BEACON ENVIRONMENTAL

GUIDING SOLUTIONS IN THE NATURAL ENVIRONMENT

Scoped Environmental Impact Assessment (Revised)

1300, 1316, 1326, 1342, 1350 and 1354 Bronte Road, Town of Oakville

Prepared For:

Bronte River Limited Partnership
Eaglewood Communities Inc.

Prepared By:

Beacon Environmental Limited

Date: **March 2023**

Project: **220262 and 221306**

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Report Versions Issued

Version	Date	Revisions
1.	January 2022	
2.	February 2022	Revised Site Plan for Eaglewood only
3.	March 2023	Address Agency Comments; Revised Site Plans

1. Introduction

Beacon Environmental Limited (Beacon) was retained by Bronte River Limited Partnership and Eaglewood Communities Inc. to prepare a Scoped Environmental Impact Assessment (EIA) in support of two separate applications to redevelop the properties located at 1300, 1316, 1326, 1342, 1350 and 1354 Bronte Road, Oakville, Ontario, herein referred to as Subject Lands (**Figure 1**).

The Subject Lands include 12.5 hectares (ha) of land located west of Bronte Road, south of Upper Middle Road, north of the Queen Elizabeth Way and east of the Bronte Creek valleylands. The northern half of the Subject Lands support existing development and the southern half supports woodlands and valleylands. The existing developed areas are comprised of several properties that support individual residences, outbuildings, landscaped areas (lawns, ornamental plantings and artificial ponds). It is proposed that these existing developed areas be redeveloped to create a single community comprised of a mix of residential townhouses, detached homes, and a six-storey residential building.

The developed portions of the Subject Lands are designated by the Town of Oakville as Low and Medium Density Residential and Natural Area. The undeveloped portions of the Subject Lands are designated as Greenbelt.

The developed portions of the Subject Lands are surrounded by environmentally designated lands including the Greenbelt Protected Countryside, Bronte Creek Provincial Park and components of the Region of Halton (Region) Natural Heritage System (**Figure 2**). These environmentally designated areas correspond with the Bronte Creek valleylands, woodlands, buffers and adjacent undeveloped lands to the north that form part of the Bronte Creek Provincial Park.

As the Subject Lands overlap in part with the Regional Natural Heritage System (RNHS) and lands identified as Greenbelt Natural Area by the Town of Oakville, an EIA is required to assess the potential impacts of the redevelopment proposal on any significant natural heritage features and functions. Additionally, due to proximity to the Bronte Creek valleylands, portions of the Subject Lands fall within the regulation limits of Conservation Halton (CH) and are subject to CH development policies and permitting (**Figure 3**). Note that the CH's regulation mapping, which is provided in this report, is approximate and does not represent finalized hazard limits or constraints that have been further refined through the site-specific technical studies.

Because the proposed redevelopment will be limited primarily to portions of the Subject Lands that are already developed and will not encroach into any adjacent key natural heritage features, it was proposed that the EIA could be scoped. Additionally, previous environmental studies were completed on the Subject Lands between 2012–2015 as part of the Merton Tertiary Planning process which established the current land use designations and zoning (Dance Environmental 2013).

Draft Terms of Reference for a Scoped EIA were submitted to the Town of Oakville (Town) on July 9, 2021. Following a site walk with CH and the Town (August 18, 2021), and a site walk with the Region (September 7, 2021), comments on the Terms of Reference were received from the Town (October 15, 2021) and CH (October 12, 2021). Responses to the comments as well as Revised EIA Terms of Reference were submitted to the Town, CH and Region on October 25, 2021. These are included in **Appendix A**.

A Scoped EIA report in support of the proposed redevelopment was previously submitted in January 2022. Since that time, the proposed redevelopment plans have been revised. The current EIA report has been updated to incorporate the revised plan and address comments received from agencies.

Additionally, a site walk with the Town and the Region was conducted on March 24, 2023, to discuss some comments received, namely the natural channel design and erosion protection works of the Bronte Creek tributary and the presence of seeps.

1.1 Study Team

This EIA report was prepared using an integrated approach with input from a multi-disciplinary team comprised of experts in the fields of land use planning, ecology, hydrology, hydrogeology, and fluvial geomorphology.

A list of Study Team members, their qualifications, and role in the project is provided in **Table 1**.

Table 1. Composition of Study Team, Key Roles and Reports Provided

Firm	Individuals	Title - Qualifications	Key Role and Reporting
Beacon Environmental Limited	Ken Ursic	M.Sc. / Senior Ecologist	Project Management *EIA – Reviewer, Author*
	Todd Smith	B.Sc., M.L.A., OALA / Senior Landscape Architect	*EIA – Reviewer*
	James Seery	B.Sc., CERPIT / Ecologist, Certified Arborist	*EIA – Co-Author*
	Devon Fowler	B.Sc., Dipl. Eco. Restoration / Aquatic Ecologist	Fisheries *EIA – Author*
	Mark Dorriesfield	B.Sc., Cert. GIS / Ecologist	Breeding Bird Surveys *EIA – Author*
	Dan Westerhof	B.Sc., MES / Terrestrial Ecologist, Certified Arborist	Vegetation Survey *EIA - Author*
GEO Morphix Ltd.	Paul Villard	Ph.D., P.Geo., EP., CERP., CAN-CISEC / Director, Principal Geomorphologist	Conceptual Channel Design and Erosion Assessment Report
	John Tweedie	M.Sc / Environmental Scientist	Conceptual Channel Design and Erosion Assessment Report
Urbantech Consulting	Steve A. Hader	P.Eng. / Senior Project Manager	Functional Servicing Report
	Janna Ormond	B.Eng., EIT / Water Resources Designer	Functional Servicing Report
	Andrew Fata	P.Eng.	
DS Consultants Ltd.	Martin Gedeon	M.Sc., P.Geo. / Vice President	Project Management
Terraprobe Inc.	Madan Talukdar	B.A.Sc., P.Eng. / Associate	Geotechnical Investigator
Kuntz Forestry Consulting Inc.	Peter Kuntz	B.Sc.F., R.P.F., BNA, TRAQ, TPAQ/ President	Tree Inventory
Jennifer Lawrence and Associates Inc.	Jennifer Lawrence	Principal, B.E.S., MCIP, RPP / Environmental Planner	Project Management
Korsiak Urban Planning	Terry Korsiak	Principal – M.A., MCIP, RPP	Planning
	Alison Bucking	Planner – B.E.S., RPP	

1.2 Study Area

As the EIA adopts an integrated multi-disciplinary study approach that considers not only natural heritage resources, but also the interrelationships with the physical environment, the Study Area limits vary based on the subject of investigation. For example, when characterizing surface water resources, the Study Area boundaries extend to the limits of the catchments, however when characterizing natural heritage resources, the Study Area includes lands within 120 metres (m) of the Subject Lands that were screened to confirm the presence of significant natural heritage resources (**Figure 1**).

2. Environmental Regulatory Framework

One of the objectives of an EIA is to identify how the proposal complies with applicable environmental protection legislation, regulations, and policies. A framework for evaluating compliance is provided in **Table 2** which provides a general overview of key federal, provincial and local environmental policies, legislation, and regulations that may be relevant to the project and should be considered. An evaluation of conformity using this framework is presented in **Section 10**.

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Table 2. Regulatory Framework for Environmental Protection

Level of Government	Act/Regulation/ Policy/Guideline	Type	Purpose	Relevance to the Subject Lands
Federal	*Fisheries Act* (1985) and Ontario Fisheries Regulations	Act and Regulation	To ensure the conservation and protection of fish and fish habitat.	Fish habitat is present in the Study Area. Fish and fish habitat are protected under the federal *Fisheries Act,* which was last amended on August 28, 2019, and is administered by the Fish and Fish Habitat Protection Program within Fisheries and Oceans Canada (also known as "DFO"). The protection provisions of the *Fisheries Act* apply to all fish and fish habitat throughout Canada and the Act sets out authorities for the regulation of works, undertakings or activities that risk harming fish and fish habitat. Specifically, the protection provisions include two core prohibitions. One is against persons carrying on works, undertakings or activities that result in the "death of fish by means other than fishing" (subsection 34.4[1]), and the other is "harmful alteration, disruption or destruction of fish habitat" (subsection 35[1]; also referred to as "HADD"). The protection provisions are applied in conjunction with other applicable federal laws and regulations related to aquatic ecosystems, including the federal *Species at Risk Act*. Proponents are responsible for planning and implementing works, undertakings or activities in a manner that avoids harmful impacts, specifically the death of fish and HADD of fish habitat. Where proponents believe that their work, undertaking or activity will result in harmful impacts to fish and fish habitat, DFO will work with proponents to assess the risk of their proposed work, undertaking or activity resulting in the death of fish or HADD of fish habitat and provide advice and guidance on how to comply with the *Fisheries Act*.
	Migratory Birds Convention Act (1994)	Act	To protect listed migratory bird species and their nests.	Breeding habitat for listed migratory birds is present on the Subject Lands. To comply with this legislation, activities that can potentially impact breeding birds must be avoided. Compliance with the Act will need to be demonstrated as a condition of the development application approval and prior to commencing site preparation, earthworks and construction.
	Species at Risk Act (2002)	Act	To protect the habitats of federally listed species at risk.	Habitat for federally listed Species at Risk may be present on the Subject Lands. Note that the *Species at Risk Act* applies primarily to lands under federal jurisdiction. Outside of federal lands, the *Species at Risk Act* prohibitions apply only to aquatic species and migratory birds that are also listed in the *Migratory Birds Convention Act*. This is applicable to the Subject Lands as nesting birds are present.
Provincial	*Conservation Authorities Act* (1990) and Ontario Regulation 162/06	Act and Regulation	To provide for the organization and delivery of programs and services that further the conservation, restoration, development and management of natural resources in watersheds in Ontario.	The Subject Lands and Study Area contain lands that are regulated by Conservation Halton pursuant to Ontario Regulation 162/06, which is a regulation made under the *Conservation Authorities Act*. Regulated areas include the erosion hazards (i.e., stable top of bank) associated with the main Bronte Creek valley and tributary plus an additional 15m regulatory allowance. Work within Conservation Halton's regulated area requires a Permit from that agency. In addition to their regulatory role, Conservation Halton also provides peer review advice to the Region of Halton through a Memorandum of Understanding on various natural heritage and natural hazard elements of the PPS.
	Endangered Species Act (2007) and Ontario Regulations 242/08 and 830/21	Act and Regulations	This Act provides protection to the habitats of endangered and threatened species in Ontario.	Habitat for provincially listed Species at Risk may be present adjacent to the Subject Lands within the Bronte Creek valleylands. Where habitat exists for threatened or endangered species, such habitats are to be protected in accordance with the provisions of the Act and its regulations (Ontario Regulations 242/08 and 830/21). If a proposed activity has the potential to impact the habitats of threatened or endangered species, then the activity must be authorized by Ministry of Environment, Conservation and Parks (MECP). In some cases, a permit may be required to undertake an activity, while in other cases a Notice of Activity may be registered with the MECP. The Regulation provides exemptions for some species and certain types of activities.
	Fish and Wildlife Conservation Act (1997)	Act and Regulation	The *Fish and Wildlife Conservation Act* enables the Ministry of Natural Resources and Forestry (MNRF) to provide sound management of the province's fish and wildlife.	The *Fish and Wildlife Conservation Act* protects the nest or eggs of birds not already protected on the *Migratory Birds Convention Act* with some exceptions.
	Greenbelt Act (2005) and Greenbelt Plan (2017)	Act and Provincial Plan	The Greenbelt Plan identifies where development may and may not occur in order to provide permanent protection to the agricultural land base and the ecological and hydrological features, areas and functions occurring on this landscape. The Greenbelt Plan includes lands within the Greenbelt Plan area and builds upon the ecological protections provided by the Niagara Escarpment Plan	Schedule 1 (*Greenbelt Area*) confirms that portions of the Subject Lands are located within the Greenbelt Plan Area and are designated as Protected Countryside. The lands on the south and west sides of the Subject Lands, and the lands surrounding the Subject Property, overlap with portions of the Greenbelt Plan Area that are designated as Protected Countryside and subject to the policies of the Greenbelt Plan (**Figure 2**). These policies limit the types of land uses that are permitted within the Protected Countryside.

Level of Government	Act/Regulation/ Policy/Guideline	Type	Purpose	Relevance to the Subject Lands
			(NEP) and the Oak Ridges Moraine Conservation Plan (ORMCP). The Greenbelt Plan, together with the Growth Plan, the NEP and the ORMCP, builds on the Provincial Policy Statement (PPS) to establish a land use planning framework for the Greater Golden Horseshoe that supports a thriving economy, a clean and healthy environment and social equity.	*3.2.5.1 - Development or site alteration is not permitted in key hydrologic features and key natural heritage features within the Natural Heritage System, including any associated vegetation protection zone, with the exception of:* *a. Forest, fish and wildlife management;* *b. Conservation and flood or erosion control projects, but only if they have been demonstrated to be necessary in the public interest and after all alternatives have been considered; or* *c. Infrastructure, aggregate, recreational, shoreline and existing uses, as described by and subject to the policies of section 4.*
	Planning Act (1990) and Provincial Policy Statement (2020)	Act and Policy	The Provincial Policy Statement (PPS) provides policy direction to municipalities on matters of provincial interest as they relate to land use planning and development. The PPS provides for appropriate land use planning and development while protecting Ontario's natural heritage and water resources and managing impacts of natural hazards.	All land use planning in Ontario is required to be consistent with the policies of the PPS. The PPS is to be read in its entirety however, for the purpose of this EIA, the following policies are the focus: • Section 2.1 - Natural Heritage (Policies 2.1.1 - 2.1.9); • Section 2.2 – Water (Policies 2.2.1-2.2.2); and • Section 3.1 - Natural Hazards (Policies 3.1.1-3.1.8).
	Natural Heritage Reference Manual (2010)	Guideline	This manual provides guidance for implementing the natural heritage policies of the Provincial Policy Statement.	Natural heritage features as described under Section 2.1 of the PPS are located within the Subject Lands. The protection of significant features within an NHS will need to be considered in the proposed site alteration.
	Significant Wildlife Habitat Criteria for Ecoregion 7E (2015)	Guideline	Provides the recommended criteria for identifying Significant Wildlife Habitat (SWH) within Ecoregion 7E.	SWH has been identified as one of the natural heritage feature areas under the Provincial Policy Statement. Tables 1.1 through 1.4 within the Schedules provide guidance for SWH designation for the four categories of SWH outlined in the Significant Wildlife Habitat Technical Guide and its Appendices, while Table 1.5 contains and provides descriptions for exceptions criteria for ecoregional SWH which will be identified at an ecodistrict scale. The EIA will assess the Subject Lands for potential SWH.
	Significant Wildlife Habitat Technical Guide (2000)	Guideline	This guide supports the Natural Heritage Reference Manual. It provides detailed information on the identification, description, and prioritization of significant wildlife habitat.	Planning authorities require proponents to use the guide when completing an ecological site assessment for SWH. This resource will be used to assess SWH on the Subject Lands as part of the EIA.
	Ontario Planning and Development Act (1994) and Parkway Belt West Plan (1978)	Act and Provincial Plan	The Parkway Belt West Plan (PBWP) was implemented in 1978 for the purposes of planning a multipurpose utility corridor, urban separator and linked open space system in the western GTA. A consolidated version of the PBWP was prepared in 2008, which incorporates numerous previous amendments.	In 2019, the developable limits of 1300, 1316, 1326 and 1342 Bronte Road were all removed from the PBWP through Amendment 182. In 2022, 1350 Bronte Road was removed from the PBWP. The woodlot remains within the limits of the PBWP. The woodlot is designated 'Public Open Space and Buffer Areas' which permits public, open space and linear facility uses.
Regional	Region of Halton Official Plan (2018)	Policy	The Halton Region Official Plan is made under the *Planning Act* (1990) and includes policies related to natural heritage systems, water management, servicing, soil erosion / contamination, and trees. It identifies a Natural Heritage System (NHS) that consists of both the Greenbelt NHS and the Regional NHS.	Currently, Map 1 of the Regional Official Plan identifies portions of the Subject Lands as Regional NHS. Additionally, the Subject Lands and areas adjacent to it are shown as overlaying Greenbelt Plan Protected Countryside Boundary. One of the objectives of the EIA is to evaluate features that may qualify as components of the Regional NHS System, to identify which of these are to be included within the future NHS and to demonstrate how the proposed site alteration accommodates the NHS and demonstrates no negative impacts.
Municipal	Town of Oakville Official Plan (2021 Consolidation)	Policy	The Town of Oakville Official Plan (2021 Consolidation) is made under the *Planning Act* (1990) and provides direction as to the land use within the Town. Section 27.3.8 of the Plan contains area-specific policies applicable to the Subject Lands	Like the Region of Halton NHS, the Town of Oakville has a Natural Heritage System. Schedule A1 shows the municipal NHS which is composed of a "*linked system of natural areas including natural features, hazard lands, buffers and linkages*". One of the objectives of the EIA is to evaluate features that may qualify as components of the municipal natural heritage system, to identify which of these are to be included within the refined NHS and to demonstrate how the proposed site alteration accommodate the NHS and demonstrates no negative impacts.
Conservation Authority	Policies and Guidelines for the Administration of Ontario Regulation 162/06 and Land Use Planning Policy Document (Conservation Halton 2020)	Policy / Guideline	These policies relate to how Conservation Halton manages its watersheds and regulates activities within areas under its jurisdiction as well as land use planning.	Portions of the Subject Lands fall within the regulation limits of Conservation Halton and these policies and guidelines provide direction to land use planning within regulated areas to ensure that land use planning and site alteration are consistent with their regulation and Provincial Policy.

