18	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
30	white willow	*Salix alba*	14	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
31	white willow	*Salix alba*	18	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
32	white willow	*Salix alba*	13.5,10	0.75	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Codominant, included bark at base	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
33	red maple	*Acer rubrum*	12	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
34	white ash	*Fraxinus americana*	16.5	0.00	0.00	0.00	0%	Dead	-	-	-	-	-	-	-	-		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
35	white ash	*Fraxinus americana*	14	0.00	0.00	0.00	0%	Dead	-	-	-	-	-	-	-	-	suckering	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
36	red oak	*Quercus rubra*	18.5	0.80	0.80	0.75	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	some defoliation	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
37	burr oak	*Quercus macrocarpa*	18.5	0.80	0.80	0.75	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	some defoliation	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
38	burr oak	*Quercus macrocarpa*	13	0.80	0.80	0.80	80%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%		Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove
39	red maple	*Acer rubrum*	11	0.65	0.75	0.65	68%	Fair	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	open wound on trunk	Encroachment into mTPZ due to proposed SWM pond decomissioning and fill	Public-SWM Pond	Remove

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Legend

DBH	Diameter at Breast Height (cm)
TPZ	Tree Protection Zone
GOOD	Dead branches less than 10%; good compartmentalization on any wounds, no structural defects
FAIR	10-30% dead branches, size or occurrence of wounds present some concerns, minor structural defects.
POOR	More than 30% dead branches, weak compartmentalization, early leaf drop, presence of insects or disease, major structural defects.
DEAD	Tree shows no signs of life
Rating	(L) = light; (M) = moderate; (H) = heavy

SEAL

No.	REVISIONS	DATE	INITIAL
01	ISSUED FOR REVIEW	05/06/2022	K.G.

Arborist Report
1450 King Road, Burlington
Tree Protection Details

Scale:	Drawn By: S.G.	Drawing No. 02
Date Issued: 05/06/2022	Checked By: K.G.	