3. Methodology

3.1 Background Review

To develop an understanding of past and current conditions, all available background information related to the natural heritage resources on the Subject Lands was obtained and reviewed as outlined in the EIA TOR. This included but was not limited to the following:

- Ministry of Natural Resources' Natural Heritage Information Centre (NHIC) rare species database (accessed October 2021);
- MECP Response to Species at Risk Screening Request (March 2021);
- Functional Servicing Report (Urbantech 2023);
- Geotechnical Slope Stability and Streambank Erosion Analysis 1300 Bronte Road, Oakville Ontario (Terraprobe 2016);
- Geotechnical Slope Stability and Streambank Erosion Study Long Term Stable Slope Crest Update 1300 Bronte Road, Oakville Ontario (Terraprobe 2023);
- Preliminary Geotechnical Investigation Proposed Residential Development 1300–1350 Bronte Road Oakville Ontario (DS Consultants 2023a);
- Hydrogeological Investigation: 1300, 1316, 1326, 1342, and 1350 Bronte Road, Oakville, Ontario (DS Consultants 2023b);
- Tree Inventory and Preservation Plan 1300–1350 Bronte Road Oakville Ontario (Kuntz Forestry Consulting 2023);
- Phase 2 Environmental Impact Study Merton Tertiary Planning Study Town of Oakville, Ontario (Beacon Environmental 2014);
- Enns Property 2013 Spring and Summer Inventory Results (Dance Environmental Inc. 2013);
- Enns Property 2014 and 2015 Inventory Results (Dance Environmental Inc. 2015);
- Merton Tertiary Plan Enns Property (Dance Environmental 2013);
- Halton Natural Areas Inventory (Dwyer 2006);
- Halton Region Environmentally Sensitive Areas Consolidation Report (Halton Region and North-South Environmental 2005); and
- Historical and current aerial photography and topographic mapping.

3.2 Field Investigations

3.2.1 Aquatic Habitat Assessment

Aquatic habitat in the Study Area is limited to the Bronte Creek adjacent to and outside of the Subject Lands, the Bronte Creek Tributary (BCT-1) on and adjacent to the Subject Lands, and the two artificial waterbodies (i.e., private ponds). A habitat assessment of Bronte Creek was not completed as it is distant to the proposed re-development area. An assessment of BCT-1 and the two artificial waterbodies was however completed by Beacon Environmental aquatic ecologists on June 7, 2021.

The aquatic habitat assessment followed a modified version of the Rapid Assessment Methodology as described in Section 4, Module 4 of the Ontario Stream Assessment Protocol (OSAP; Stanfield *et al*.,

2010), and involved walking around the waterbodies, following BCT-1 downstream to its confluence with the Bronte Creek and collecting information on the following aquatic habitat characteristics (where applicable):

- Stream morphology, runs, pools, riffles;
- Channel width and depth profile, bank height, bank stability;
- Substrate types and distribution;
- Seepage areas;
- Dams and obstructions;
- Riparian and in-stream cover type and extent;
- Floodplain vegetation;
- Wetland and pond areas; and
- Side channels and floodplain.

Representative photographs were also taken at the time of the assessment.

3.2.2 Ecological Land Classification and Flora

Ecological communities and flora within the Study Area have been well documented and mapped through past investigations completed by Dance Environmental on June 8, June 10, and September 20, 2012. As it has been close to a decade since these communities were last studied, Beacon conducted supplemental surveys on the Subject Lands on May 25, 2021, June 15, 2021, August 18, 2021, and September 30, 2022, to confirm community classifications, boundaries, and to document flora. Additional refinements to ecological community boundaries in the Bronte Creek valleylands on March 17, 2023, while confirming and mapping seepage areas.

Ecological communities associated with the Bronte Creek Provincial Park and distant from the area of proposed development and site alteration were subject to desktop review only.

All ecological communities in the Study Area are classified and mapped according to the *Ecological Land Classification System for Southern Ontario* (Lee *et al*. 1998).

A checklist of all vascular plant species observed from the Subject Lands, from prior studies as well as from the more recent surveys, has been compiled along with their regional and provincial status.

3.2.3 Anuran Surveys

The amphibian communities associated with the Subject Lands have been well documented through past surveys completed by Dance Environmental. Anuran (frog and toad) surveys were conducted by Dance Environmental in May 2013 in accordance with the Bird Studies Canada Marsh Monitoring Program Guidelines (Bird Studies Canada 2008). Surveys were conducted between a half hour before sunset and midnight (Dance Environmental 2013). Incidental anuran observations were also noted during other fieldwork (Dance Environmental 2013).

Beacon repeated the surveys in 2021. The surveys were completed using the standard survey protocols of the Marsh Monitoring Program (Bird Studies Canada 2008). Surveys were conducted on the evenings of April 5, May 25, and June 23, 2021, from two survey locations. The Subject Lands were visited at

least a half hour after sunset during suitable weather conditions to listen for calling frogs and toads. Survey details are included in **Table 3.**

Table 3. Anuran Survey Details

Date	Time of Survey	Weather Conditions
April 5, 2021	22:00 - 22:15	8°C, wind Beaufort 0, cloud 30%, no precipitation
May 25, 2021	23:00 - 23:15	26°C, wind Beaufort 0, cloud 80%, no precipitation
June 23, 2021	23:15 – 23:30	20°C, wind Beaufort 0, cloud 90%, no precipitation

As per the Marsh Monitoring Program, calling anurans detected were identified to species and chorus activity was assigned a code from the following options:

0 No calls;
1 Individuals of one species can be counted, calls not simultaneous;
2 Some calls of one species simultaneous, numbers can be reliably estimated; and
3 Full chorus, calls continuous and overlapping.

Using this code method, areas that support a Code 1 indicate very low population numbers in the local area, and/or low-quality breeding habitat; Code 2 is taken to indicate a moderate population and/or lower quality breeding habitat; and Code 3 is taken to indicate a healthy population and high-quality breeding habitat.

3.2.4 Bat Surveys

The forest communities on and adjacent to the Subject Lands likely support habitat for various species of bats, and possibly species that are listed as endangered in Ontario. Confirming the presence/absence of specific bat species requires acoustic monitoring which can reveal species based on their call signatures. As no development has been proposed within any of the forested communities on the Subject Lands, no snag surveys or acoustic monitoring was completed in these protected areas.

Certain bat species are however known to roost and overwinter in buildings, provided the structures can be accessed and conditions are suitable. Generally, newer buildings are well sealed and do not provide openings for bats to enter attics, however older buildings and those in disrepair can be colonized by bats. There are several structures associated with the Subject Lands, including residential dwellings, garages, and outbuildings. These structures were inspected on March 29, 2021, to confirm their suitability for supporting bats. This was confirmed visually and with handheld acoustic detectors. It was determined that there are two buildings on the Subject Lands that could potentially support habitat for bats. One building is the old garage located in the woodland at the southwestern corner of the property and the other is a residence at 1316 Bronte Road (**Figure 1**).

As the garage in the woodland is not proposed to be redeveloped, no surveys were completed at this time, however surveys should be completed in the future in advance of demolition.

Surveys of the building at 1316 Bronte Road were completed by Beacon staff on June 16 and June 17, 2021, in accordance with the methods outlined in MNRF Guelph District's *Use of Buildings and Isolated*

Trees by Species at Risk Bats: Survey Methodology (2014). The weather conditions on both nights were warm with no precipitation. Surveys began half an hour before sunset and ended an hour after sunset to capture any potential bats emerging from the surveyed building. Per the protocol, two persons completed each survey; survey locations were selected so that surveyors would have an unobstructed and comprehensive view of any bats that may be entering or exiting the building being surveyed.

3.2.5 Breeding Bird Surveys

The breeding bird community on the Subject Lands has been well documented through past surveys completed by Dance Environmental who completed on-site and off-site breeding bird surveys in 2012, 2013, 2014 and 2015 following the protocols of the 2001 Ontario Breeding Bird Atlas. Area surveys were conducted in the early mornings of June 6, 2012, June 20, 2013, June 20 and July 11, 2014, and June 24 and July 8, 2015, one half hour before sunrise to 9:00 am when winds were low and there was no precipitation.

As it has been over six years since the Subject Lands were last surveyed, Beacon repeated the breeding bird surveys in 2021. Beacon conducted two breeding bird surveys on the mornings of May 26 and June 7, 2021. These surveys were on days with low to moderate winds (0-2 Beaufort Scale), no precipitation and temperatures within 5°C of normal average temperatures. The breeding bird community was surveyed using a roving type survey, in which all parts of the Subject Lands were walked to within 50 m and all birds heard or observed and showing some inclination toward breeding were recorded as breeding species. All birds heard and seen were recorded in the location observed on an aerial photograph of the site. This survey method is superior to the point count methods as it more comprehensively documents the communities present.

A checklist of all breeding birds observed from the Subject Lands, from prior studies as well as from the more recent surveys, has been compiled along with their regional and provincial status.

3.2.6 Other Bird Related Surveys

3.2.6.1 Crepuscular Surveys

Crepuscular or twilight surveys are undertaken to confirm whether certain bird species such as Common Nighthawk, Eastern Whip-poor-will or Chimney Swift may be using an area as habitat. These species are all listed as threatened in Ontario.

Dance Environmental completed crepuscular surveys on June 19, 2013, to confirm whether Common Nighthawk or Eastern Whip-poor-will were present. This survey was conducted on a night with low wind, no precipitation, minimal cloud cover and an air temperature of 16 °C. Three inventory stations were monitored in locations where Eastern Whip-poor-will and Common Nighthawk might forage (one at the northwest edge of 1342 Bronte Road facing west off-site, one in the centre of the residential lawn associated with 1326 Bronte Road and one at the eastern edge of the large man-made pond on 1300 Bronte Road). The survey was conducted between half an hour after sunset to sunrise. Ten-minute point counts were conducted at each survey station. Common Nighthawk calls were broadcast for 1-1.5 minutes followed by 2-3 minutes of listening to see if response were observed.

Beacon conducted crepuscular surveys for Chimney Swift at 1354 Bronte Rd on June 24, 2021, between the hours of 8:30 pm and 9:45 pm. This building is the only structure proposed for removal with potentially suitable habitat (a chimney without a chimney cap). This survey was conducted following Ontario Swift Watch Protocol, with monitoring beginning half an hour before sunset and running until the monitored chimney was no longer visible. Two biologists monitored the open chimney at the surveyed building for Chimney Swift use. Surveys for Common Nighthawk and Eastern Whip-poor-will were not repeated as conditions have not changed since the time of the original surveys in 2013.

3.2.6.2 Henslow's Sparrow Survey

Surveys for Henslow's Sparrow (*Centronyx henslowii*) were conducted in open field on the adjacent Bronte Creek Provincial Park lands to the north by Dance Environmental in 2013. These surveys were conducted to determine species presence/absence, likelihood of breeding, abundance and to identify protected habitat. Point count and transect surveys were conducted on the evening of June 19 between 19:17 – 21:23, the evening of July 17 between 20:52 – 21:38 and the morning of July 20, 2013, between 7:04 – 8:00. At each survey station a four-minute period of silence was observed to listen for/observe any nearby sparrows. A pre-recorded Henslow's Sparrow song was then played for one minute, followed by a minute of silence to allow biologists to record any calling individuals. The recorded call was again played for one minute, followed by three minutes of silence. Transects were then walked between survey stations while listening for species calls. Due to size limitations of the potential habitat on adjacent lands, the distance between point counts were closer than those recommended by MNR guidelines. Surveys for Henslow's Sparrow were not repeated as suitable habitat is not present on the Subject Lands and the likelihood of this species occurring in the area is extremely low.

3.2.7 Dragonfly, Damselfly and Butterfly Surveys

The insect community on the Subject Lands has been well documented through past surveys completed by Dance Environmental. Dance Environmental conducted Lepidoptera and Odonata surveys in 2014 and 2015. Locations on the Subject Lands and within the adjacent Bronte Provincial Park Lands were surveyed on warm sunny days with low winds (Dance 2015). A butterfly net was used along with a 10x hand lens to identify species.

Field investigations for species of Odonata (dragonflies and damselflies) and Lepidoptera (butterflies, skippers and moths) were conducted by Beacon during warm, sunny days with minimal winds on June 13, July 6, August 13 and September 8, 2021. Binoculars were used to observe insect species. If required, individuals were captured using a net and examined using a hand lens before being released. Species locations were noted if they had a ranking of S4 or lower (more sensitive) or if a species generally occurs in densities low enough as to warrant mention.

3.2.8 Reptile Surveys

Dance Environmental completed turtle surveys on May 30, June 20 and July 11, 2014. Turtle surveys were also conducted on May 24, June 24 and July 8, 2015. Locations around the on-site ponds were monitored for 10 minutes, and locations were mapped on air photos. Locations were selected for clear visibility of the ponds. Surveys were conducted early in the season, on warm sunny days with limited clouds (Dance 2015).

Beacon also completed turtle surveys on the Subject Lands in 2021. These surveys consisted of slowly walking along the outer edge of the pond using binoculars to scan its perimeter and other potential basking sites within the pond. Surveys were completed between 8:00 am and 5:00 pm during sunny periods when the air temperature was greater than water temperature and after inclement weather.

Details of these surveys, including weather conditions, are included in **Table 4**.

Table 4. Basking Turtle Survey Details (Beacon)

	Survey 1	Survey 2	Survey 3
Date:	April 23, 2021	May 13, 2021	September 17, 2021
Start time:	12:30 pm	9:50 am	11:00 am
End time:	12:45 pm	10:15 am	12:00 pm
Temp:	12 °C	12 °C	24 °C
Wind (Beaufort Scale):	2	1	0
Cloud cover:	0%	0%	30%
Precipitation:	None	None	None

Dance Environmental also conducted snake coverboard surveys in 2013 to monitor for snake Species at Risk (Dance Environmental 2013). Plywood coverboards were set in suitable snake habitat throughout the Subject Lands. The coverboards were placed in areas that had good contact with the ground that received lots of sunlight (Dance Environmental 2013). The boards provide cover from predators and as the board radiates heat to the ground it attracts snakes for basking.

Snakes were also searched for as incidental observations during other field surveys completed by Dance in 2013, 2014 and 2015.

In 2021, Beacon scanned potential basking sites and the tree line near ponds for snakes on April 23 and May 13. On June 7, Beacon flipped cover objects in unmaintained areas and along BCT-1 for snakes. Note that the majority of the site is unsuitable for snakes as it is very manicured, with frequently mown grass, no debris, or brush.

3.2.9 Incidental Wildlife

Incidental wildlife observations for other wildlife groups were recorded during the course of regular fieldwork conducted by Dance Environmental and Beacon in 2021. Incidental wildlife species were identified by sight of the animal (e.g., egg, larvae, juvenile, or adult), sound of the animal, signs of the animal (e.g., tracks, scat, or fur), where the opportunity presented itself. Incidental wildlife observations were recorded by Beacon on all field investigation days.

3.3 Feature Staking

The top of slope along the Bronte Creek valley and BCT-1 was staked by Conservation Halton on August 18, 2021. The boundaries of woodlands associated with the Subject Lands and adjacent lands were staked by Region of Halton representatives on September 7, 2021. The staked limits of these

features were surveyed by an OLS from JD Barnes. Copies of the survey plans were subsequently circulated to the agencies for review and confirmation.

4. Existing Conditions

The following sections characterize biophysical resources associated with the Study Area using background information that has been supplemented with site-specific investigations or studies.

4.1 Physical Resources

4.1.1 Physiography

The Subject Lands are located on the south slope of the Trafalgar Moraine, a 'till moraine' originally mapped by Chapman and Putnam (1984). The Trafalgar Moraine consists of a belt of gently undulating topography extending across the Oakville area. The Iroquois Plain is mapped to the south of the moraine. The Iroquois Plain formed in the basin of glacial Lake Iroquois and is often characterized by coarse sand and gravel. The north edge of this plain, referred to as the Lake Iroquois shoreline, is roughly coincident with Highway 403/QEW (Karrow 1964) to the south of the Subject Lands.

4.1.2 Soils

Soils are described in the *Preliminary Geotechnical Investigation*'s for 1300–1350 Bronte Road (DS Consultants 2023a) as generally consisting of a layer of topsoil followed by fill material consisting of sandy silt/silty sand, sand, gravel and clayey silt to depths of 3 m below existing grade. Below the fill, cohesionless deposits consisting of silt, silty sand to sand silt and gravelly sand to sand and gravel were encountered in most boreholes except BH20-5 to BH20-7 and BH 20-11 at depths ranging from 2.3 to 6 m (DS Consultants 2023a). Cohesive deposits were encountered in all boreholes below the cohesionless deposits and consisted of silty clay and clayey silt till. Sandy deposits below this ranged from 6 m to 8.2 m below ground surface (DS Consultants 2023a). Topsoil typically ranged in thickness from 75 mm to 180 mm, however the depth may vary across the site (DS Consultants 2023a). Fill was identified at all boreholes at depths varying from 0.8 to 3 m.

Inferred shale bedrock of the Queenston Formation was encountered at depths varying from 6.1 to 12.2 m below existing grade (Terraprobe 2016, 2023).

4.1.3 Topography and Drainage

The tableland portion of the Subject Lands is relatively flat and comprised of well landscaped residential properties. The western limits of the Subject Lands and Study Area are defined by the steep slopes of the Bronte Creek valleylands. The slope elevations range from 132 m above sea level (masl) on top to 98 masl at the bottom of the valley located off the Subject Lands (Terraprobe 2016, 2023).