Tree #	Common Name	Scientific Name	DBH	Trunk Integrity	Crown Structure	Crown Vigor	Overall Condition (%)	Condition Rating	mTPZ	mTPZ m²	mTPZ encroachment (m²)	mTPZ encroachment (%)	CRZ	CRZ m²	CRZ encroachment (m²)	CRZ encroachment (%)	Comments	Potential Impacts from Construction	Ownership	Recommendation
40	white willow	*Salix alba*	10	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Private	Save
A	white oak	*Quercus alba*	115.5	0.80	0.80	0.80	80%	Good	6.0	113.1	17.1	15%	10.0	314.2	87.3	28%	lower branches pruned	Potential disturbance within the TPZ is unavoidable, therefore place ¾ in thick plywood over an 8-in deep mulch in the TPZ to avoid or reduce soil compaction	Neighboring	Save
B	trembling aspen	*Populus tremuloides*	15	0.80	0.65	0.75	73%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	canopy die back	None	Public - ROW	Save
C	trembling aspen	*Populus tremuloides*	10,16	0.65	0.75	0.65	68%	Fair	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	smaller trunk stem is dead	None	Public - ROW	Save
D	shagbark hickory	*Carya ovata*	27	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
E	white oak	*Quercus alba*	19	0.80	0.80	0.80	80%	Good	2.4	18.1	11.4	62%	4.0	50.3	21.7	43%			Neighboring	Remove
F	shagbark hickory	*Carya ovata*	25,17	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
G	shagbark hickory	*Carya ovata*	19.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
H	shagbark hickory	*Carya ovata*	18	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
I	shagbark hickory	*Carya ovata*	10	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
J	shagbark hickory	*Carya ovata*	20	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
K	shagbark hickory	*Carya ovata*	20	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
L	white oak	*Quercus alba*	23	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
M	white oak	*Quercus alba*	33	0.80	0.80	0.65	75%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	Dead branched (minor)	None	Neighboring	Save
N	shagbark hickory	*Carya ovata*	14.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
O	white oak	*Quercus alba*	13.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
P	white oak	*Quercus alba*	27.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
Q	red oak	*Quercus rubra*	44,65	0.80	0.80	0.80	80%	Good	4.2	55.4	0.0	0%	7.0	153.9	0.0	0%	some lower branch dieback. two trunks fused. Gypsy moth eggs	None	Neighboring	Save
R	shagbark hickory	*Carya ovata*	18	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
S	white oak	*Quercus alba*	20,30	0.00	0.00	0.00	0%	Dead	-	-	0.0	0%	-	-	-	-	snag habitat, loose bark	None	Neighboring	Save
T	shagbark hickory	*Carya ovata*	45	0.80	0.80	0.80	80%	Good	3.0	28.3	0.0	0%	5.0	78.5	0.0	0%	bat roosting habitat	None	Neighboring	Save
U	white ash	*Fraxinus americana*	16	0.00	0.00	0.00	0%	Dead	-	-	0.0	0%	-	-	-	-	EAB	None	Neighboring	Save
V	white oak	*Quercus alba*	31.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Neighboring	Save
W	white oak	*Quercus alba*	32	0.80	0.80	0.75	78%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	defoliation	None	Neighboring	Save
X	white oak	*Quercus alba*	27.5	0.80	0.80	0.75	78%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	GM defoliation	None	Neighboring	Save
Y	white oak	*Quercus alba*	28	0.80	0.80	0.75	78%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	GM eggs, defoliation	None	Neighboring	Save
Z	white oak	*Quercus alba*	57	0.80	0.80	0.80	80%	Good	3.6	40.7	0.0	0%	6.0	113.1	0.0	0%		None	Neighboring	Save
AA	white oak	*Quercus alba*	32	0.00	0.00	0.00	0%	Dead	-	-	0.0	0%	-	-	-	-		None	Public- NH Feature	Save
AB	white oak	*Quercus alba*	15	0.80	0.80	0.65	75%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	defoliation, GM eggs	None	Public- NH Feature	Save
AC	white oak	*Quercus alba*	21	0.80	0.80	0.65	75%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	GM defolation	None	Public- NH Feature	Save
AD	white ash	*Fraxinus americana*	17	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	EAB	None	Public- NH Feature	Save
AE	white ash	*Fraxinus americana*	10	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	EAB	None	Public- NH Feature	Save
AF	white oak	*Quercus alba*	15,22	0.80	0.80	0.75	78%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	GM defoliation	None	Public- NH Feature	Save
AG	white oak	*Quercus alba*	30	0.80	0.80	0.60	73%	Fair	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	dieback and defoliation	None	Public- NH Feature	Save
AH	white oak	*Quercus alba*	32x2	0.00	0.00	0.00	0%	Dead	-	-	0.0	0%	-	-	-	-		None	Public- NH Feature	Save
AI	basswood	*Tilia americana*	15,24,32	0.80	0.80	0.75	78%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	some insect defoliation	None	Public- NH Feature	Save
AJ	basswood	*Tilia americana*	12,17	0.75	0.80	0.80	78%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	epicormic branching at base	None	Public- NH Feature	Save
AK	white oak	*Quercus alba*	34	0.80	0.80	0.65	75%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	leaf defoliation, GM eggs	None	Public- NH Feature	Save
AL	shagbark hickory	*Carya ovata*	17.5	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	GM eggs. note ash regen, lots of Buckthorn not much evidence of oak or hickory regen	None	Public- NH Feature	Save
AM	basswood	*Tilia americana*	13	0.00	0.00	0.00	0%	Dead	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Public- NH Feature	Save
AN	white oak	*Quercus alba*	23	0.65	0.40	0.40	48%	Poor	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	lower trunk epicormic branching	None	Public- NH Feature	Save
AO	basswood	*Tilia americana*	25	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%		None	Public- NH Feature	Save
AP	basswood	*Tilia americana*	23,28	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	GM eggs	None	Public- NH Feature	Save
AQ	white oak	*Quercus alba*	29	0.80	0.80	0.65	75%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	dieback, defoliation	None	Public- NH Feature	Save
AR	basswood	*Tilia americana*	13,30	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	ravine edge	None	Public- NH Feature	Save
AS	white oak	*Quercus alba*	28	0.80	0.80	0.80	80%	Good	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	healthy com to others less defoliation	None	Public- NH Feature	Save
AT	white ash	*Fraxinus americana*	11	0.75	0.40	0.40	52%	Poor	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	EAB,top canopy dead	None	Public- NH Feature	Save
AU	American elm	*Ulmus americana*	18	0.80	0.65	0.40	62%	Poor	2.4	18.1	0.0	0%	4.0	50.3	0.0	0%	Sparse canopy branches, Common buckthorn competition	None	Public- NH Feature	Save
AV	Russian olive	*Elaeagnus angustifolia*	14,18,10.5	0.75	0.80	0.80	78%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, included bark	Encroachment into mTPZ due to proposed future site developement	Public- ROW	Remove
AW	Russian olive	*Elaeagnus angustifolia*	2*10	0.75	0.80	0.80	78%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, included bark	Encroachment into mTPZ due to proposed future site developement	Public- ROW	Remove
AX	Russian olive	*Elaeagnus angustifolia*	16,15	0.75	0.80	0.80	78%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, included bark	Encroachment into mTPZ due to proposed future site developement	Public- ROW	Remove
AY	Russian olive	*Elaeagnus angustifolia*	15,14,20,15,23	0.75	0.80	0.80	78%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, included bark	Encroachment into mTPZ due to proposed future site developement	Public- ROW	Remove
AZ	Russian olive	*Elaeagnus angustifolia*	14,14	0.75	0.80	0.80	78%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, included bark	Encroachment into mTPZ due to proposed future site developement	Public- ROW	Remove
BB	Russian olive	*Elaeagnus angustifolia*	2*13	0.75	0.80	0.80	78%	Good	2.4	18.1	18.1	100%	4.0	50.3	50.3	100%	Multi-stem, included bark	Encroachment into mTPZ due to proposed future site developement	Public- ROW	Remove

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Legend

DBH	Diameter at Breast Height (cm)
TPZ	Tree Protection Zone
GOOD	Dead branches less than 10%; good compartmentalization on any wounds, no structural defects
FAIR	10-30% dead branches, size or occurrence of wounds present some concerns, minor structural defects.
POOR	More than 30% dead branches, weak compartmentalization, early leaf drop, presence of insects or disease, major structural defects.
DEAD	Tree shows no signs of life
Rating	(L) = light; (M) = moderate; (H) = heavy

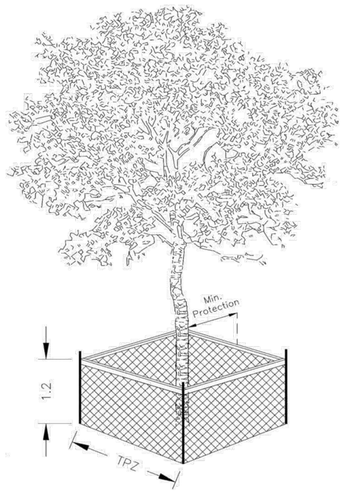
SEAL

No.	REVISIONS	DATE	INITIAL
01	ISSUED FOR REVIEW	05/06/2022	K.G.

Arborist Report
1450 King Road, Burlington
Tree Inventory table - 2

Scale:	Drawn By: S.G.	Drawing No. 03
Date Issued: 05/06/2022	Checked By: K.G.	

Tree Protection and Preservation
Specification No.: SS12A



TREE PROTECTION BARRIER

Detail TP-1 – Tree Protection Detail.

Trunk Diameter (DBH) 2	Minimum Tree Protection Zone (MTPZ) Distances Required 3	Critical Root Zone (CRZ) Distances Required 3&4
< 10 cm	1.8 m	1.8 m
11 - 40 cm	2.4 m	4.0 m
41 - 50 cm	3.0 m	5.0 m
51 - 60 cm	3.6 m	6.0 m
61 - 70 cm	4.2 m	7.0 m
71 - 80 cm	4.8 m	8.0 m
81 - 90 cm	5.4 m	9.0 m
91 - 100+ cm	6.0 m	10.0 m

NOTES:

1 The roots of a tree can extend from the trunk to approximately 2-3 times the distance of the drip line.

2 Diameter at breast height (DBH) is the measurement of tree trunk taken at 1.4 metres above ground.

3 Minimum Tree Protection Zone and Critical Root Zone distances are to be measured from the outside edge of the tree base towards the drip line and may be limited by an existing paved surface, provided the existing paved surface remains intact throughout the construction work and is subject to Section 6 of this specification.

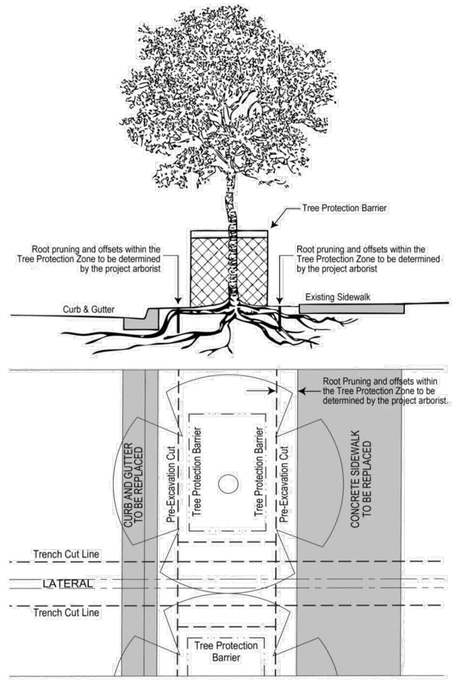
4 Where work is being performed beyond the Minimum Tree Protection Zone but within the Critical Root Zone the works are subject to Section 8 of this specification.