Bronte Creek is the main watercourse adjacent to the Subject Lands. The tableland portion of the Subject Lands supports two artificial waterbodies (dug ponds), one large (0.41 ha) and another smaller (0.05 ha) that are connected by a culvert. The large pond drains into the smaller pond which then outlets to BCT-1. The artificial waterbodies are not individually mapped within the CH regulated area (**Figure 3**). However, the southern portion of the smaller artificial waterbody and the associated BCT-1 exist within the defined regulated limit of Bronte Creek and therefore may be regulated by CH.

BCT-1 conveys drainage from the artificial waterbodies into a steep gully and onto the Bronte Creek floodplain. BCT-1 terminates in an alluvial fan comprised of coarse sediments which diffuses the flow. Flows in the upper portion of BCT-1 are ephemeral and only flow during storm events, however in the lower reach and on the floodplain of Bronte Creek, flows are supplemented by seeps on the valley slope and are intermittent.

4.1.4 Hydrogeology

A hydrogeological investigation report was completed for the Subject Lands by DS Consultants Ltd. (2023b). This report describes groundwater levels as being between 0.92 m and 5.1 m below existing ground surface (DS Consultants 2023b). Groundwater flow was inferred to be northeast towards Fourteen Mile Creek and west towards Bronte Creek (DS Consultants 2023b).

4.2 Aquatic Habitat

4.2.1 Artificial Waterbodies

The larger of the two artificial waterbodies (herein referred to as the ‘large pond’) has a surface area of 0.41 ha. It is steep sided and has a depth of up to 3.0 m. The large pond is largely open water with areas of emergent aquatic vegetation (mostly along the northern shoreline), an extending dock and small beach within its margins. In-water habitat is provided by the nearshore emergent and submergent aquatic vegetation. The south/west shoreline area is comprised of maintained lawn to the water's edge, and the north/northeast shore is lawn with planted trees.

A small patch of iron staining was observed along the margin of the large pond. While the large pond is considered to be groundwater fed (DS Consultants 2023b), the observations of iron staining along the pond edge are consistent with shallow interflow, rather than a seep or spring produced by groundwater discharge.

Baitfish species, such as Pumpkinseed (*Lepomis gibbosus*) and Largemouth Bass (*Micropterus salmoides*), were observed to be utilizing the in-water cover provided by the aquatic vegetation and a small wooden dock within the large pond. The previous landowner noted that all fish species had been anthropogenically introduced into the pond habitat.

The smaller of the two artificial waterbodies (herein referred to as the ‘small pond’) has a surface area of 0.05 ha and is located south of the large pond and is approximately 3 m deep. The large pond discharges to the small pond through a culvert (approximately 30 m in length) under an existing driveway. The small pond appeared to drain via an overflow drain that outlet through a small, constructed berm at the top of the valley slope and into the BCT-1. At the time of investigation, the water levels were not overtopping the drain. The nearshore slope of the small pond is steep. At the time of

investigation, the centre of the small pond was open water, presumably maintained by a small bottom circulation system. Dense aquatic macrophyte growth provided most of the in-water cover which included floating, emergent and submergent (in order of dominance) plants. Large woody debris provides some nearshore cover, however in minimal amounts. Other than the open water area being agitated by the aeration system, the water was stagnant in the ponds marginal areas. The surrounding riparian area is dominated by large mature trees and the pond was heavily shaded. No fish were observed at the time of the investigation; however, dense vegetation may have limited visibility.

4.2.2 Bronte Creek Tributary (BCT-1)

BCT-1 conveys drainage from the small pond in a southwest direction for approximately 130 m to its confluence with the floodplain of Bronte Creek. The geomorphic assessment (GEO Morphix 2023) divided BCT-1 into three distinct reaches. To maintain consistency this report will use the same naming convention for when describing the aquatic existing conditions within BCT-1. These are identified from upstream to downstream as reaches BCT-1a, BCT-1b and BCT-1c (see **Figure 4**). Furthermore, the aquatic and fish habitat features described below have been greatly influenced by the varying geomorphic conditions identified for each reach.

South of the small pond is a small, constructed berm, below which the small pond outlets into the beginning of the BCT-1 feature at the top of valley slope. At the pond outlet, there was a collection of standing water within the channel. As mentioned above, water levels in the small pond were not high enough to be conveying flow to the tributary. The BCT-1a reach is channeled through a high gradient ravine associated with the Bronte Creek valley slope. Its banks are defined by the surrounding steeply sloping gully, of which, a small (0.5 m) incision that defines the frequent flow path was observed. The channel bed comprises a silt- and sand-dominant substrate under a leaf litter layer and was saturated; however, there was no flowing water throughout the investigated reach. The gully feature is approximately 13 m wide and 6-7 m deep. The observed exposed banks and tree roots are indicative of active erosion. Woody vegetation, shrubs, and trees are not present in the areas of active erosion. The base of the steep gully contains a deposit of large woody debris and leaf litter. The woody debris at the bottom of the reach has created several knickpoints; one knickpoint approximately 0.5 m in height and one knickpoint approximately 1.0 m in height. The accumulation of large woody debris associated with the knickpoints, and the high gradient sloped gully feature, present an impediment for any potential upstream fish movement.

The base of the sharp slope is where the reach break for BCT-1a ends and BCT-1b starts. Within reach BCT-1b, the gully widens, the slope is reduced, and the channel follows a more natural morphology. The channel substrates associated with this reach are comprised of silt, sand, and cobble dominant and there is more vegetative (herbaceous and groundcover) growth throughout. In stream cover is provided by cobble and small woody debris. As noted throughout this report, one confirmed seep was identified west of BCT-1b, and another seep was associated with BCT-1c. The location of seeps, as well as others that occur along the valley slope, are illustrated on **Figure 4.**

Portions of reach BCT-1b appear to have intermittent flow within the channel. In areas of flowing water, the mean wetted width of the channel is approximately 0.75 m wide. Further downstream in this reach, the accumulation of groundwater inputs throughout the surrounding valley slope significantly increased the amount of water and the rate of flow within the channel.

Downstream of reach BCT-1b, in reach BCT-1c, the channel intersects with an alluvial fan and flows are dispersed. The gradient is less steep and drainage to Bronte Creek is conveyed as sheet flow through dense herbaceous vegetation. There is no distinct channel outlet to Bronte Creek.

No fish were observed within any of the reaches of BCT-1. Impediments to fish passage are evident in all reaches; however, under high flood stage conditions in Bronte Creek, fish movement into reaches BCT-1c and perhaps even BCT-1b may be possible.

As noted by GEO Morphix during the agency site meeting on March 24, 2023, the upstream reach of BCT-1 has been subject to previous alteration including a small outbuilding adjacent to the channel and berm at the top of slope. Immediately adjacent to the small outbuilding, there is a knickpoint in the channel, which is approximately 1.0 m in height, significant bank undercutting, and exposed tree root masses.

4.2.3 Fish Community

The fish community in Bronte Creek is known and has been well documented through multiple studies. Fish community sampling was not completed within the artificial waterbodies on the Subject Lands. Field investigations have identified a fish population in the large pond, however, correspondence with the previous landowner has confirmed that all fish species have been historically introduced by the landowner. Known introduced species include Pumpkinseed, Bluegill (*Lepomus macrochirus*) and Largemouth Bass (Dance Environmental 2015).

As is noted in the preceding section, no fish were observed in any of the BCT-1 reaches. The upper most reach BCT-1a represents a significant impediment to fish movement and is considered indirect fish habitat. The lower reaches, BCT1-b and BCT1-c also contain impediments to fish moving upstream from Bronte Creek, however under flooded conditions, it is possible that fish can access these reaches. As a result, BCT1-b and BCT1-c provide seasonal habitat for the fish community within Bronte Creek.

4.3 Ecological Land Classification

Eight ecological communities were identified as being associated with the Subject Lands (ELC Units 1-8). An additional four ecological communities (ELC Units 9-12) were identified on the broader Study Area and were ground-truthed. One additional ecological community (ELC Unit 13) was identified in the broader Study Area based on desktop review only. These are described below and illustrated on **Figure 4**.

ELC Unit 1: Dry-Fresh Sugar Maple-Beech Deciduous Forest (FOD5-2)

This mature deciduous forest community is located along the south/east edge of the property. The forest is dominated by mid-aged to mature Sugar Maple (*Acer saccharum*), American Beech (*Fagus grandifolia*), Red Oak (*Quercus rubra*), and Black Cherry (*Prunus serotina*). The canopy is closed resulting in a relatively sparse understorey. Understorey species include Chokecherry (*Prunus virginiana*), Sugar Maple saplings, and Alternate-leaved Dogwood (*Cornus alternifolia*). Dominant ground cover species include Garlic Mustard (*Alliaria petiolata*), Enchanter's Nightshade (*Circaea canadensis*), Sugar Maple seedlings, Jack-in-the-pulpit (*Arisaema triphyllum*), and Herb Robert

(*Geranium robertianum*). This community has a high proportion of native species, however there are patches of invasive species that may over time impact upon the composition.

ELC Unit 2: Dry-Fresh Sugar Maple-Oak Deciduous Forest (FOD5-3)

This mature deciduous forest community is located along the steep valley wall of Bronte Creek on the west side of the property. The canopy consists of White Oak (*Quercus alba*), Sugar Maple, Red Oak, Basswood (*Tilia americana*), Black Cherry, with some White Pine (*Pinus strobus*), and Eastern Hemlock (*Tsuga canadensis*). Understory shrubs include Maple-leaf Viburnum (*Viburnum acerifolium*), Round-leaved Dogwood (*Cornus rugosa*), Witch-hazel (*Hamamelis virginiana*), and Bush Honeysuckle (*Diervilla lonicera*). This forest supports a high diversity of native ground covers, including a number of regionally uncommon species (see **Section 4.4**). Dominant ground covers include False Solomon's Seal (*Maianthemum racemosum*), Pennsylvania Sedge (*Carex pennsylvanica*), Zig-zag Goldenrod (*Solidago flexicaulis*) and Large-leaved Aster (*Eurybia macrophyllum*). A Butternut (*Juglans cinerea*), identified by Kuntz Forestry Consulting (2023) as NT26, is present in ELC Subunit 2a, but it is more than 25 m from the limit of the proposed development.

This community spans the Subject Lands boundary. ELC Subunit 2c is located outside of the Subject Lands and contains an (~0.5 ha) Open Bluff (BLO1) inclusion.

ELC Unit 3: Mineral Meadow Marsh (MAM2)

This small marsh (0.01 ha) is located along the south/east side of the property and is associated with a low area at the outlet of the small artificial pond (ELC unit 4). This feature is dominated by Common Reed (*Phragmites australis*), Spotted Jewelweed (*Impatiens capensis*), Field Horsetail (*Equisetum arvense*), and Coltsfoot (*Tussilago farfara*).

ELC Unit 4: Duckweed Mixed Shallow Aquatic (SAM1-2) / Open Water Aquatic (OAO)

This unit corresponds with the small artificial pond feature (0.05 ha). It supports Lesser Duckweed (*Lemna minor*), pondweeds (*Potomageton* spp.), and Eurasian Water-milfoil (*Myriophyllum spicatum*). The edges support emergent vegetation such as Common Reed, Reed Canary Grass (*Phalaris arundinacea*), and Broad-leaved Cattail (*Typha latifolia*). The center of the community is open water.

ELC Unit 5: Open Water Aquatic (OAO)

This feature corresponds with the large artificial pond (0.41 ha) and supports minimal aquatic vegetation, consisting of Eurasian Water-milfoil and Fragrant Water-lily (*Nymphaea odorata*). Emergent vegetation along the pond margins includes Pickerelweed (*Pontedaria cordata*), Fox Sedge (*Carex vulpinoidea*), Narrow-leaved Cattail (*Typha angustifolia*), and Joe-Pye Weed (*Eutrochium maculatum*).

ELC Unit 6: Hedgerow

This hedgerow feature consists of Norway Spruce (*Picea abies*), Sugar Maple, Austrian Pine (*Pinus nigra*), and three Butternut (identified as Trees 461, 467, and 468 by Kuntz Forestry Consulting (2023)).

Ground covers include Garlic Mustard, Enchanter's Nightshade, Tall Goldenrod (*Solidago altissima*), and Orchard Grass (*Dactylis glomerata*).

ELC Unit 7: Anthropogenic

Much of the property was classified as "Anthropogenic" which corresponds with existing residential buildings, lawn, and driveways. Scattered trees include Red Oak, Apple, Silver Maple (*Acer saccharinum*), Black Walnut (*Juglans nigra*), White Cedar (*Thuja occidentalis*), and one hybrid Butternut (*J. x bixbyi*) as determined by Kuntz Forestry Consulting (2023).

ELC Unit 8: Dry-Fresh Hardwood-Hemlock Mixedwood Forest (FOM3)

This feature is a mature forest on the southwestern side of the Subject Lands that is dominated by Eastern White Cedar (*Thuja occidentalis*), White Pine (*Pinus strobus*), Sugar Maple (*Acer saccharum*), and White Oak (*Quercus alba*). The canopy results in fairly dense shade, resulting in a sparse understorey. Understory shrubs include Maple-leaf Viburnum (*Viburnum acerifolia*), and Witch-hazel. This forest supports a good diversity of native ground covers, including a number of regionally uncommon species (see **Section 4.4**). Dominant ground covers include False Solomon's Seal, Pennsylvania Sedge (*Carex pennsylvanica*), and Large-leaved Aster (*Eurybia macrophyllum*).

ELC Unit 9: Mixed Plantation (CUP2)

This woodland community is located within the Study Area adjacent to the Subject Lands to the northwest. It consists of a mix of young to mid-aged planted coniferous and deciduous trees, including White Cedar, Norway Spruce, White Spruce (*Picea glauca*), White Ash (*Fraxinus americana*), Black Walnut, and Eastern Cottonwood (*Populus deltoides*). Ground covers and understory vegetation are sparse where coniferous trees are dense, while in more open areas, herbaceous and shrub cover increases. Dominant species include European Buckthorn (*Rhamnus cathartica)*, Wild Red Raspberry (*Rubus idaeus ssp. strigosus*), Black Raspberry (*R. occidentalis*), Garlic Mustard, Avens (*Geum sp.*), and Thicket Creeper (*Parthenocissus vitacea)*.

ELC Unit 10: Cultural Meadow (CUM1)

This old field community is present on the adjacent Bronte Creek Provincial Park lands. The south subunit (10b) has been identified as a Prairie Restoration by Dance Environmental (2013b).

ELC Unit 11: Cultural Woodland (CUW1)

This community is on the adjacent Bronte Creek Provincial Park lands. Subunit 11a was a plantation established in the late 1970s that was subsequently thinned/opened up in the late 1980s or early 1990s. Portions of the Subunit 11a include Norway Spruce.

According to Dance (2013b), subunit 11b consists of colonizing species including Trembling Aspen (*Populus tremuloides*), Green Ash (*Fraxinus pennsylvanica*), and Norway Maple (*Acer platanoides*). Understorey species include Alternate-leaved Dogwood, European Buckthorn (abundant), Gray

Dogwood (*Cornus racemosa*), and Staghorn Sumac (*Rhus typhina*). Ground cover includes a mix of moisture tolerant species, introduced species and native flora, including Sensitive Fern (*Onoclea sensibilis*), Spotted Jewelweed, Dame's Rocket (*Hesperis matronalis*), Garlic Mustard, False Solomon's Seal, and Green Ash seedlings. The only significant species is a Butternut, labelled as NT27, which is more than 25 m from the limits of the proposed development (Kuntz Forestry Consulting 2023).

ELC Unit 12: Fresh-Moist White Cedar-Sugar Maple Mixed Forest (FOM7-1)

This community includes the lower reaches of BCT-1 along with an alluvial fan and is dominated by Eastern White Cedar and Sugar Maple. It has canopy/subcanopy associates of Eastern Hemlock, Sycamore (*Platanus occidentalis*), Bitternut Hickory (*Carya cordiformis*), Shagbark Hickory (*C. ovata*), Yellow Birch (*Betula alleghaniensis*), and Eastern Hop-Hornbeam *(Ostrya virginiana*). Several Green Ash were found in the subcanopy; however, all were dead/dying from Emerald Ash Borer (*Agrillus planipenis*) infestation. The understorey was open, with few specimens of American Beech and Blue-Beech (*Carpinus caroliniana*). Three specimens of Black Ash (*Fraxinus nigra*) were observed: one dead and two imminent due to Emerald Ash Borer infestation. The understorey is dominated by Spotted Jewelweed, with associates of Field Horsetail, Coltsfoot, Bitter Cress (*Cardamine sp.*), and Purple-Flowering Raspberry (*Rubus odoratus*).

Seepage indicator species were observed in this community, including several patches of Eastern Rough Sedge (*Carex scabrata*) and Spreading Goldenrod (*Solidago patula*), where the latter was associated with the largest seep, which was to the east and distal to BCT-1. The seeps were associated with aggregations of mineral precipitates and dissolved bioclastic limestones.

ELC Unit 13: Deciduous Swamp (SWD)

This community is located on a braid bar at the base of the Bronte Creek valley, which is bordered by both watercourse channels. The north channel is filling in with wetland vegetation; however, this community was not accessible by foot. The Halton Natural Areas Inventory (Dwyer 2006) ELC mapping identifies this community as a wetland. Air photo interpretation by Beacon and ground-truthing of adjacent ELC Unit 12, confirms that this community is dominated by deciduous trees.

4.4 Flora

A total of 257 vascular plant species were identified during botanical field investigations in 2012, 2013, 2021, 2022, and 2023. A list of flora recorded during field surveys is presented in **Appendix B.** Of the 257 species, 74 (29%) are non-native in Ontario or hybrid. The majority of the native species are ranked S5 or S4 by the NHIC, indicating they are secure (S5) or apparently secure (S4) provincially.

Two of the observed species are ranked S2?: Honey Locust (*Gleditsia triacanthos*) and Butternut. A ranking of S2? indicates that the species is imperilled provincially. Honey Locust is not designated endangered or threatened in Ontario. This species was observed in 2012 within ELC Unit 7 and during tree inventory work completed by Kuntz Forestry Consulting (2023). Butternut is designated as an endangered species in Ontario. The locations of the three Butternut trees that are within 25 m of the limit of proposed development are illustrated in **Figure 4**. All three of these Butternuts have been evaluated by Kuntz Forestry Consulting (2023), in accordance with the ESA and associated

regulations/guidelines, and do not represent constraints. See the Tree Inventory and Preservation Plan (Kuntz Forestry Consulting 2023) for further details.

Using the vascular plant status from the Halton Natural Areas Inventory (Crins *et al* 2006), there are 19 species identified from the Subject Lands that are considered uncommon in the Region and 3 species that are considered Regionally rare. A list of Regionally rare and uncommon species and their location is provided in **Table 5**. These species are primarily associated with forest ELC Units 1, 2 and 8 and the larger pond ELC Unit 5. The rare and uncommon species associated with the pond are considered adventive as they are species commonly used to landscape backyard ponds.

Table 5. Regionally Rare and Uncommon Plant Species

Scientific Name	Common Name	S-Rank	Halton Status (Crins *et al*., 2006)	Location (ELC Unit)
Bidens vulgata	Tall Beggarticks	S5	Uncommon	7*
Borodinia canadensis	Canada Rockcress	S4?	Uncommon	2
Cardamine sp. (presumed *C. pensylvanica*)	Pennsylvania Bittercress	S5	Uncommon	12
Caulophyllum giganteum	Giant Blue Cohosh	S5	Requires further review	Not identified in background reporting!
Celtis occidentalis	Common Hackberry	S4	Rare	1
Collinsonia canadensis	Canada Horsebalm	S4	Uncommon	1*
Erigeron pulchellus	Robin's-plantain Fleabane	S5	Uncommon	2
Galium boreale	Northern Bedstraw	S5	Uncommon	2
Hepatica americana	Round-lobed Hepatica	S5	Uncommon	2b*, 8*
Luzula acuminata	Hairy Woodrush	S5	Uncommon	8*
Luzula multiflora	Many-flowered Woodrush	S5	Uncommon	2
Micranthes virginiensis	Early Saxifrage	S5	Uncommon	8*
Myrica gale	Sweet Gale	S5	Rare	5
Nuphar variegata	Variegated Pond-lily	S5	Uncommon	5*
Nymphaea odorata	Fragrant Water-lily	S5	Uncommon	5
Platanus occidentalis	Sycamore	S4	Rare	7*
Poa alsodes	Grove Bluegrass	S4	Uncommon	1
Potentilla simplex	Old-field Cinquefoil	S5	Uncommon	2
Quercus velutina	Black Oak	S4	Uncommon	2b*, 6*, 7*, 8*
Sassafras albidum	Sassafras	S4	Uncommon	8*
Solidago patula	Spreading Goldenrod	S4	Uncommon	12
Taenidia integerrima	Yellow Pimpernel	S4	Uncommon	2
Vitis aestivalis	Summer Grape	S4	Uncommon	2

! Noted during 2013 spring flora survey by Dance Environmental

* Noted during 2012 flora surveys by de Gruchy Environmental for Dance Environmental

A detailed Arborist Report and Tree Inventory Preservation Plan has been prepared under separate cover by Kuntz Forestry Consulting (2023).

4.5 Anuran Surveys

Dance Environmental did not detect any anuran species calling within the Subject Lands (Dance Environmental 2013). Three Green Frogs (*Lithobates clamitans*) were observed sitting in the water southwest of the smaller pond but not calling. Numerous American Toads (*Anaxyrus americanus*) were heard calling from the Bronte Creek valleylands to the west of the Subject Lands (Dance Environmental 2013).

Two frog species, Green Frog and Spring Peeper (*Pseudacris crucifer*) were recorded calling within the Subject Lands during Beacon's amphibian surveys in 2021. Young American Toad were observed incidentally on the lawn. These species are considered common and abundant in southern Ontario and are not of conservation concern.

The findings of the 2021 anuran calling surveys are summarized in **Table 6**.

Table 6. Anuran Calling Count Results

Station	Survey 1	Survey 2	Survey 3
1	-	-	GRFR 1-(1)
2	SPPE*	-	GRFR 1-(3)

*=Call recorded from outside station area

GRFR = Green Frog, SPPE = Spring Peeper

Chorus Code:
1. Individuals of one species can be counted, calls not simultaneous. Number of individuals observed in brackets;
2. Some calls of one species simultaneous, numbers can be reliably estimated. Number of individuals observed in brackets; and
3. Full chorus, calls continuous and overlapping.

The anuran population on the Subject Lands is low in species richness and in diversity. While the artificial ponds do provide potential habitat, they are stocked with predatory fishes, which precludes amphibian production. In addition to the anuran surveys, searches for egg masses of other amphibians were conducted but none were observed.

4.6 Bat Surveys

Beacon completed exit surveys for the building located at 1316 Bronte Road in 2021. Five species of bats were recorded by the handheld detectors in the vicinity of the building. Species detected include Big Brown Bat (*Eptesicus fuscus*), Eastern Red Bat (*Lasiurus borealis*), Hoary Bat (*Lasiurus cinereus*), Silver-haired Bat (*Lasionycteris noctivagans*) and Northern Myotis (*Myotis septentrionalis*) Northern Myotis is a provincially listed endangered species. Notably, no bats were observed exiting the building during the surveys.

It is assumed that the Northern Myotis calls were recorded while foraging, or simply moving from their roosting habitat to foraging habitat and it is probable that the Northern Myotis in this area are roosting within the adjacent forest communities.

Bat habitat assessments and acoustic monitoring was not completed within the forested habitats on the Subject Lands as these are contained within the Greenbelt and RNHS and will not be developed. Due to the abundance of potential roosting habitat, including listed species, it is assumed habitat is present.

As was noted in **Section 3.2.4**, it will be necessary to survey the garage structure in the woodland for SAR bats prior to its demolition in the future.

4.7 Breeding Bird Surveys

Breeding bird surveys were conducted on the Subject Lands by A. Keaveney in 2012. 26 bird species were observed / heard during the breeding bird surveys, including Wood Thrush (special concern) which was observed in ELC Unit 1 and Eastern Wood-Pewee (special concern) was heard calling from the Bronte Creek valleylands off the Subject Lands.

Dance Environmental also conducted breeding bird surveys in 2013, 2014 and 2015. Targeted surveys were completed for Henslow's Sparrow, Eastern Whip-poor-will and Common Nighthawk and none of these target species were detected. Breeding bird surveys of adjacent Bronte Creek Provincial Park lands identified 28 species in 2013. Species of note included a female Cooper's Hawk on a nest, a foraging Barn Swallow, a Great Horned Owl and a single post-breeding Chimney Swift flying overhead. Surveys conducted in 2014 and 2015 documented Eastern Wood-Pewee in ELC Unit 1 and Barn Swallow was observed foraging over the large pond (ELC Unit 5).

Beacon conducted breeding bird surveys on the Subject Lands in 2021 and detected a total of 22 species (**Appendix C**). The composition of the breeding bird community is reflective of the habitats present on the Subject Lands that are dominated by open anthropogenic spaces, artificial ponds and forest habitats.

The avian community is comprised of species that are indicative of anthropogenic, rural settings. The most abundant species was American Robin (*Turdus migratorius*) with 6 territories present, and Blue Jay (*Cyanocitta cristata*), House Wren (*Troglodytes aedon*), European Starling (*Sturnus vulgaris*), Northern Cardinal (*Cardinalis cardinalis*), Song Sparrow (*Melospiza melodia*), Red-winged Blackbird (*Agelaius phoeniceus*), Common Grackle (*Quiscalus quiscula*), Baltimore Oriole (*Icterus galbula*), and House Sparrow (*Passer domesticus*) all had multiple territories present.

The large pond provided breeding habitat for two species of waterfowl, Canada Goose (*Branta canadensis*) and Hooded Merganser (*Lophodytes cucullatus*) in addition to the previously mentioned Red-winged Blackbirds.

Forest edges on the west and south borders of the property supported forest species including Eastern Wood-Pewee (*Contopus virens*), Great Crested Flycatcher (*Myiarchus crinitus*) and White-breasted Nuthatch (*Sitta carolinensis*). The nuthatch is an area-sensitive species, which requires larger tracts of suitable habitat in which to breed or has a higher breeding success in larger areas of suitable habitat. However, it is still a common species in a variety of woodlands including those close to human habitation.

No species provincially ranked as S1 through S3 (Critically Imperiled through Vulnerable) or species regulated under the ESA were encountered. However, Eastern Wood-Pewee, listed as Special Concern was observed, with one on the eastern edge of the Subject Lands in ELC unit 1. Though this species is

Special Concern provincially and federally based on a declining trend over their range, these birds remain relatively common in both urban and urbanizing woodlands. They are somewhat tolerant of forest fragmentation and will live in both edge habitats and forest interiors.

Beacon did not observe any Chimney Swift on the Subject Lands.

4.8 Insect (Dragonfly and Damselfly) Surveys

Odonates

Dance Environmental identified 13 dragonfly and damselfly species on the Subject Lands in 2012, with the majority found around the two artificial ponds on 1300 Bronte Road. In 2014 & 2015 Dance observed 28 species of Odonates on the Subject Lands. No species currently ranked S1-S3 were observed.

Beacon identified a total of thirty-two species and 516 dragonflies and damselflies individuals were observed on the Subject Lands. Of the taxa identified to species level, fifteen of these species are ranked as S5, ten are S4, two are non-native and one was ranked S3.

By far the most productive areas were those associated with the large pond. The small pond appeared to provide poor habitat for odonates, as there were few observations within the immediate area. Most species were observed at the large pond, although predatory fish have been observed in this feature which limits Odonate diversity.

Table 7. Dragonflies and Damselflies (Odonata) Recorded on the Subject Lands

Common Name	Scientific Name	Total Recorded	Provincial S rank	Region of Halton Status (Rothfels 2006)
Mosaic Darners	*Aeshna sp*	2	n/a	n/a
Shadow Darner	*Aeshna umbrosa*	3	S5	HU
Common Green Darner	*Anax junius*	17	S5	Common
Comet Darner	*Anax longipes*	2	SNA	n/a
Powdered Dancer	*Argia apicalis*	1	S4	HR
Variable Dancer	*Argia fumipennis*	29	S5	n/a
Lilypad Clubtail	*Ariogomphus furcifer*	5	S4	HR
Calico Pennant	*Celithemis elisa*	5	S5	Common
Halloween Pennant	*Celithemis eponina*	2	S4	HR
Azure Bluet	*Enallagma aspersum*	37	S4	HR
Double-striped Bluet	*Enallagma basidens*	7	S3	Somewhat likely to occur in the Region due to presence in adjacent municipalities
Familiar Bluet	*Enallagma civile*	82	S5	Common

Common Name	Scientific Name	Total Recorded	Provincial S rank	Region of Halton Status (Rothfels 2006)
Skimming Bluet	*Enallagma geminatum*	1	S4	HR
Enallagma species	*Enallagma sp*	3	n/a	n/a
Common Baskettail	*Epitheca cynosura*	7	S5	HU
Eastern Pondhawk	*Erythemis simplicicollis*	10	S5	Common
Fragile Forktail	*Ischnura posita*	36	S4	HR
Eastern Forktail	*Ischnura verticalis*	69	S5	Common
Spreadwing species	*Lestes sp*	1	n/a	n/a
Swamp Spreadwing	*Lestes vigilax*	1	S4	n/a
Widow Skimmer	*Libellula luctuosa*	19	S5	Common
Twelve-spotted Skimmer	*Libellula pulchella*	12	S5	Common
Blue Dasher	*Pachydiplax longipennis*	57	S5	Common
Wandering Glider	*Pantala flavescens*	1	S4	HR
Eastern Amberwing	*Perithemis tenera*	9	S4	HU
Common Whitetail	*Plathemis lydia*	5	S5	Common
White-faced Meadowhawk	*Sympetrum obtrusum*	3	S5	Common
Ruby Meadowhawk	*Sympetrum rubicundulum*	2	S5	Common
Meadowhawk sp.	*Sympetrum sp.*	16	n/a	n/a
Autumn Meadowhawk	*Sympetrum vicinum*	33	S5	HU
Black Saddlebags	*Tramea lacerata*	30	S4	Common
Red Saddlebags, tentative ID	*Tramea onusta*	9	SNA	n/a

Legend: Provincial Status (Srank): S5 = Secure; S4 = Apparently Secure; S3 = Vulnerable; Region of Halton Status: HR = Regionally Rare, HU = Regionally Uncommon.

Lepidoptera

Dance Environmental identified 4 butterfly species on the Subject Lands in 2012 and 20 species in 2014 & 2015. All species observed by Dance are considered stable populations within Ontario.

A total of 16 species / 112 individuals were documented by Beacon in 2021. Of the taxa identified to the species level, ten are ranked as S5, two as S4, and one, Monarch, as S2N, S4B (the imperilled status S2N applying to non-breeding aggregations). Monarch is also of Special Concern provincially and was observed migrating in the orchard. **Table 8** provides the results of the lepidopteran surveys.

Table 8. Lepidoptera Recorded on the Subject Lands

Common Name	Scientific Name	Total Recorded	Provincial S rank	Region of Halton Status (Wormington 2006)
Azure sp.	*Celastrina sp.*	2	N/A	n/a
Common Wood-Nymph	*Cercyonis pegala*	4	S5	Common
Common Ringlet	*Coenonympha tullia*	1	S5	Common
Clouded Sulphur	*Colias philodice*	16	S5	Common

Common Name	Scientific Name	Total Recorded	Provincial S rank	Region of Halton Status (Wormington 2006)
Monarch	*Danaus plexippus*	11	S2N,S4B	Common
Dun Skipper	*Euphyes vestris*	1	S5	Common
Viceroy	*Limenitis archippus*	2	S5	Common
Little Wood Satyr	*Megisto cymela*	6	S5	Common
Mourning Cloak	*Nymphalis antiopa*	2	S5	Common
Black Swallowtail	*Papilio polyxenes*	1	S5	Common
Crescent sp.	*Phyciodes sp.*	3	N/A	n/a
Pearl Crescent	*Phyciodes tharos*	1	S4	n/a
Cabbage White	*Pieris rapae*	64	SNA	Common
Hobomok Skipper	*Poanes hobomok*	2	S5	Common
Pecks Skipper	*Polites peckius*	3	S5	Common
Banded Hairstreak	*Satyrium calanus*	2	S4	Common

Legend: Provincial Status (Srank): S5 = Secure; S4 = Apparently Secure; S3 = Vulnerable; S2N Non-breeding population imperilled;

4.9 Reptile Surveys

A review of the Natural Heritage Information Centre databases identified two potential turtle species that could occur in the Study Area:

- Midland Painted Turtle (*Chrysemys picta marginata*); and
- Snapping Turtle (*Chelydra serpentina*).

Dance Environmental observed one Midland Painted Turtle during two of their site visits in 2015 (May 14 and August 4). During the three basking turtle surveys completed by Beacon in 2021, no turtles were observed.

Dance Environmental (2013b) surveyed six (6) cover boards on four (4) days in June and July of 2013 for the purposes of identifying SAR snake species. At one of these coverboards (shown on **Figure 5**), Dance Environmental observed more than five (5) Eastern Gartersnake and one (1) Dekay's Brownsnake. No other cover board showed five or more snakes of one species or any number of two snake species. It should be noted that Dance Environmental (2013, 2013b, 2015) did not identify any hibernaculum adjacent to the snake aggregation.

No snakes were noted by Beacon during any field visits in 2021 on the Subject Lands. Furthermore, during Beacon's surveys, the lawn was thoroughly surveyed and can be precluded from potential hibernaculum habitat.

4.10 Incidental Wildlife

During the 2021 field season, incidental wildlife that was recorded included ten (10) bird species, five (5) mammal species, and two (2) amphibian species. The following species were observed during field work on the Subject Lands and along the Subject Lands boundary:

Birds

- Mallard (*Anas platyrhynchos*).
- Northern Flicker (*Colaptes auratus*).
- Cedar Waxwing (*Bombycilla cedrorum*).
- American Robin (*Turdus migratorius*).
- Dark-eyed Junco (*Junco hyemalis*).
- White Breasted Nuthatch (*Sitta carolinensis*).
- Hooded Merganser (*Lophodytes cucullatus*).
- Ring Billed Gull (*Larus delawarensis*).
- Red-winged blackbird (*Agelaius phoeniceus*).
- Blue Jay (*Cyanocitta cristata*).
- Black-capped chickadee (*Poecile atricapillus*).
- Great Horned Owl (*Bubo virginianus*).

Mammals

- Eastern Cottontail (*Sylvilagus floridanus*).
- Grey Squirrel (*Sciurus carolinensis*).
- Eastern Chipmunk (*Tamias striatus*).
- Hairy-tailed Mole (*Parascalops breweri*).
- White-tailed Deer (*Odocoileus virginianus*).

Amphibians

- Green Frog (*Lithobates clamitans*).
- American Toad (*Anaxyrus americanus*).