TREE PROTECTION BARRIER

1. The required barrier is a 1.2 metre (4 ft) high orange plastic web snow fencing on 2” x 4” frame. Where orange plastic web snow fencing creates a restriction to sightlines, page wire fencing with reflective tape can be used.
2. Tree protection barriers are to be erected prior to the commencement of any construction or grading activities on the site and are to remain in place throughout the entire duration of the project. The barriers shall be maintained erect and in good repair throughout the duration of construction operations with breaks and unsupported sections repaired immediately. Tree protection may be not be removed prior to the completion of construction without written authorization from the Manager of Urban Forestry or designate.
3. All supports and bracing used to safely secure the barrier should be located outside the MTPZ. All supports and bracing should minimize damage to roots.
4. Where some fill or excavated material must be temporarily located near a MTPZ, a wooden barrier with silt fencing must be used to ensure no material enters the MTPZ.
5. No materials or fill may be stored within the MTPZ.
6. Equipment or vehicles shall not be operated, parked, repaired, or refueled within the MTPZ.
7. No construction activity, grade changes, surface treatment or excavations of any kind is permitted within the MTPZ without written authorization from the Manager of Urban Forestry or designate.
8. A laminated Minimum Tree Protection Zone sign (See Detail TP-3 – Minimum Tree Protection Zone Sign) must be attached to the side of the Tree Protection where it will be visible by persons entering the site. Minimum size must be 10”x14”.

Tree Protection and Preservation
Specification No.: SS12A

Detail TP-2 – Root Pruning Detail



NOTE:
For excavations perpendicular to to the curbing (ie. sidewalk, curbing, water or sewer laterals renewal)

(a) The contractor is to use a trench box to minimize the width of the open cut.
(b) When the lateral replacement is within the Tree Protection Zone of a tree, the contractor is to complete the works using trenchless technologies.

City of Burlington

TREE PROTECTION ZONE (TPZ)

No equipment or vehicles shall be operated, parked, repaired or refueled within the Tree Protection Zone.

No construction activity, grade changes, surface treatment or excavations of any kind is permitted within the Tree Protection Zone.

No materials or fill may be stored within the Tree Protection Zone.

This tree protection barrier must not be removed prior to the completion of construction without written authorization from the City of Burlington, Urban Forestry Department.

For information, contact:
City of Burlington, Development and Infrastructure Division,
905-335-7642.

Notes:

The proponent is to be made aware of the following notes:

1. The Private Tree By-law is applicable to subject properties within the Urban Planning Boundary and the City Public Tree By-law is applicable City-wide. Private trees that are regulated and require removal or injury to facilitate projects works may require a tree permit depending on the timing of project works relative to planning application(s). Please consult with the City at all stages of your project (e.g., demolition) to ensure compliance.
2. A qualified professional (as defined in the City of Burlington's Pre-submission Checklist) is required to be retained to address potential impact on the existing trees on site during excavation operations to ensure no damage to the protected trees or their root systems.
3. The Owner is to be aware of the Migratory Birds Convention Act, 1994. This Act is implemented by Environment Canada and the Owner is to make every effort to avoid removal of vegetation from the period of October 1st and March 31st”.

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DRAFT
NOT FOR CONSTRUCTION

SEAL

No.	REVISIONS	DATE	INITIAL
01	ISSUED FOR REVIEW	05/06/2022	K.G.

Arborist Report
1450 King Road, Burlington
Tree Protection Details

Scale: as shown | Drawn By: S.G. | Drawing No. 04
Date Issued: 05/06/2022 | Checked By: K.G.

Appendix D

Species at Risk Screening Sources

Table A 1. Species at Risk Screening Sources

Screening Resource	Description
Natural Heritage Information Center (NHIC)	The Natural Heritage Information Center (NHIC), operated by the Ontario Ministry of Natural Resources and Forestry, collects, reviews, manages and distributes information on Ontario's biodiversity. Data distributed by the NHIC is used in conservation and natural resource management decision making and was a primary resource for this report. Through the NHIC Make-a-Map tool, data on species, plant communities, wildlife concentration areas and natural areas is made accessible to the public and professionals using generalized 1-kilometer grid units to protect sensitive information. The mapping interface provides current and historical occurrences of SAR within the specified grid unit. The database also identifies environmental designations which provide insight into habitat potential including wetland, areas of natural and scientific interests and woodlands.
Breeding Bird Atlas	The atlas divides the province into 10×10 km squares and then birders find as many breeding species as possible in each square. Atlassers who know birds well by song complete 5-minute "Point Counts", 25 of which are required to provide an index of the abundance of each species in a square. Data from every square are mapped to show the distribution of each species. Point count data from each square show how the relative abundance of each species varies across the province.
eBird	eBird data document bird distribution, abundance, habitat use, and trends through checklist data collected within a simple, scientific framework. Birders enter when, where, and how they went birding, and then fill out a checklist of all the birds seen and heard during the outing. eBird's free mobile app allows offline data collection anywhere in the world, and the website provides many ways to explore and summarize your data and other observations from the global eBird community. eBird hotspots that are within 1 km of the Study Area are selected for species review.
Ontario Moth Atlas	The Ontario Moth Atlas is a project of the Toronto Entomologists' Association. The atlas currently covers about 250 species from 7 of the best-known families. The atlas presently includes 62,000 records. The last update of the atlas was in April 2020. The atlas is updated at least every 3 months. Most atlas data come from iNaturalist records. However, there is some data from Chris Schmidt of Agriculture Canada, the BOLD (Barcode of Life Datasystems) project of the University of Guelph, and from other records submitted directly to the TEA. The atlas uses the same 10×10 km squares at the Breeding Bird Atlas.
Ontario Butterfly Atlas	The Ontario Butterfly Atlas is a project of the Toronto Entomologists' Association (TEA). The TEA has been accumulating records and publishing annual seasonal summaries (Ontario Lepidoptera) for 50 years, with the first edition appearing in 1969. Atlas data comes from eButterfly records, iNaturalist records, BAMONA records, and records submitted directly to the TEA. The atlas uses the same 10×10 km squares at the Breeding Bird Atlas.
i-Naturalist	i-Naturalist is a nature app that helps public identify plants and animals. Using algorithms as well as scientists and taxonomic experts' multiple observations can be identified at a research scale. This data generated by the iNat community can be used in science and conservation. The program actively distributes the data in venues where scientists and land managers can find it. I-Naturalist has a project group for (NHIC) Rare species of Ontario. GRA only records observations with-in 1 km of the Study Area.
Fisheries and Ocean Aquatic Species at Risk Maps	The DFO has compiled critical habitat and distribution data for aquatic species listed under the Species at Risk Act (SARA). The interactive map is intended to provide an overview of the distribution of aquatic species at risk and the presence of their critical habitat within Canadian waters. The official source of information is the Species at Risk Public Registry. Using this map, a 1 km radius circle is outlined around aquatic features located within the Study Area.

Appendix E

Significant Wildlife Habitat Full Assessment

(7E)

Table A 2. Significant Wildlife Habitat Assessment for Ecoregion 7E.

Wildlife Habitat	Candidate SWH ELC Ecosite Codes	Habitat Criteria	Potential In the Study Area	Rationale	Confirmed Defining Criteria= Studies to confirm…
		Seasonal Concentration Areas of Animals			
Waterfowl Stopover and Staging Areas (Terrestrial)	CUM, CUT1 - plus evidence of annual spring flooding within these ecosites *Fields with seasonal flooding and waste grains in certain areas are specific to Tundra Swan	Fields with sheet water during Spring (mid-March to May) • Agricultural fields with waste grain are not SWH unless they have spring sheet water available.	No	No habitat features in the Study Area.	•Any mixed species aggregations of 100+ individuals • the flooded field plus 100-300m radius, dependant on localized site and adjacent land us • Annual Use of Habitat is documented from information sources or field studies •Specific evaluation methods required
Waterfowl Stopover and Staging Areas (Aquatic)	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.	No	No habitat features in the Study Area.	•Aggregations of 100 + of species listed for 7 days, results in > 700 waterfowl use days. •Areas with annual staging for ruddyducks, canvasbacks and redheads. •The combined area of the ELC ecosites and a 100m radius area. •Wetland area and shorelines associated with sites identified within the SWHTG, Appendix K, are significant wildlife habitat. •Annual Use of Habitat is documented from information sources or field studies • Specific evaluation methods required
Shorebird Migratory Stopover Area	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 in May to mid-June and early July to October. • No sewage treatment ponds.	No	Study Area is not along a shoreline.	•Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall 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. •Annual Use of Habitat is documented from information sources or field studies • Specific evaluation methods required
Raptor Wintering Area	Combo of one of each Community Series from Forest (FOD,FOM,FOC) and Upland (CUM,CUT,CUS,CUW). Bald Eagle: Forest on shoreline area adjacent to large rivers and lakes.	A combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. • Need to be > 20 ha. •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 and large trees and snags available for roosting .	No	Although a red-tailed hawk was observed incidentally, the Study Area does not meet the habitat size criteria.	•One or more Short-eared Owls or; •One of more Bald Eagles or;• At least 10 individuals and two of the listed hawk/owl species. •To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. •for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area.• Specific evaluation methods required