5. Evaluation of Significant Features and Functions

To determine which biophysical resources and ecological functions in the Study Area are considered significant we relied upon the significance criteria outlined in the PPS (2020) and associated Natural Heritage Reference Manual (2010), Significant Wildlife Habitat Ecoregional Criteria Schedules (MNRF 2015), Region of Halton Official Plan, and Town of Oakville Official Plan.

5.1 Significant Habitat of Endangered Species and Threatened Species

Significant Habitat of Endangered Species and Threatened Species as defined by the PPS is recognized as a Key Feature within the RNHS. Significance, as it relates to the habitat of endangered species and threatened species, is defined by the PPS (2020) as:

> *The habitat, as approved by the Ontario Ministry of Natural Resources, that is necessary for the maintenance, survival, and/or the recovery of naturally occurring or reintroduced populations of endangered species or threatened species, and where those areas of occurrence are occupied or habitually occupied by the species during all or any part(s) of its life cycle.*

Screening for Endangered or Threatened Species was undertaken (**Appendix D**). Screening and habitat assessments confirmed that the Subject Lands support habitat for endangered Butternut and habitat for endangered Northern Myotis.

The lowland community outside the Subject Lands (ELC Unit 12) also support habitat for recently listed endangered Black Ash; however, the specimens observed were dead or dying from Emerald Ash Borer infestation.

As was discussed in **Section 4.4**, there are five Butternut (not hybrid) identified in the Study Area:

- Two trees were planted;
- One tree was assessed to be in poor health (Category 1; non-retainable) following a Butternut Health Assessment by Kuntz Forestry Consulting (2023); and
- Two Butternut will not have their habitat impacted by development as they are more than 25 m from the limits of the proposed development.

The regulations under the *Endangered Species Act* (Ontario Regulation 830/21, Part V) do not apply to planted Butternut and allow removal of Category 1 Butternut following a Butternut Health Assessment. As such, the habitat of the planted and Category 1 Butternut trees was not used to define the limits of the RNHS.

While not confirmed, it is possible that portions of the forested communities on the Subject Lands could support habitat for endangered Northern Myotis, however further studies would be required to confirm their presence. It has been assumed habitat is present within the natural forested communities that comprise the Significant Woodland.

5.2 Significant Woodlands

Significant Woodlands are also Key Features of the RNHS. Significant Woodlands are defined in the PPS, and in the ROP. Both definitions are consistent with respect to attributes and functions that make a woodland significant, however there is some variability in how they are to be identified.

The PPS defines Significant Woodlands as follows:

> *… 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.*

The ROP includes definitions of woodlands and significant woodlands. A Significant Woodland is considered a woodland that is 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 located outside the Urban Area but below the Escarpment Brow, or 10 ha or larger if it located outside the Urban Area but above the Escarpment Brow;
- The woodland has an interior core area of 4 ha or larger, measured 100 m 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 natural forest communities on the Subject Lands (ELC Units 1, 2 and 8) and in the Study Area (ELC Unit 12) support patches of trees over 99 years in age, and collectively comprise an area of greater than 2.0 ha, and are situated within 50 m of Bronte Creek, which has been identified as a major creek by the ROP. Based on fulfilment of these criteria, these forest units qualify as Significant Woodland and represent Key Features of the RNHS. The cultural plantation (ELC Unit 9) is somewhat contiguous with ELC Unit 2a as well as cultural woodlands (ELC Unit 11a & 11b) and have therefore also been included as Significant Woodland.

The limits of the Significant Woodlands on the Subject Property were staked by the Region as described in **Section 3.3** of this EIA.

5.3 Significant Wetlands

As it relates to wetlands, significant is defined by the PPS (2020) as:

> *An area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time.*

Significant wetlands are a Key Feature of the RNHS. The following definitions of significance, from the ROP, need to be considered for this study:

- *For lands within the Greenbelt Plan Area but outside of the Niagara Escarpment Area, Provincially Significant Wetlands and wetlands as defined in the Greenbelt Plan;*

- *For lands within the Regional Natural Heritage System but outside the Greenbelt Plan Area, Provincially Significant Wetlands and wetlands that make an important ecological contribution to the Regional Natural Heritage System; and,*
- *Outside the Regional Natural Heritage System, Provincially Significant Wetlands.*

A deciduous swamp has been previously described on a braid bar at the base of the Bronte Creek valley (Dwyer 2006). This is shown as ELC Unit 13 on **Figure 4** and is at the edge of the Study Area. This feature was not ground-truthed or delineated in the field however, given its presence along the main Bronte Creek and within the Bronte Creek valley, it is likely that this wetland would be considered to provide an important ecological contribution to the RNHS. As such, this wetland would be considered significant based on the Region's definition.

Other than the deciduous swamp as noted above, there are no other ecologically contributing wetlands within the Study Area. Similarly, there are no Provincially Significant Wetlands (PSWs) or MNRF evaluated wetlands within or adjacent to the Subject Lands. The nearest PSW is the Lower Bronte Creek Wetland Complex, located ~2.3 km southeast of the Subject Lands (**Figure 2**).

The small wetland associated with ELC Unit 3 is located on average of 10 m outside the Greenbelt Plan Area. This feature does not contain regionally or provincially sensitive species, was not staked as a regulated wetland by CH and covers less than 0.01 ha. The small amount of wetland area, lack of sensitive species and anthropogenic origin do not constitute a wetland that provides an important ecological contribution to the RNHS. As such, this wetland is not considered significant based on the Region's definition.

5.4 Significant Valleylands

Significant Valleylands are normally identified by municipalities with input from their agency partners. Significant Valleylands are also recognized regionally as a Key Feature of the RNHS. The Town of Oakville does not define Significant Valleylands, although they do identify major valleylands like Bronte Creek.

The PPS (2020) defines valleylands as follows:

> *Means a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year.*

As it relates to other significant natural heritage features and area, the PPS (2020) defines these as:

> *Ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system …*

The ROP similarly defines significant as:

> *In regard to the other components of the RNHS, ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system."*

Table 8-1 in the *Natural Heritage Reference Manual* (MNR 2010) provides recommended criteria for evaluating significant valleylands, including criteria relating to landform functions and attributes, ecological features and restored ecological functions. The Bronte Creek valleylands meet most of the criteria in this table and are therefore considered to represent a Key Feature of the RNHS. In terms of establishing the limits of the Significant Valleylands on the Subject Property, the *Natural Heritage Reference Manual* (MNR 2010) recommends that Significant Valleylands be defined by their LTSTOS.

5.5 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) represents a combination of natural heritage features, attributes and functions that are intended to capture the best examples of wildlife habitat within a planning area such as an upper or lower tier municipality. This responsibility for confirming SWH is assigned to the planning authority (i.e., Town, Region); however, municipalities rely upon proponents to identify potential SWH through planning studies.

The ROP and PPS share a very similar definition of significant as it pertains to SWH:

> *PPS – Significant means:* d) *"in regard to other features and areas, ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system"*
>
> *ROP – Significant means: "in regard to the other components of the RNHS, ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system."*

To determine if any of the features on the Subject Lands support potential SWH, we consulted the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E* (MNRF 2015).

According to the *Significant Wildlife Habitat Technical Guide (*OMNR 2000), there are four broad categories of SWH:

- Habitats of Seasonal Concentration Areas of Animals;
- Rare Vegetation Communities or Specialized Habitat for Wildlife;
- Habitat for Species of Conservation Concern; and
- Animal Movement Corridors.

Within each of these categories, there are multiple types of SWH that are recognized based on type or function that may or may not be included within other Key Features or components of the RNHS.

In applying the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E* (MNRF 2015), it was determined that potential SWH is present on the Subject Lands and in the broader Study Area.

On the Subject Lands, there is potential SWH associated with areas identified as Significant Woodland and Significant Valleyland. In the broader Study Area, SWH is associated with Bronte Creek Provincial Park and Greenbelt Plan Area. A detailed analysis of SWH criteria and their applicability to the Subject Lands is presented in **Appendix E.** A summary of potential SWH is provided below. ELC units are illustrated on **Figure 4**.

SWH Category	Potential Habitats (ELC Units)
Bat Maternity Colony	Woodland (1, 2, 8, 9, 11, 12)
Landbird Migratory Stopover Area	Woodland (1, 2, 8, 9, 11, 12)
Migratory Butterfly Stopover Area	Bronte Creek P.P. Meadow (10)
Open Country Bird Breeding	Bronte Creek P.P. Meadow (10)
Raptor Wintering Area	Bronte Creek P.P. Meadow (10), Plantation (9), Cultural Woodland (11)
Reptile Hibernaculum	Woodland adjacent Valley Slope (1, 2, 8, 9, 11b, 12)
Seeps and Springs	Seeps (no springs) on lower valley slopes (12)
Species of Conservation Concern: • Eastern Wood-Pewee • Wood Thrush • Barn Swallow • Monarch	 • Woodland (1, 2, 8, 9, 11, 12) • Forest (1, 2, 8, 12) • Bronte Creek P.P. Meadow (10) • Bronte Creek P.P. Meadow (10)
Tallgrass Prairie	Restoration areas in Bronte Creek P.P. (10b)
Turtle Nesting Area	Toe of Valley Slope (2c, 12)
Woodland Area-Sensitive Bird Breeding	Woodland (2c, 8, 12)
Woodland Raptor Nesting	Woodland (2c, 8, 11, 12)

As noted in **Section 3.2.2**, the Study Area was inspected for seeps in consultation with DS Consultants on March 17, 2023. Seeps were observed on the lower valley slope of Bronte Creek (ELC Unit 12) as described by DS Consultants in the *Hydrogeological Investigation* report (DS Consultants 2023b). These seeps are maintained by a shallow sand unit and these seeps are hydraulically connected to a more regionally expansive sand unit found on other sites to the east of Bronte Road (DS Consultants 2023b). As such, DS Consultants have advised that any minimal recharge that may be occurring on the Subject Lands is anticipated to be insignificant in relation to the larger recharge area associated with these seeps.

The large artificial pond is not in a forested area and is therefore not SWH for seeps or springs. DS Consultants have advised that this pond was excavated to the depth of a sand layer and is consequently fed by groundwater (DS Consultants 2023b). It should be noted that the pond is also actively maintained, as the previous landowner has noted that when the pond level drops, he tops up the pond with well water. It should be further noted that *Significant Wildlife Technical Guide – Appendix Q* (OMNR 2000) specifies that seeps or springs found in relatively undisturbed areas are generally more significant than those found in areas disturbed by human activities.

During a site visit with Region and Town representatives on March 24, 2023, a wet depression was noted in the tableland woodland (ELC Unit 1) and discussion took place with respect to whether this wet area should be considered a seep. It was the opinion of DS Consultants that the wet area is not a seep because there is insufficient catchment area for groundwater discharge. In addition, this wet area does not contain plant species indicative of seepage. This depression outlets to the BCT-1 gully and the outlet is approximately 1 m lower than the depression. This drop is deemed by Beacon to be a result of the active erosion of the BCT-1 gully by the watercourse, rather than an indicator of high discharge from the wet depression.

Insect surveys in 2022 identified Double-striped Bluet associated with the large pond. This species is ranked as S3 and little is known about its abundance in Halton (Rothfels, 2006). It should be noted that the large pond is not considered to be conducive to population viability of Double-striped Bluet due to the presence of large predatory fish species and anthropogenic stressors. Based on an evaluation in accordance with the *Significant Wildlife Habitat Technical Guide* Appendix Q (OMNR 2000), described in **Table E2** of **Appendix E**, the presence of Double-Striped Bluet associated with the large pond on the Subject Lands was determined to be not significant**.**

5.6 Significant Areas of Natural and Scientific Interest

Significant Areas of Natural and Scientific Interest are recognized as Key Features within the RNHS. Regarding Areas of Natural and Scientific Interest (ANSI), significant is defined by the PPS (2020) as:

> *Areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education.*

The provincially significant Bronte Creek Provincial Park Nature Reserve Zone - Life Science ANSI overlaps slightly with the southern and western portions of the Subject Lands (**Figure 2**). The ANSI boundaries are generally coincident with the Significant Woodland boundaries on the Subject Lands.

5.7 Fish Habitat

The PPS (2020) treats all fish habitat equally regardless of significance. However, the PPS applies only to waterbodies where the protection prohibitions of the *Fisheries Act* (1985) apply.

The *Fisheries Act* defines fish habitat as “water frequented by fish and any other areas on which fish depend directly or indirectly to carry out their life processes, including spawning grounds and nursery, rearing, food supply and migration areas”. As identified in **Table 1**, protection provisions of the *Fisheries Act* are focused on two core prohibitions, a) carrying on works, undertakings or activities that result in the “death of fish by means other than fishing” (subsection 34.4[1]), and b) the “harmful alteration, disruption or destruction of fish habitat” (subsection 35[1]; also referred to as “HADD”). There are three aquatic features within the Subject Lands that have undergone an assessment to identify and define the fish and fish habitat within the Subject Lands.

The fish habitat, within the reach BCT-1a is limited by the identified impediments to fish movement (i.e., the accumulation of large woody debris and associated knickpoints, along with the high gradient gully feature). Therefore, the BCT-1a reach has been identified as indirect fish habitat. Indirect fish habitat has an insufficient flow duration and/ or a barrier that prevents the ability of fish to complete one or more of their life processes (spawning, rearing, feeding, over wintering or migration). Indirect fish habitat is provided protections under the *Fisheries Act* prohibitions as these features provide water and nutrients to downstream habitats.

The fish habitat in downstream reaches BCT-1b and BCT-1c is less limited as there are intermittent flows, groundwater inputs and a potential connection under flood conditions to Bronte Creek, a fish bearing waterbody. For this reason, these lower reaches have been identified as direct fish habitat.

The two ponds on the Subject Lands are artificial (i.e., historically dug ponds). The large pond has been established as habitat to an introduced fish population. Neither pond has a connection (during anytime of the year) to Bronte Creek due to the known impediments to upstream fish movement along BCT-1. Furthermore, neither pond is proximal to the Bronte Creek floodplain, nor connected to any other drainage features or waterbodies (**Figure 3**).

The Fish and Fish Habitat Protection Policy Statement (FOC 2019), outlines exceptions, outside of the ministerial authorizations identified in subsection 34.4(2)(a) or 35(2)(a) of the Act, that provide authority for a proponent to complete work, undertaking, or activity without contravening the prohibitions against the death of fish or the HADD of fish habitat. One such exception includes the prescription of certain 'Canadian waters' where the prohibitions do not apply. The DFO's Projects Near Water website, provided further guidance in defining these 'specific types of minor waterbodies' where proposed work, undertakings, or activities are exempt and therefore do not require additional consultation with DFO. These include, but are not limited to, artificial waterbodies (including private ponds) that are not connected to a waterbody that contains fish at any time during any given year. Therefore, since the ponds within the subject lands are artificial (anthropogenically created), have no connection (during any time of the year) to the lower reaches of BCT-1 and Bronte Creek and are not located within the Bronte Creek floodplain they meet the exception requirements for a waterbody where the prohibitions do not apply. Furthermore, the death of the introduced fish population can be avoided by following the recommended mitigations provided in **Section 9**.

6. Natural Heritage System

The PPS (2020) describes natural heritage systems as follows:

> *A system made up of natural heritage features and areas, linked by natural corridors which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species and ecosystems.*

The Town of Oakville Official Plan describes their natural heritage system as a linked system of natural areas which include natural features, hazard lands, buffers and linkages.

ROP policy 115.3 defines the RNHS as including: Key Features, Enhancements to the Key Features, including Centres for Biodiversity, linkages, buffers, watercourses within Conservation Authority Regulation Limit or those that provide a linkage to a wetland or a significant woodland, and wetlands other than those considered significant. Key Features include significant habitat of threatened or endangered species, significant wetlands, significant coastal wetlands, significant woodlands, significant valleylands, significant wildlife habitat, significant ANSI's and fish habitat. Additionally, the RNHS also includes watercourses and floodplains regulated by CH and wetlands that do not meet the ROP definition of significant.

Map 1 and Map 1G of the ROP identify the limits of the RNHS on the Subject Lands. ROP policy 116.1 states that:

> *The boundaries of the Regional Natural Heritage System may be refined, with additions, deletions and/or boundary adjustments, through:*

a) a Sub-watershed Study accepted by the Region and undertaken in the context of an Area-Specific Plan;
b) an individual Environmental Impact Assessment accepted by the Region, as required by this Plan; or
c) similar studies based on terms of reference accepted by the Region.

One of the objectives of this EIA is to refine the limits of a RNHS by identifying Key Features and establishing their limits in consultation with the agencies, identifying enhancements to Key Features, as well as linkages, natural hazards and setbacks, and ecological buffers.

The following subsections identify Key Features and components of the RNHS as they relate to the Subject Lands. As the RNHS also encompasses the Greenbelt NHS, the latter is not discussed below. Furthermore, as the Key Natural Heritage Features within the Greenbelt extend beyond the Greenbelt Plan limits, the Greenbelt Plan policies do not apply to those natural heritage features beyond the Greenbelt Plan limit. In those instances, the EIA is to determine the appropriate buffer as opposed to utilizing the minimum vegetation protection zone (VPZ) prescribed by the Greenbelt Plan.

The intent of identifying a Preliminary RNHS on the Subject Lands is to inform the development plan and design. The boundaries of the Preliminary RNHS will be further refined, in later sections of this EIA, based on consideration of the development design and its efficient integration and the resulting development limits will be used to define the Final Refined RNHS. The Preliminary RNHS is illustrated with constraints on **Figure 6.**

6.1 Key Features

Based on the evaluation of significance presented in **Section 5.0**, the following Key Features have been identified with the Study Area:

- Significant Habitat for Endangered and Threatened Species;
- Significant Woodlands;
- Significant Valleylands;
- Significant Wildlife Habitat;
- Significant Areas of Natural and Scientific Interest; and
- Fish Habitat.

6.1.1 Significant Habitat of Endangered and Threatened Species

As noted in **Section 5.1** the following endangered and threatened species and/or their habitat have either been confirmed on the Subject Lands or likely associated with the Subject Lands:

- Black Ash (*Fraxinus nigra*) – Endangered;
- Butternut (*Juglans cinerea*) – Endangered; and
- Northern Myotis (*Myotis septentrionalis)* – Endangered.

Two Butternut trees (not hybrid) will be retained within the limits of the RNHS and are greater than 25 m from the proposed development limit.

Northern Myotis was detected on the Subject Lands during acoustic monitoring. While no bats were observed utilizing existing structures in the developed portion of the Subject Lands, this occurrence suggests that there could be a maternity roost nearby and most likely in the adjacent woodland and possibly in the abandoned garage in the woodland. As these areas are contained within the Significant Woodland and will not be developed, the habitat for this species, as well as other listed bats that may also utilize these areas as habitat, will be maintained.

6.1.2 Significant Woodlands

As was described in **Section 5.2**, the forested slopes along the Bronte Creek valleylands and adjoining tableland woodlands on the Subject Lands satisfy regional criteria for significant woodlands and therefore form part of the Preliminary RNHS. The boundaries of these Significant Woodlands were staked and confirmed by the Region of Halton as noted in **Section 3.3**.

6.1.3 Significant Wetlands

As discussed in **Section 5.3**, a potential significant wetland is present at the base of the Bronte Creek valleylands in ELC Unit 13.

6.1.4 Significant Valleylands

As discussed in **Section 5.4**, the Bronte Creek valleylands are considered to meet the criteria of a Significant Valleyland. This Significant Valleyland forms part of the RNHS. The top of slope of these valleylands were staked and confirmed by CH as noted in **Section 3.3** and the LTSTOS was determined by Terraprobe (2023). The limits of the Significant Valleyland correspond with the LTSTOS as specified in the *Natural Heritage Reference Manual* (MNR 2010).

6.1.5 Significant Wildlife Habitat

As discussed in **Section 5.5**, the Study Area supports potential SWH, mostly outside of the Subject Lands. The habitats identified as potential SWH are contained entirely within the boundaries of the Preliminary RNHS or Greenbelt.

6.1.6 Significant Areas of Natural and Scientific Interest (ANSI)

As discussed in **Section 5.6**, the Subject Lands is flanked by the Bronte Creek Provincial Park. The Nature Reserve Zone associated with the park is identified by MNRF as a provincially significant life science ANSI. This Key Feature of the RNHS is fully contained within the Preliminary RNHS.

The woodland on the Subject Lands is contained in the ANSI boundaries.

6.1.7 Fish Habitat

As examined in **Section 5.7**, the two artificial ponds are exempt from the prohibitions identified as protection provisions of the *Fisheries Act*. The PPS policies only pertain to waterbodies where the prohibitions of the *Fisheries Act* (1985) apply. The fish habitat within the BCT-1 feature is divided into indirect habitat and direct habitat. Reach BCT-1a is identified as indirect habitat based on its lack of connection to a fish bearing waterbody and the impediment to upstream fish movement due to ephemeral flow and steep gradient. Reaches BCT-1b and BCT-1c are identified as direct fish habitat based in intermittent flows and connections to a fish bearing waterbody in Bronte Creek under certain high water flood conditions.

6.2 Non-Significant Wetlands

As discussed in **Section 5.3** there is one wetland (ELC Unit 3) adjacent to the smaller artificial pond on the Subject Lands. This wetland feature does not meet the ROP definition of significant because it is outside the Greenbelt, is not a Provincially Significant wetland, and does not make an important ecological contribution to the RNHS (dominated by invasive *Phragmites*). This wetland feature is nevertheless considered a component of the RNHS (i.e., a wetland other than those considered significant). This wetland unit was not staked by CH. The wetland is contained entirely within the limits of the Preliminary RNHS as it is contained within the Significant Valleyland by virtue of it being within the LTSTOS.

6.3 Linkages

The Bronte Creek valleylands represent a regional scale linkage. This has been confirmed through previous studies including the Merton Tertiary Plan studies. This linkage is defined by the Significant Valleyland which is included in the Preliminary RNHS.

6.4 Buffers

The primary purpose of a buffer is to provide protection to Key Feature(s) and ecological functions by mitigating potential adverse impacts from development or site alteration.

The Region defines buffer as follows:

> *220.1.1 BUFFER means an area of land located adjacent to Key Features or watercourses and usually bordering lands that are subject to development or site alteration. The purpose of the buffer is to protect the features and ecological functions of the Regional Natural Heritage System by mitigating impacts of the proposed development or site alteration. The extent of the buffer and activities that may be permitted within it shall be based on the sensitivity and significance of the Key Features and watercourses and their contribution to the long-term ecological functions of the Regional Natural Heritage System as determined through a Sub-watershed Study, an Environmental Impact Assessment or similar studies that examine a sufficiently large area*.

Key factors to be considered when prescribing ecologically appropriate buffers to natural features include a) the sensitivities of the habitats and species present, b) the nature of the proposed land use change or activity and associated stressors, and c) the ability of the buffer to mitigate adverse impacts to adjacent natural features and their ecological functions.

Although it is generally recognized that, given all the variables to consider, it is more scientifically defensible to identify buffers on a site-specific basis, precautionary buffers are sometimes recommended or adopted by planning authorities because it simplifies the process, ensures a certain level of consistency, and provides more certainty about the amount of land that will need to be set aside for conservation purposes.

Additionally, while buffers have become a more or less standard mitigative tool as part of the natural heritage planning process in southern Ontario, buffers represent only one of the many protection measures available. Buffers can only mitigate certain types of stressors, not all. Therefore, they should be complimented with other protection measures. Similar or enhanced levels of environmental protection can also be achieved through design, education, and controlling access to sensitive areas. For example, green infrastructure such as LIDs and stormwater management (SWM) ponds are intervening land uses that can provide similar protective functions to a buffer. Fencing and trails can also be used to prevent encroachment, control/direct access adjacent to natural features and mitigate impacts to sensitive features.

Buffer design requires consideration of feature sensitivity and potential stressors associated with how the adjacent lands will be used. Depending on the types of uses and associated stressors, buffers may or may not be warranted. In some situations, such as infill redevelopment projects in urban areas where the ambient stressors are already high, or where environmental features may not support highly sensitive ecological receptors, buffers may not be as effective as if applied to greenfield developments. In cases, where there are fewer stressors associated with the new use than the existing use, buffers may not always be necessary.

As it relates to the proposed redevelopment, Beacon recommends that an ecological buffer be applied to the boundary of the Significant Woodland as this provides protection to all other Key Features associated with the Subject Lands.

Through consideration of key factors for determination of buffer width described above (i.e., sensitive ecological receptors, potential stressors, and buffer form), it is recommended that a 10 m naturalized buffer be applied to the dripline of the Significant Woodland. A buffer width of 10 m to Significant Woodlands is considered a standard in most municipalities in southern Ontario.

While Town of Oakville policies pertaining to woodlands (S. 16.1.8) generally do not permit development within 10 m of a woodland, they do allow for larger or smaller buffers to be applied depending on the sensitivity of the woodland. Conservation Halton's Land Use Planning policies relating to significant woodlands (S.3.6.4) recommend a minimum 10 m buffer to be confirmed through study. The Town of Oakville also has land use planning policies that specifically relate to the Bronte Road West Lands. Policy 27.3.8.3(e)(i) requires that a 30 m minimum buffer be applied to Key Features on the Subject Lands but allows for this buffer to be further refined through the completion of an EIA approved by the Region. This is consistent with ROP Policy 116.1, which provides the ability for proponents to refine the RNHS limit through the EIA process.

Beacon considers a 10 m buffer, applied to the limits of the Significant Woodland, to be ecologically appropriate for protecting all of the Key Features and their ecological functions from potential impacts related to the proposed redevelopment of the Subject Lands. Rationale for the determination of this buffer width is provided below:

- The Subject Lands currently support long-established residences, laneways, artificial ponds, extensive trails, lawns, accessory buildings and structures, some of which are contained within the Key Features themselves (i.e., trails and accessory buildings). The ecological communities and species that are most proximal and could potentially be affected by the redevelopment proposal have long adapted to the existing residential land uses and activities on the Subject Lands as well as other urban uses in the Study Area, including noise and light impacts from Bronte Road to the east (and immediately adjacent to the woodland), noise from the QEW to the south, and noise and activity related to camping and off-leash trail usage in the Bronte Creek Provincial Park to the north;
- The most sensitive ecological receptors are the vegetation, fish, and wildlife resources associated with the Bronte Creek valleylands and these are physically/vertically separated from the redevelopment proposal (ELC Units 2c and 12);
- Portions of ELC Unit 1 proximal to the valley and ELC Unit 8 are also considered sensitive, however the portions of ELC 1 that currently abut Bronte Road and the existing development are not sensitive as they are already exposed to existing stressors. A 10 m buffer can mitigate potential stressors associated with the proposed redevelopment; however, the existing effects of Bronte Road cannot be mitigated by any buffer;
- ELC Unit 9 is a cultural plantation that does not support any sensitive of significant species or wildlife habitat. A 10 m buffer along the southern limit of this feature is sufficient to protect its functions and attributes. The eastern, northern and western limit of this feature is located on Bronte Creek Provincial Park land and will have no adjacent development;
- ELC Unit 2b flanks the Bronte Creek valley but does not support significant or sensitive wildlife as it is maintained as lawn and used by the existing residents; and
- There are presently no buffers or fencing to separate the existing residential uses from the adjacent Key Features. The proposed redevelopment can be designed to provide for greater separation between human activities and the Key Features than what currently exists.

As it relates to the Significant Valleyland, a 15 m setback has been applied to the LTSTOS to conform with Town and CH policies relating to erosion hazards as is described in **Section 6.8**. As the purpose of a setback differs from that of an ecological buffer, the setback has been mapped separately as a component of the Preliminary RNHS to satisfy Town and CH policies pertaining to erosion hazards and valleylands.

6.5 CH Regulated Watercourses

Watercourses that are within a Conservation Authority Regulation Limit represent a component of the RNHS. There are two regulated watercourses associated with the Subject Lands – Bronte Creek and BCT-1. These watercourses are contained within the limits of the Preliminary RNHS.

6.6 Enhancements to Key Features

Enhancements to Key Features represent another component of the RNHS as outlined in ROP policy 115.3.

ROP policy 229.1.1 defines Enhancements to Key Features as follows:

> *ENHANCEMENTS TO THE KEY FEATURES means ecologically supporting areas adjacent to Key Features and/or measures internal to the Key Features that increase the ecological resilience and function of individual Key Features or groups of Key Features.*

Opportunities exist on the Subject Lands to implement measures that can increase the ecological resilience and function of Key Features. Recommended enhancement measures to be considered within and/or adjacent to Key Features are listed below:

Enhancements Internal to Key Features

- Restoration of the upper reach of BCT-1 using natural channel design principles to rectify previous alteration and existing erosion issues.
- Removal of existing structures (e.g., sheds, outbuildings, garage, lookout platform, etc.) from Key Features and restoration of these areas to woodland using locally appropriate native trees, shrubs and groundcovers.
- Decommissioning of existing trails (some of which were used for vehicular access by the previous landowner) in Key Features (ELC Units 1 and 8), as illustrated in **Appendix F**, and restoration of these areas to woodland using locally appropriate native trees, shrubs and groundcovers. It is estimated that the cumulative area that could potentially be restored is approximately 3,250 m^2.
- Management and control of populations of invasive and exotic species such as Garlic Mustard and Common Buckthorn associated with the Significant Woodland (ELC Units 1, 2a, 2b and 8) and replacement using locally appropriate native trees, shrubs and groundcovers.
- Creation of supplementary wildlife habitat (brush piles, etc.) in Significant Woodland (ELC Units 1, 2a, 2b and 8).

Enhancements Adjacent to Key Features

- Removal of artificial ponds and mitigation of existing surface runoff and erosion impacts.
- Removal of existing structures (e.g., estate home, driveway, garages, etc.) from Buffers and stable slope setback and naturalization of these areas using locally appropriate native trees, shrubs and groundcovers.
- Creation of artificial wildlife habitats (i.e., brush piles, snake pits, bird and bat boxes) on developed portions of the Subject Lands where feasible.

6.7 Regulated Flood Plain

The ROP includes regulated flood plains as a component of the RNHS as defined in ROP policy 115.4. There are no regulated flood plains on the Subject Lands, however there is a regulated flood plain associated with Bronte Creek within the Study Area. The regional floodline and 15 m setback are fully contained within the valleylands and limits of the Preliminary RNHS and do not extend onto the Subject Lands.

6.8 Erosion Hazards

Erosion hazards such as steep slopes are not considered components of the RNHS; however, hazard lands, which include erosion hazards, are considered part of the Town's NHS, and for this reason have also been included as part of the Preliminary RNHS.

On the Subject Lands, the steep slopes associated with Bronte Creek valleylands, including BCT-1, represent an erosion hazard. The physical top of slope of the valley was staked by CH on August 18, 2021, and the LTSTOS was determined by Terraprobe (2023). The Town and CH have specific policies and regulations pertaining to development within or adjacent to natural hazards. Bronte Creek is considered a major valley and development is not permitted within the 15 m of the LTSTOS. The erosion hazard limits include the 15 m setback and have been used to define the limits of the Preliminary RNHS.

6.9 Preliminary RNHS Limits

Based on the evaluation of significant natural heritage features and functions provided in **Section 5** and subsequent confirmation of other components of the RNHS discussed in **Section 6**, the limits of the Preliminary RNHS were identified by the outermost RNHS component or erosion hazard limit which corresponds with the following, whichever is greater:

- 10 m Buffer to the Significant Woodland; or
- 15 m Setback to the LTSTOS.

The Preliminary RNHS is illustrated on **Figure 6** and is further refined in subsequent sections of this EIA, based on the design of the proposed redevelopment and identification of Enhancements to the Key Features.

7. Development Constraints and Opportunities

The identification of potential biophysical constraints to future development is based on the findings of the background review, characterization of existing conditions completed to date, and evaluation of significance. Where conditions have been revealed that make areas unsuitable for future development under the current environmental regulatory framework described in **Section 2**, these areas have been identified as potential constraints to development.

It is important to note that while an area or feature may be identified as a potential constraint, this does not necessarily mean the area is not developable. Constraints are treated variably according to their significance and sensitivity as applicable environmental protection policy and regulations determine allowed development / use within these areas. The following sections summarize natural heritage and natural hazard constraints associated with the Subject Lands.

In addition to the identification of environmental constraints, the EIA has identified opportunities to restore and enhance the natural environment as part of the proposed development. These opportunities include measures to enhance the ecological integrity of the woodland and valleylands and have been outlined in **Section 6.6**.

7.1 Natural Heritage Constraints

Based on the background information and the data gathered through background review and field investigations described in **Section 3.2** and through the evaluation of significance presented in **Section 5** and identification of the Preliminary RNHS limits in **Section 6.9**, it was determined that the significant natural heritage features that have been identified on the Subject Lands are associated primarily with the Bronte Creek valleylands and the woodlands within the Greenbelt and Bronte Creek Provincial Park.

The following is a list of natural heritage constraints to the proposed redevelopment:

- Significant Habitat of Endangered and Threatened Species:
    - Black Ash (endangered) – contained within the boundary of ELC Unit 12;
    - Northern Myotis (endangered) – defined by limits of Significant Woodlands;
    - Butternut (endangered) – contained within the limits of Significant Woodlands and its Buffer, subject to applicable exemptions under the ESA and regulations;
- Significant Woodlands – defined by dripline staked by Region;
- Significant Valleylands – defined by LTSTOS determined by Terraprobe Inc. (2023);
- Significant Wildlife Habitat – defined by limits of Significant Woodland;
- Significant ANSI;
- Fish Habitat – BCT-1, Bronte Creek;
- Linkages – Bronte Creek valleyland – defined by limits of Significant Valleyland; and
- Buffers –10 m to Significant Woodland.

7.2 Natural Hazard Constraints

The Study Area includes the Bronte Creek valleylands which contain natural hazards related to flooding and erosion.

The bottomlands contain the flood hazard which is defined by the regional floodline and 15 m setback or allowance. The flood hazard limits are contained entirely on the adjacent BCPP property and do not extend onto the Subject Lands. As such, they do not represent a constraint to the proposed redevelopment, unless there is a need for infrastructure to be installed in the valley.

The valley slopes present an erosion hazard which is defined by the LTSTOS and 15 m setback or allowance. The erosion hazard limits extend onto the Subject Lands and will represent a constraint to redevelopment of the Subject Lands.

While development within natural hazards is generally not permitted, natural hazard policies do permit development in hazard lands in certain cases such as existing uses and new infrastructure, provided certain criteria can be satisfied. Any development within the natural hazard will require a Permit from Conservation Halton pursuant to Ontario Regulation 162/06.

8. Description of the Proposed Development

One of the primary objectives of the proposed redevelopment plan is to protect, maintain, restore and enhance the significant natural heritage features and ecological functions associated with the Subject Lands and surrounding area. To facilitate achieving this objective, the proposed redevelopment has been designed to respect the various natural heritage and natural hazard constraints described in **Section 7** which correspond with the limits of the Preliminary RNHS identified in **Section 6.9**.