Wildlife Habitat	Candidate SWH ELC Ecosite Codes	Habitat Criteria	Potential In the Study Area	Rationale	Confirmed Defining Criteria= Studies to confirm...
Bat Hibernacula	CCR1,CCR2,CCA1,CCA2. * buildings are not to be considered SWH	May be found in caves, mine shafts, underground foundations and Karsts. •Active mine sites are not considered SWH.	No	No habitat features in the Study Area.	•All sites with confirmed hibernating bats are SWH. • area includes 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.). • Specific survey methods required
Bat Maternity Colonies	All Ecosites in: FOD,FOM,SWD,SWM.	Maternity colonies can be found in tree cavities, vegetation and often in building. *Building are not considered SWH. • Not found in caves or mines in ON. •Located in Mature Deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees. •Prefer snags in early stages of decay (class 1-3 or class 1 or class 2). •Silver-haired Bats prefer older mixed or deciduous forests with at least 21 snags/ha.	No	The FODM2-2 community contains shagbark hickory and white oaks that could potentially provide suitable roosting habitat, however the majority of trees located along the edge are < 25 cm dbh. This feature is being protected with a 10m setback.	•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. • Specific evaluation methods required
Turtle Wintering Areas	Snapping and Midland Painted: SW,MA,OA,SA and FEO/BOO Series. Northern Map: Open water areas such as deeper rivers or streams and lakes.	Wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. •Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen. •Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH.	No	No habitat features in the Study Area.	•Presence of 5 over-wintering Midland Painted Turtles is significant, •One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant • The mapped ELC ecosite area with the over wintering turtles is the SWH. • If the hibernaculum in the Study Area is within a stream or river, the deep water pool where the turtles are over wintering is the SWH. • Search for congregations in Basking Areas in spring and fall.
Reptile Hibernaculum	Any ecosite other that very wet. •Talus, Rock Barren, Crevice, Cave, Alvar may be directly related. •Observations of congregations in spring or fall is good indicator.	Sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH.• Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. •Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover.	No	No habitat features in the Study Area.	•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 (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct).• If there are Special Concern Species present, then site is SWH. •The feature in which the hibernacula is located plus a 30 m radius area is the SWH.• Hibernacula are used annually, often by the same individuals (strong site fidelity) and other life processes often take place near by
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns. CUM1,CUS1,BLS1,CLO1,CLT1,CUT1,BLO1,BLT1,CLS1.	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 or licenced Mineral Aggregate Operation.	No	No habitat features in the Study Area.	•Presence of 1 or more nesting sites with 8 or 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

Wildlife Habitat	Candidate SWH ELC Ecosite Codes	Habitat Criteria	Potential In the Study Area	Rationale	Confirmed Defining Criteria= Studies to confirm...
					to be completed during the breeding season. • Specific evaluation methods required
Colonially-Nesting Bird Breeding Habitat (Tree/Shrub)	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.	No	No habitat features in the Study Area.	•Presence of 2 or more active nests of Great Blue Heron or other listed species. •The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH. •Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells.
Colonially-Nesting Bird Breeding Habitat (Ground)	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6; MAS1 – 3; CUM,CUT,CUS	Nesting colonies on islands or peninsulas associated with open water or in marshy areas. Brewers Blackbird colonies found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands.	No	No habitat features in the Study Area.	•Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. •Presence of 5 or more pairs for Brewer's Blackbird. •Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. •The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH. •Studies would be done during May/June when actively nesting. • Specfic evaluation methods required
Migratory Butterfly Stopover Areas	Combo of one of each Field (CUM, CUT, CUS) and Forest (FOC, FOD,FOM,CUP).	Minimum 10 ha in size with combo of field and forest located within 5km of Lake Erie or Lake Ontario. •Should not be disturbed. • Field/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. •Should provide protection from the elements, often spits of land or areas with the shortest distance to cross the Great Lakes.	No	Monarch butterflies were observed in mid September; however, the field does not meet size requirement. Efforts will be made to plant native pollinator and host plants.	•Presence of Monarch Use Days (MUD) during Fall migration (Aug/Oct) •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.
Landbird Migratory Stopover Areas	All Ecosites within: FOC,FOM,FOD,SWC,SWM,SWD	Woodlots >5ha in size and within 5km of Lake Erie and Lake Ontario. • If woodlands are rare in area, smaller size can be considered. • If multiple woodlands located along shore line, those 2km from shoreline are more significant. • Sites have a variety of habitats; forest, grassland and wetland complexes. •The largest sites are more significant. •Woodlots and forest fragments are important habitats to migrating birds, these features located along the	No	The Study Area is within 5 km of Lake Ontario but the adjacent woodland is not greater than 5 ha. Suitable woodlands are likely located more north and west in the Sassafras Wood.	•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. •Studies should be completed during spring (Mar to May) and fall (Aug to Oct) migration using standardized assessment techniques. • Specific evaluation methods required

Wildlife Habitat	Candidate SWH ELC Ecosite Codes	Habitat Criteria	Potential In the Study Area	Rationale	Confirmed Defining Criteria= Studies to confirm...
		shore and located within 5km of Lake Erie and Lake Ontario are Candidate SWH.			
Deer Winter Congregation Areas	All forested ecosites within: FOC,FOM,FOD,SWC,SWM,SWD + conifer plantations much smaller than 50 ha may be used.	Woodlots >100 ha in size or if large woodlots are rare in a planning area woodlots >50ha. • 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.	No	No habitat features in the Study Area but there was some evidence of deer activity.	•Will be mapped by MNRF. • All woodlots exceeding the criteria are significant unless determined to be not by the MNRF. •Studies to be completed during winter when >20 cm of snow is on the ground, using aerial survey or pellet count.
		Rare Vegetation Communities			
Cliffs and Talus Slopes	Any Ecosite within: TAO CLO TAS CLS TAT 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.	No	No habitat features in the Study Area.	•Confirm any ELC Vegetation Type for Cliffs or Talus Slopes
Sand Barren	SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicketlike (SBS1), or more closed and treed (SBT1). Tree cover always < 60%	A sand barren area >0.5ha in size. • 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%.	No	No habitat features in the Study Area.	•Confirm any ELC Vegetation Type for Sand Barrens. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.
Alvar	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2, *Five Alvar Indicator Species:* 1) Carex crawei 2) Panicum philadelphicum 3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum	An Alvar site > 0.5 ha in size, only known sites are found in the western islands of Lake Erie. • 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 animals species. • Vegetation cover varies from patchy to barren with a less than 60% tree cover.	No	No habitat features in the Study Area.	•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.
Old Growth Forest	FOD FOC FOM SWD SWC SWM	Woodland area is >0.5ha • Characterized by heavy mortality or turnover of overstorey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy	No	No habitat features In the Study Area.	•If dominant trees species of the area 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

Wildlife Habitat	ELC Ecosite Codes	Candidate SWH Habitat Criteria	Potential In the Study Area	Rationale	Confirmed Defining Criteria= Studies to confirm...
		and an abundance of snags and downed woody debris.			forestry activities • The area of forest ecosites combined or an eco-element within an ecosite that contain the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest forest area containing the old growth characteristics
Savannah	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. • No minimum size to site. • Site must be restored or a natural site. *Remnant sites such as railway right of ways are not considered to be SWH. • Remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario)	No	No habitat features In the Study Area.	•Field studies confirm one or more of the Savannah indicator species found in Appendix N, Ecoregion 7E of the SWHTG, OMNR (2000). •Entire area of the ELC Ecosite is SWH. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic species).
Tallgrass Prairie	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. •An open Tallgrass Prairie habitat has < 25% tree cover. •No minimum size to site. •Site must be restored or a natural site. *Remnant sites such as railway right of ways are not considered to be SWH.	No	No habitat features in the Study Area.	•Field studies confirm one or more of the Prairie indicator species in Appendix N, Ecoregion 7E of The SWHTG, OMNR (2000). •Area of the ELC Ecosite is the SWH. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.)
Other Rare Vegetation Communities	See the Significant Wildlife Habitat Technical Guide (OMNR, 200), Appendix M for Provincially Rare S1,S2 and S3 ELC Vegetation Types.	May include beaches, fens, forest, marsh, barrens, dunes and swamps. See OMNRF/NHIC for up to date list of rare vegetation communities.	No	No habitat features in the Study Area, vegetation is disturbed.	•Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG, OMNR (2000). •Area of the ELC Vegetation Type polygon is the SWH.
		Specialized Habitat for Wildlife			
Waterfowl Nesting Area	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4. * Note: includes adjacency to Provincially Significant Wetlands	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. •Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. • Upland areas should be at least 120 m wide so	No	No habitat features in the Study Area.	•Presence of 3 or more nesting pairs for listed species excluding Mallards OR •Presence of 10 or more nesting pairs for listed species including Mallards. •Any active nesting site of an American Black Duck is considered significant. •Nesting studies should be completed during the spring breeding season (April - June). •Specific evaluation methods required •A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting

Wildlife Habitat	Candidate SWH ELC Ecosite Codes	Habitat Criteria	Potential In the Study Area	Rationale	Confirmed Defining Criteria= Studies to confirm...
		that predators such as racoons, skunks, and foxes have difficulty finding nests.			habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	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. *Nests located on man-made objects are not to be included as SWH. •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.	No	The FODM2-2 adjacent to the Study Area is likely not close enough to water and there was no observations of nests or birds.	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. *with additional requirements•For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. * with additional requirements•To be significant a site must be used annually. •When found inactive, the site must be known to be inactive for > 3 years or suspected of not being used for >5 years before being considered not significant. •Observational studies to determine nest site use, perching sites and foraging areas need to be done from early March to mid August. • Specific evaluation methods required
Woodland Raptor Nesting Habitat	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 >4ha of interior habitat. • Interior habitat determined with a 200m buffer. •Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.	No	The adjacent FODM2-2 does not meet SWH size requirement nor does it contain interior habitat.	Presence of 1 or more active nests from species list is considered significant. •Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH. (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) •Barred Owl – A 200m radius around the nest is the SWH. •Broad-winged Hawk and Coopers Hawk,– A 100m radius around the nest is the SWH. •Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. • Conduct field investigations from early 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.