Through the design of the proposed redevelopment, opportunities were identified to incorporate green infrastructure such as a bioswale and naturalized channel that can mitigate existing impacts to Key Features while increasing their ecological resilience. Such measures, external to Key Features and Buffers (i.e., external to the Preliminary RNHS) are considered Enhancements to the Key Features and represent components of the RNHS and were used to establish the limits of the Final RNHS.

8.1 Proposed Development Plans

Eaglewood Communities Limited

The proposed redevelopment plan at 1354 Bronte Road (**Figure 7A**) consists of the following:

- One six storey residential complex consisting of 110 condominium units; 166 parking spaces;
- Landscaping; and
- Public Road connection to Saw Whet Boulevard and adjacent lot.

For servicing details, please refer to Functional Servicing Report for 1354 Bronte Road prepared by Urbantech Consulting (2023).

Bronte River Partnership Limited

The Conceptual Development Plan for 1300, 1316, 1326, 1342, 1350 Bronte Road (**Figure 7B)** consists of the following:

- Block 1 – Residential Condominium – 4.87 ha:
    - 86 single detached dwellings including one existing heritage house to be retained;

    - 89 condominium town homes;
- Block 2 – Natural Area (LID-RNHS Enhancement Area) – 0.42 ha;
- Block 3 – Natural Area (RNHS Buffer/Significant Valleyland/Setback/Enhancement Area) – 0.88 ha.;
- Block 4 – Natural Area (RNHS Buffer) – 0.01 ha;
- Block 5 – Greenbelt/Parkway Belt West (RNHS Key Features – Woodland etc.) – 5.32 ha;
- Block 6 – Natural Area (RNHS Key Features – Woodland etc.) 0.36 ha;
- Block 7 – Residential Reserve Area – 0.04 ha;
- Block 8 – Road Widening – 0.10 ha;
- Block 9 – 0.3 m Reserve; and
- 17 m Street A ROW.

As part of the proposed redevelopment plan, all existing anthropogenic structures that overlap with the Preliminary RNHS will be restored to a natural condition as is described in **Section 6.6**. This includes the removal of the existing house on 1300 Bronte Road, driveway, garage, lookout platform, and other structures within the woodland.

8.2 Grading

Grading details are outlined in the Functional Servicing and Stormwater Management Report (FSR) prepared by Urbantech Consulting (March 2023). The objectives of the grading design are to:

- Match existing ground elevations at the limits of the RNHS and perimeter of the pocket wetland designs;
- Conform to the Town of Oakville design criteria;
- Provide appropriate cover on proposed servicing;
- Achieve stormwater management and environmental objectives;
- Provide overland flow conveyance for major storm conditions;
- Address boundary drainage conditions where surrounding lands are not developing at the present time;
- Optimize cut and fill operations to minimize import/export;
- Ensure compatibility with extensions of roads into surrounding lands; and
- Adhere to the recommendations of the EIA.

Grading is proposed within the Preliminary RNHS to facilitate the removal of the existing estate home, removal of the existing small pond, and to stabilize the erosion issues and reinstate a natural channel in the upper reach of BCT-1. The grading for these proposed works is also shown in the FSR (Urbantech 2023) as well as the Conceptual Channel Design and Erosion Assessment (GEO Morphix 2023). The proposed grading within the Preliminary RNHS is restorative and for conservation purposes. The Tree Preservation Plan (Kuntz Forestry Consulting 2023) has assessed the impacts of the proposed grading on adjacent trees and has determined that approximately 70 trees will be impacted by the proposed grading works. However, as observed while on-site with agency staff on March 24, 2023, several of these trees are located within areas of severe undercutting along BCT-1 and will soon fall over naturally. It is our opinion that the removal of these 70 trees to facilitate restorative works is not a negative impact as the works are highly localized and will have a positive impact on the Key Features in the Study Area. The disturbed areas will be revegetated, using Conservation Halton's Landscaping Guidelines.

8.3 Stormwater Management and BCT-1 Restoration

8.3.1 Stormwater Management Alternatives

The FSR considered several SWM design alternatives including options with different drainage diversion areas between Bronte Creek and Fourteen Mile Creek as well as options, including a conventional wet pond that would discharge to the storm sewer on Bronte Road versus a biofiltration swale LID feature that would discharge to the BCT-1 tributary. The different design alternatives are discussed in Table 4-1 and Section 4 of the FSR (Urbantech 2023).

The preferred SWM design alternative is to utilize a biofiltration swale LID to collect runoff from most of the Subject Lands. The LID would outlet to a created pocket wetland, enter a naturalized channel and another pocket wetland before being discharged to the existing BCT-1. The remainder of the site, within the Fourteen Mile Creek catchment area, is proposed to drain to a sewer in the Bronte Road right-of-way, and ultimately Fourteen Mile Creek.

During the August 18, 2021, site visit with Town and CH staff, the Study Team outlined a proposed approach for discharging stormwater from a portion of the Subject Lands to Bronte Creek using the natural drainage outlet provided by BCT-1 tributary. Town and CH staff recommended that the Study Team explore other locations for discharging stormwater to Bronte Creek.

To address this request, the Study Team undertook an analysis and determined that there are only two options to outlet stormwater from the Subject Lands to Bronte Creek. Option A utilizes the BCT-1 as this is the only available natural drainage outlet to Bronte Creek proximal to the proposed redevelopment and provides an opportunity to restore conditions in this area to a more natural condition. Option B would consist of creating a new outlet that would consist of a large drop structure and an outfall headwall beside Bronte Creek at the base of the steep valley slope.

An evaluation of Options A & B is presented in Section 4.3.4 and Table 4-4 of the FSR (Urbantech 2023) and summarized below.

Option A – Naturalized Outlet to BCT-1

BCT-1 represents the natural drainage outlet for much of the Subject Lands. Most of the drainage from the Subject Lands and adjacent upstream drainage catchment areas are directed to the two artificial pond features and these outlet to the BCT-1 gully and then to Bronte Creek.

This option is considered least impactful to the environment as it utilizes the natural drainage outlet and provides an opportunity to restore the area previously modified by the creation of the artificial small pond.

Although not required to facilitate the proposed development, this Option will also involve the restoration and stabilization of the eroded sections of the BCT-1 gully on the Subject Lands. GEO Morphix has prepared a design to replace the smaller artificial pond features with a natural channel and pocket wetlands to provide a more ecologically appropriate interface between the biofiltration swale LID feature and the BCT-1 gully that complements the RNHS.

To facilitate the construction of the naturalized channel and removal of the smaller artificial pond some minor work within the Significant Woodland and Buffer will be required. It is estimated that an area of approximately 265 m^2 within the Significant Woodland will be temporarily affected, but immediately restored. An additional area of 1,660 m^2 outside the Significant Woodland, and within the Buffer will also be temporarily affected and immediately restored.

This option results in the least impact to the RNHS in terms of construction and implementation impacts and provides for a stormwater outfall on lands that will ultimately be owned by the Town and easily accessible as compared to an inaccessible outlet on Bronte Creek Provincial Park lands.

Option B – Bronte Creek Outfall

As previously described, during the site visit on August 18, 2021, CH staff requested that an alternative outlet to the main Bronte Creek valley be considered. Specifically, CH requested that the construction of a stormwater outfall directly to the base of the main Bronte Creek valley be explored using directional drilling. This would require the use of a significant drop structure, given the height of the valley in this area. This proposed alternative was thoroughly reviewed by the Study Team from various perspectives including constructability, impacts to natural heritage and natural hazard features and cost. In comparison to the Study Team's recommended outfall to BCT-1, a drop structure outlet to the main Bronte Creek will have significant impacts to the natural heritage system and natural hazards within and along the valley slope. Specifically, the construction of a drop structure will necessitate the creation of a headwall within the valley which will require that construction vehicles have access to the base of the valley. There is no existing access route into the valley in this location and, as such, a new construction access route into the valley would need to be created on lands owned by Ontario Parks (Bronte Creek Provincial Park). This would involve significant tree removal and grading along the slopes of the main Bronte Creek valley, to provide safe machinery access, creating a 10,000 m^2 area of disturbance. This disturbance would require the removal of vegetated areas within the significant woodland that would take decades to replace. Once at the base of the valley, the creek is at the toe of slope, which may necessitate placing fill into the creek / redirecting the creek in order to create a construction access route to the headwall location. In addition to the extensive impact to the natural environment that would be required to implement this option, the cost of the drop structure, and the long-term maintenance implications to the Town are significant. Finally, this option would result in the creation of permanent infrastructure within Bronte Creek Provincial Park that would be generally inaccessible by the Town.

Preferred Approach

Based on the Study Team's evaluation of both outlet options, the team is of the opinion that Option A (the naturalized channel outlet to BCT-1) will result in significantly fewer impacts to the natural environment This option will also provide an opportunity to rectify existing erosion issues within the BCT-1a reach. Furthermore, all the works can be implemented entirely from the Subject Lands and will result in a stormwater outfall that is on Town owned lands and accessible by the Town.

8.3.2 Stormwater Management Strategy Objectives

The objectives of the SWM strategy are as follows:

- Provide erosion control and meet pre-development flows for Bronte Creek. For 14 Mile Creek meet the pre-development targets outlined in PCSWMM model for 14 Mile Creek received from DSEL (December 2022);
- Provide extended detention for 24- to 48-hour drawdown for 14 Mile Creek and Bronte Creek, and ensuring the erosion threshold target flow rate established by GEO Morphix is met for Bronte Creek;
- Ensure minimum MECP enhanced (Level 1) stormwater quality treatment of runoff is provided;
- Endeavor to maintain pre-development water balance through the use of LID measures to the extent possible; and
- Provide safe overland flow conveyance of the 100-year event.

Details of the proposed stormwater management (SWM) strategy are outlined in the FSR (Urbantech 2023) and the Conceptual Channel Design and Erosion Assessment (GEO Morphix 2023). A summary of the various stormwater components is presented below.

8.3.3 Description of Proposed Biofiltration Swale –- LID

The proposed biofiltration swale LID feature has been designed by Urbantech to meet required quality and quantity controls, including Enhanced Level 1 protection that will be provided through the combination of two OGS units and the biofiltration swale LID. Additionally, a 750 mm clean water system pipe is proposed to convey flows from a 5.2 ha external drainage area. The bypass pipe outlets to the upstream limit of the naturalized channel near the outlet of the bio-filtration facility. A flow splitter is located upstream of the outlet to convey the flows from the 10 mm event to the LID to mitigate downstream erosion.

The biofiltration swale LID feature has been designed to contain stormwater runoff from the 25 mm though the 100-year events. Runoff from the 25 mm event will percolate through the floor of the swale through engineered topsoil (special topsoil/sand mixture) and be subject to evapotranspiration through vegetation. Beneath engineered topsoil is a rock gallery with a perforated underdrain that collects filtered flows that are released to the naturalized outlet channel. An impervious liner is proposed beneath the bio-filtration swale to preclude groundwater intrusion into the filter and underdrain. Runoff for events greater than the 25 mm event will be controlled to pre-development peak flow levels or lower. It should be noted that the biofiltration swale LID has been designed to reduce overall erosive hours based on continuous hydrologic modeling which reduces the risk of further erosion in BCT-1.

The biofiltration swale LID is proposed to be located outside the limits of the Preliminary RNHS identified in **Section 6.9**. The biofiltration swale LID is proposed immediately adjacent to the 10 m Buffer to the Significant Woodland. The biofiltration swale LID is approximately 170 m long with a trapezoidal shaped cross section, 3-6 m bottom width, 3:1 side slopes which will be planted with native vegetation, and 17–22 m top width with a varied bank height.

The location of the biofiltration swale LID provides for a 20 m wide strip between the proposed redevelopment and the Buffer to the Significant Woodland. The biofiltration swale LID will be partly naturalized and provide for improved water quality by controlling flows and mitigating erosion within BCT-1. The ecological functions provided by this green infrastructure facility contribute to the protection, maintenance, and improvement of the adjacent Key Features of the RNHS and serves to increase their ecological resilience.

For these and other reasons, the biofiltration swale LID is considered an Enhancement to the Key Features and is proposed to be included as part of the Final RNHS as is further discussed in **Section 8.6**.

8.3.4 Description of Outlet to BCT -1 – Natural Channel and Pocket Wetlands

While described in the stormwater section of this report, it should be noted that the outlet to BCT-1 does not represent stormwater management infrastructure. All works described in this section will be limited to the Subject Lands

As has been observed by agency staff over the course of several site visits, there is existing erosion taking place along the upper reach of BCT-1. To address this existing erosion, GEO Morphix has designed erosion protection measures that involve the use of an alternating cascade using hydraulically sized keystones as well as lining the sides of the upstream reach with a vegetated rock buttress. Further details are provided in the Conceptual Channel Design Report (GEO Morphix 2023). The provision of this erosion protection, to mitigate existing erosion, will be a benefit to the RNHS by stabilizing BCT-1 and the surrounding gully, thereby mitigating potential for further tree loss and long-term sedimentation of Bronte Creek.

The proposed works, upstream of BCT-1, relate to removing the artificial pond, and creation of a natural channel connection, with 0.03 ha of pocket wetlands, between the proposed biofiltration swale LID and BCT-1. This work is not required to meet SWM objectives as quantity, quality and erosion control is provided for in the biofiltration swale LID and OGS's, but rather is intended to restore a more natural connection to BCT-1 as compared to existing conditions which include a dug pond, berm, and associated erosion.

GEO Morphix (2023) has prepared conceptual plans for this outlet based on natural channel and ecological design principles (ref. Drawings GEO-1, DET-1 to DET-3 within the separate Conceptual Channel Design and Erosion Assessment). The design connects the outlet of the biofiltration swale LID outlet to BCT-1 using three pocket wetlands, a natural channel, and an alternating cascade morphology. This design includes two online pocket wetlands, designed to provide for flow detention, attenuation, and polishing which are supplementary to the biofiltration swale LID. Brush mattresses are proposed along the channel and the cascade, and the wetlands and intervening lands will be revegetated and naturalized with native species.

The proposed natural channel, pocket wetlands, and cascade tie in to BCT-1 have been designed by GEO Morphix to accept flows from the bio-filtration swale LID and the external area clean water system and will release flows into the upper reach of the restored BCT-1. As described by GEO Morphix (2023), the benefits of the proposed wetlands include organic inputs, temperature regulation, polishing, energy dissipation, and dispersion of flows. Additionally, by retaining flows, the wetlands can provide supplementary opportunities for infiltration, evapotranspiration, and detention (GEO Morphix 2023). The total area of pocket wetlands is similar to the wetland area that is proposed for removal, and they are designed to provide improved hydrologic functions, thereby resulting in no loss of wetland habitat/function on the Subject Lands. Additional ecological benefits of creating the natural channel and pocket wetlands are the provision of a compatible interface between the residential redevelopment and the Key Features. The proposed restorative works will be limited primarily to areas on the Subject Lands outside of Key Features and the Greenbelt. The restorative works provide for an additional 20+ m of land to be naturalized between the redevelopment and the Buffer to the Significant Woodland.

As discussed during the March 24, 2023, agency site visit, the erosion threshold analysis, for the release rate into BCT-1, has been completed based on existing conditions and unrelated to the proposed restoration works. The proposed restoration works have been identified to address an existing negative impact within the RNHS and, it is the Study Team's recommendation that it is in the greater public interest to address this existing erosion. The only other alternative is to leave BCT-1 in its current degraded condition.

The purpose of the restorative works is to improve the functions of the adjacent RNHS Key Features and to increase their ecological resilience. For this reason, and other reasons discussed throughout this report, the area proposed for the naturalized channel and pocket wetlands located outside of the Key Features, Buffers and Setbacks represents an Enhancement Adjacent to the Key Features; therefore, these areas are proposed to be included as part of the Final RNHS, as is further discussed in **Section 8.6**.

8.3.5 Outfall to Fourteen Mile Creek Tributary

While the final alignment of the storm sewer within the Bronte Road right-of-way remains under discussion with Region staff, an outlet to the Fourteen Mile Creek will be required. It is possible that this outlet could be combined with the existing outfall that conveys Bronte Road drainage to Fourteen Mile Creek. However, until the final location of the storm sewer is decided by the Region, the exact location and configuration of the outfall to Fourteen Mile Creek cannot be determined. For this reason, the impacts of this outlet have not been assessed in this EIA. Regardless, the outfall will be either within the existing headwall or a new headwall in proximity to the existing headwall, located on the south side of the Fourteen Mile Creek tributary, approximately 360 m north of the Subject Lands. Works related to this infrastructure will require a permit from CH pursuant to Ontario Regulation 162/06.

8.4 Servicing

A summary of the underground servicing for wastewater and potable water is as follows:

- 200 mm gravity sewers network;
- Sewer network discharging to an existing sewer in the west boulevard (right of way) of Bronte Road, subject to the approval by the Region; and
- Water servicing (potable) from Bronte Road with watermains ranging from 150 to 300 mm.

None of these services are proposed within the RNHS and, as such, no negative impacts are anticipated.

8.5 Trails

No trails or access points to the RNHS are proposed as part of the current redevelopment proposal to avoid potential impacts to Key Features. Beacon recommends the full decommissioning and ecological restoration of the existing network of trails and associated building/driveway within the Significant Woodland on the Subject Lands. This recommendation would provide the greatest ecological benefit to Key Features by avoiding future disturbance by humans and pets. It would also result in the restoration

of approximately 3,250 m^2 of disturbed area within the woodland, as illustrated in **Appendix F – Figure A-01**. In addition, Beacon recommends the removal of the existing overlook/platform that was constructed by the previous landowner on lands owned by Bronte Creek Provincial Park. This platform is cantilevered over the Bronte Creek valley, a Significant Valleyland, and is located beyond the LTSTOS.