Wildlife Habitat	Candidate SWH ELC Ecosite Codes	Habitat Criteria	Potential In the Study Area	Rationale	Confirmed Defining Criteria= Studies to confirm...
Turtle Nesting Areas	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. •For an area to function as a turtle nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. *Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH.• Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.	No	No habitat features in the Study Area.	Presence of:- 5 or more nesting Midland Painted Turtles OR - One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. •The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH.• Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. •Field investigations should be conducted in prime nesting season typically late spring to early summer. •Observational studies observing the turtles nesting is a recommended method.
Seeps and Springs	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.	No	No habitat features in the Study Area.	Presence of a site with 2 or more seeps/springs should be considered SWH. •The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. •The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat.
Amphibian Breeding Habitat (Woodland)	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) >500m^2 (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). • Some small wetlands may not be mapped and may be important breeding pools for amphibians. •Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat.	No	FODM2-2 woodland does not contain the presence of a wetland, pond or woodland pool. Amphibian surveys were not completed.	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 combo of observational and call count surveys required during the spring (March-June) . •The habitat is the wetland area plus a 230m radius of woodland area. • If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat.
Amphibian Breeding Habitat (Wetlands)	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 >500m^2 (about 25m diameter), supporting high species diversity are significant; •some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. •Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation.	No	No habitat features in the Study Area. Amphibian surveys were not completed.	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 combo of observational and call count surveys will be required during the spring (March-June).

Wildlife Habitat	Candidate SWH ELC Ecosite Codes	Habitat Criteria	Potential In the Study Area	Rationale	Confirmed Defining Criteria= Studies to confirm...
Woodland Area-Sensitive Bird Breeding Habitat	All Ecosites withing: FOC FOM FOD SWC SWM SWD	Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. •Interior forest habitat is at least 200 m from forest edge habitat.	No	FODM2-2 woodland does not provide interior habitat for sensitive breeding birds.	•If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered. Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. *any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. • Conduct field investigations in spring and early summer. • Specific evaluation methods required
Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)					
Marsh Bird Breeding Habitat	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..	No	No habitat features in the Study Area.	Presence of: - 5 or more nesting pairs of Sedge Wren or Marsh Wren or -breeding by any combination of 4 or more of the listed species. •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. • Specific evaluation methods required
Open Country Bird Breeding Habitat	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30 ha. •Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years). •Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. •The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species.	No	No habitat features in the Study Area.	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. • Specific evaluation methods required.
Shrub/Early Successional Bird Breeding Habitat	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 •Patches of shrub ecosites can be complexed into a larger habitat for some bird species.	Large field areas succeeding to shrub and thicket habitats>10ha in size. •Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no rowcropping, haying or livestock pasturing in the last 5 years). •Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. •Shrub and thicket habitat sites considered	No	There is a shrub thicket south of the woodland close to north service road, however, is does not meet SWH size requirements and is dominated by invasive shrubs.	Presence of nesting or breeding of - 1 of the indicator species and at least 2 of the common species. •A habitat with breeding Yellowbreasted Chat or Golden-winged Warbler is to be considered as SWH. •The area of the SWH is the contiguous ELC ecosite field/thicket area. •Conduct field investigations of the most likely areas in spring and early summer when birds are singing and

Wildlife Habitat	Candidate SWH ELC Ecosite Codes	Habitat Criteria	Potential In the Study Area	Rationale	Confirmed Defining Criteria= Studies to confirm...
		significant should have a history of longevity, either abandoned fields or pasturelands.			defending their territories. • Specific evaluation methods required
Terrestrial Crayfish	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1- with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. •Usually the soil is not too moist so that the tunnel is well formed. •Can often be found far from water.	No	No habitat features in the Study Area.	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.
Special Concern and Rare Wildlife Species	All plant and animal element occurrences (EO) within a 1 or 10km grid.	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	N/A	See SAR Screening Section	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.
Animal Movement Corridors					
Amphibian Movement Corridors	Corridors may be found in all ecosites associated with water.	Corridors will be determined based on identifying the significant breeding habitat for these species. Movement corridors between breeding habitat and summer habitat. Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from this Schedule.	NA	No habitat features in the Study Area. Amphibian surveys were not completed.	Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant. Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20m. Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat.
Exceptions for EcoRegion 7E					

Wildlife Habitat	ELC Ecosite Codes	Candidate SWH Habitat Criteria	Potential In the Study Area	Rationale	Confirmed Defining Criteria= Studies to confirm...
Bat Migratory Stopover Area	No specific ELC types.	Long distance migratory bats typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migration may concentrate these species of bats at stopover areas.	No	No habitat features in the Study Area.	Only confirmed site is Long Point. Confirmation criteria and habitat areas are still being determined.