It is Beacon's understanding that the Town has expressed an interest in repurposing some of the existing trails within the woodland to provide public access and connections to Bronte Road, including possible reuse of the existing driveways at 1300 Bronte Road. While trail usage can be supported within the RNHS, mitigation measures would need to be implemented to ensure that adverse impacts to sensitive features are minimized, as illustrated in **Appendix F - Figure A-02**.

As the existing trails are within Greenbelt Protected Countryside, Greenbelt policies related to trails will apply. Should the Town wish to pursue a trail within the woodland in the future, measures that should be considered by the Town and the Greenbelt policies related to a woodland trail include, but are not limited to, the following:

- Retain and repurpose a minimal number of trails, preferably only the central loop trail that is most commonly used at present (Greenbelt Policy 3.3.3(4)(c));
- Decommission other trails and restore to woodland by planting native species as outlined in **Section 6.6**;
- Restrict uses:
    - To minimize negative impacts the Key Feature (pets, bikes, etc.);
    - Inappropriate to the reasonable capacity of the trail (Greenbelt Policy 3.3.3(4)(d));
- Establish fencing alongside the trail (wood/paige wire) to limit encroachment beyond the trail and protect the key natural heritage features and functions (Greenbelt Policy 3.3.3(4)(g);
- Limit trail width to existing width;
- Surface with inert material such as mulch or limestone screenings;
- Establish barrier plantings in select areas;
- Provide litter receptacles at trail-side and trailhead(s); and
- Provide interpretive signage to discourage going off-trail or off-leash pets and foster stewardship.

8.6 Final RNHS Limits

Section 6.9 identified a Preliminary RNHS which was illustrated on **Figure 6**. As explained at the beginning of **Section 8**, additional refinements to the RNHS require identification of additional opportunities for enhancements through the design of the redevelopment proposal and more specifically opportunities to integrate green infrastructure as part of the environmental management systems for addressing surface and groundwater resources in a manner that not only protects the Key Features of the RNHS, but also contribute to improving their ecological health and resilience.

As was explained in **Sections 8.3.3** and **8.3.4**, the proposed biofiltration swale LID and naturalized channel and pocket wetlands provide for improved water quality and erosion control and many complimentary ecological functions to the adjacent Key Features of the RNHS and have therefore been included within the Final RNHS.

The Final RNHS, as illustrated on **Figure 8**, includes all applicable components of the RNHS as per ROP policy 115.3. Additionally, NHS components such as erosion hazards, that are not included in the Region's description of RNHS have also been included in the Final RNHS. The Final RNHS forms the Limits of Development. All areas identified as part of the RNHS will be dedicated to the Town.

9. Impact Assessment and Recommended Mitigation

The EIA Terms of Reference require that an impact assessment be prepared to describe how the proposed redevelopment may affect the Key Features and functions of the RNHS.

As was explained in **Section 8**, the proposed redevelopment was designed with the objective of protecting, maintaining, restoring and enhancing the significant natural heritage features and ecological functions associated with the Subject Lands. The proposed redevelopment has been designed to avoid developing within any significant natural heritage features and natural hazards.

The removal of a small (0.01 ha) non-significant wetland from the RNHS is required to create the proposed naturalized channel that will convey treated runoff from the biofiltration swale LID to the BCT-1 drainage feature. This proposed naturalized channel has been designed to have a small footprint that minimizes impacts to Key Features and incorporates approximately 0.03 ha of pocket wetlands that are anticipated to provide comparable or improved wetland functions. In addition, the proposed restorative works, will mitigate existing erosion within BCT-1.

As the proposed redevelopment plan has been designed to avoid Key Features and natural hazards and their associated buffers and setbacks (except for the restorative works within BCT-1 describe above), direct impacts have been avoided or minimized. As such, potential impacts to Key Features resulting from the redevelopment are limited to indirect impacts that can be more readily managed and mitigated.

As with the other components of this EIA, an integrated multi-disciplinary approach has been applied to assessing the potential impacts of redeveloping the Subject Lands, ground and surface water resources in sustaining wetlands, and fish and wildlife habitat.

The impact assessment matrix (**Table 9**) is structured to:

- Identify the specific development activity (impact source);
- Describe the potential effect on environmental receptors (features and functions);
- Recommend mitigation measures to address potential impacts; and
- Describe the net effect on the biophysical environment.

The impact assessment matrix is organized according to ecosystem components (e.g., geology, landforms, hydrogeology, hydrology, aquatic systems, terrestrial systems, etc.). The matrix describes the impact source(s) (development/ site alteration activity), the potential impact to the impact receptor(s) (features, attributes and functions), the recommended mitigation (including special monitoring or management needs), and the anticipated residual impacts.

Table 9. Impact Assessment and Mitigation Matrix

Category	Feature/Function	Proposed Activity	Potential Impacts	Recommended Mitigation/Management	Effect
Geology	**Bedrock Geology**	Grading and Servicing	Bedrock on the Subject Lands is at least 6 m below ground surface and will not be impacted by grading and servicing (Terraprobe 2023).	• None	Neutral
	Surficial Geology/ Physiography/ Topography	Site Preparation, Grading, Servicing	The topography of the Subject Lands is generally flat and bordered by steep valleylands to the south and west. To accommodate future development, the Subject Lands will be graded. Based on the preliminary grading plans, it is not anticipated that the magnitude of these grade changes will alter the character of the landform, however topographic relief will be affected at a local scale.	• Maintain a cut and fill balance to the extent feasible to minimize importing and exporting. • Match grades at outer property limits. • Match grades at development limits. • With the exception of the proposed naturalized channel and restorative works within BCT-1, removal of the existing house and barn from within the 15 m regulatory allowance to LTSTOS, avoid grading within Key Features, within 15m of stable top of slope or the 10m woodland buffer.	Neutral
Soils	**Topsoil**	Site Preparation, Grading, Servicing	Site preparation will require topsoil stripping and stockpiling to facilitate grading and servicing. Topsoil resources can be lost through mixing with sub soils and exposure to sun, wind, and water erosion.	• Protect and reuse topsoil resources by minimizing exportation or importation. • Implement Best Management Practices (BMPs) such as proper separation, stockpiling and erosion control measures, amendment and reapplication to the site following construction.	Neutral
Groundwater	**Groundwater Flows & Levels**	Grading, Servicing and Development	The direction of groundwater flow is not anticipated to be affected and to continue to flow in a southwestern direction towards Bronte Creek. The removal of the large pond, installation of site servicing utility lines and underground basement levels and/or foundations would not have the potential to affect groundwater levels.	• Implement BMPs for servicing construction. • Utilize trench plugs or anti-seepage collars along installed services to prevent redirection of groundwater flows and water table lowering however, some adjustment to the water table is possible as a result of the removal of the large pond. • Implement de-watering recommendations outlined in DS Consultants (2023b). • All excavations for site servicing and/or underground levels should be backfilled with soil material of similar permeabilities to the excavated parent native soil to minimize disruption to the groundwater flow regime. It is recommended that backfilling of all excavations or trenches, where necessary, be completed using the excavated native soil.	Neutral
	Groundwater Quality	Grading, Servicing and Development	Under the post-development scenario, contaminants such as oil, sand, salt and other debris may affect the water quality of surface runoff and consequentially that of the groundwater systems.	• Implement the Erosion and Sediment Control recommendations as detailed in the FSR (Urbantech 2023). • Implement the Stormwater Management strategies as detailed in the FSR (Urbantech 2023).	Neutral

	Dewatering	Grading, Servicing and Development	The two artificial pond features will require dewatering so they can be filled, or as is the case with the smaller pond, restored with natural channel design principles. Depending on rate of discharge where the water is released there is a potential for impacts such as erosion and sedimentation of receiving watercourses.	• Implement de-watering recommendations outlined in DS Consultants (2023b).
				• Develop and implement a Dewatering Management Plan (DMP) at the detailed design stage to ensure water is managed appropriately.
				  ○ Secure permits from the MECP for dewatering activities, if necessary, based on volumes.
				  ○ Groundwater infiltration into the temporary excavations will be controlled by the Contractor.
				  ○ If there are exceedances of the discharge water against the PWQO criteria, then pre-treatment should be completed prior to discharging into the receiving surface water source.
					Neutral

Category	Feature/Function	Proposed Activity	Potential Impacts	Recommended Mitigation/Management	Effect
				• Where dewatering is required, effluent shall be discharged in a way that prevents sedimentation to watercourses.	
Surface Water	**Drainage Patterns**	Grading, Servicing and Development	Under existing conditions surface flow from 3.7 ha of the Subject Lands drains to the existing artificial ponds and then into BCT-1 ultimately draining into Bronte Creek (Urbantech 2023). 3.26 ha of the property drains east to 14 Mile Creek where it is conveyed north by an existing roadside ditch where it eventually outlets to 14 Mile Creek (Urbantech 2023). The development of the site will result in the redirection of flows such that most of the site will drain to the Bronte Creek.	• Implement the Stormwater Management Strategy as detailed in Section 4 of the FSR (Urbantech 2023).	Neutral
	Surface Water Runoff	Grading, Servicing and Development	Uncontrolled surface runoff has the potential to impact surface water features and natural heritage features downstream in Bronte or 14 Mile Creek. Impacts typically include erosion and sedimentation which can affect water quality and aquatic habitat. To address uncontrolled flows, the flows released from the bio-filtration facility are designed to be overcontrolled to ensure the release targets are met. The bio-filtration LID and treatment train are designed to have a net positive impact in the long term by mitigating the potential for downstream migration of suspended solids in residential runoff.	• Implement proposed SWM plan and erosion control measures as detailed in FSR Sections 4 and 7 (Urbantech 2023).	Neutral-Positive
	Geomorphological Processes	Grading, Servicing and Development	The proposed increase in impervious surfaces has the potential to increase erosion in BCT-1, if uncontrolled. The biofiltration LID has been designed to provide erosion control through extended detention to not exceed the erosion threshold, as demonstrated by a continuous model. The biofiltration swale, treatment train, and BCT-1 restoration are designed to have a net positive impact in the long term by restoring the upstream reach of BCT-1 and mitigating the potential for future erosion of BCT-1.	• Implement proposed SWM plan and erosion control measures detailed in FSR Sections 4 and 7 (Urbantech 2023). • Implement restorative measures along BCT-1 as detailed in the Conceptual Channel Design and Erosion Assessment (GEO Morphix 2023).	Neutral-Positive
	Water Quality	Grading, Servicing and Development	Stormwater runoff captured by the proposed stormwater infrastructure could affect water quality in downstream reaches if released without quality control.	• The biofiltration LID and OGS have been designed to meet MECP enhanced level protection. For more information refer to FSR Section 4.4 (Urbantech 2023).	Neutral-Positive
	Water Quantity	Grading, Servicing and Development	Stormwater runoff, if not properly managed, could affect water quantity in downstream reaches.	• Implement proposed SWM plan outlined in FSR Section 4.5 (Urbantech 2023). • The biofiltration LID has been designed to target reduced flows.	Neutral

	Site Water Balance	Re-development	Re-development of the Subject Lands will increase the area of impervious surfaces relative to pervious surfaces and potentially cause a decrease in infiltration. If unmitigated, this decrease in infiltration may cause an increase in runoff to the RNHS.	• SWM plan designed to provide required water quality, quantity and erosion control.
				• Additional surficial LID techniques recommended for the Subject Lands include:
				  ○ Increasing topsoil thickness across lots and boulevards;
				  ○ Directing roof runoff to pervious areas (i.e., rear yards) via downspout disconnection
				• BMPs for topsoil placement will be used to minimize compaction
					Neutral

Natural Heritage System	**Linkages**	Grading, Servicing and Development	The Bronte Creek valleylands represent a regional scale linkage corridor. The proposed redevelopment will be confined to portions of the tablelands that are already developed and will therefore not impede on the functions of this linkage. A small portion of the linkage (naturalized channel), at the upstream reach of BCT-1, will require temporary alteration.	• Restore areas disturbed for creation of naturalized channel using locally native vegetation.	Neutral

Category	Feature/Function	Proposed Activity	Potential Impacts	Recommended Mitigation/Management	Effect
	Significant Woodlands	Grading, Servicing and Development	Significant Woodlands occur along portions of the Bronte Creek valleylands and on the tableland portion of the Subject Lands and broader Study Area. Except for the pocket wetlands and naturalized channel design and restorative works along BCT-1, no development is proposed within the Significant Woodland or its buffer. Construction of the naturalized channel and pocket wetlands could damage the roots of trees within the adjacent Significant Woodland and if unmitigated, sediment from the construction could impact downstream vegetation and water quality. It is anticipated that the tableland woodland contained within the Greenbelt portion of the Subject Lands will be dedicated to the Town who will determine whether this feature will be made accessible to the public for recreation and natural appreciation in the future. This EIA has included recommendations for management and enhancement of the woodland. Within the Greenbelt Plan area, five trees (in approximately 100 m^2) are anticipated to require removal to facilitate the BCT-1 restoration works (Kuntz Forestry Consulting 2023). This restoration and erosion control design will be a long-term net benefit to Key Natural Heritage Features and Key Hydrologic Features, as the design is intended to mitigate existing erosion along BCT-1 and potential for downstream sedimentation. Within the Significant Woodland, 13 trees (in approximately 200 m^2) including the 5 noted above that are also within the Greenbelt Plan, are anticipated to require removal to facilitate the restorative works within BCT-1 (Kuntz Forestry Consulting 2023).	• Mitigate the disturbance to tree roots during construction of naturalized outlet, as feasible, by matching existing grades at the interface between the naturalized outlet/pocket wetlands and the woodland. • Removal of trees will be offset by compensation plantings (Kuntz Forestry Consulting 2023) in the Greenbelt Plan area (tableland woodland), the Significant Woodland, Buffers, and Enhancement Areas • Restore areas disturbed for creation of naturalized outlet using locally native vegetation. • Implement woodland buffer and naturalize in accordance with CH guidelines. • Design SWM facilities such that erosion threshold of BCT-1 is not exceeded.	Neutral—Positive (Long-term)
	Significant Wetlands	Grading, Servicing and Development	There are no provincially significant wetlands or regionally significant wetlands associated with the Subject Lands. A potential Significant Wetland is present within ELC Unit 13, at the edge of the Study Area, downstream of BCT-1, the alluvial fan, and Bronte Creek. Although no impact is anticipated to this Key Feature, any impacts to this feature would directly affect its associated fish habitat. See Fish and Fish Habitat below for more discussion of impacts.	• See mitigation related to Fish and Fish Habitat below.	Neutral
	Non-Significant Wetlands	Grading, Servicing and Development	There is one wetland (0.01 ha) associated with the outlet of the small artificial pond on the Subject Lands (ELC Unit 3). The ecological functions of this wetland are limited due to its small size and invasive vegetation (*Phragmites*). This wetland and the adjacent artificial pond will be removed to facilitate the construction of a naturalized channel. This will result in the temporary loss of some wetland habitat.	• Create 0.03 ha of pocket wetland, as detailed in FSR (Urbantech 2023) and Conceptual Channel Design and Erosion Assessment (GEO Morphix 2023), to improve the wetland storage and water quality improvement functions.	Neutral - Positive
	Significant Valleylands	Grading, Servicing and Development	Significant valleylands associated with Bronte Creek overlap the Subject Lands and broader Study Area. These valleylands are entirely contained within the boundaries of the Greenbelt and, except for the BCT-1 restorative works, are not expected to be impacted by proposed development.	• Implement woodland buffer and stable top of slope setback and naturalize in accordance with CH guidelines. • Implement restorative works along BCT-1 as detailed in the Conceptual Channel Design and Erosion Assessment (GEO Morphix 2023)	Neutral
Natural Heritage System (continued)	**Significant Areas of Natural and Scientific Interest**	Servicing/Stormwater	Significant ANSI occurs along portions of the Bronte Creek valleylands and Significant Woodland on both the Subject Lands and broader Study Area. With the exception of the naturalized channel, creation of small pocket wetland	• Mitigate the disturbance to tree roots during construction of naturalized channel, as feasible, by matching existing grades at the interface between the naturalized channel/pocket wetlands and the woodland.	Neutral

Category	Feature/Function	Proposed Activity	Potential Impacts	Recommended Mitigation/Management	Effect
			features and the restorative works along BCT-1, no other alterations are proposed within the Significant ANSI. It is planned that the Significant ANSI associated with the Subject Lands will be dedicated to the Town, who will determine whether this feature will be made accessible to the public for recreation and natural appreciation in the future. This EIA has included recommendations for management and enhancement of the woodland.	• Minimize disturbance to tree roots during implementation of the restorative works along BCT-1 while recognizing that several trees are already compromised due to significant undercutting beneath them • Restore areas disturbed for creation of pocket wetlands, naturalized channel and BCT-1 restorative works using locally native vegetation. • Implement revegetation in accordance with CH guidelines. • Design SWM facilities such that the erosion threshold of BCT-1 is not exceeded.	
Trees	**General Habitat**	Grading, Servicing and Development	The Tree Inventory and Protection Plan (Kuntz Forestry Consulting 2023) indicates that 16 trees within Key Features will require removal to facilitate (1) the demolition of both the garage in the tableland and the outbuilding adjacent BCT-1; and (2) the construction of the naturalized channel, pocket wetlands and restorative works along BCT-1. With respect to trees located in the buffer and stable slope setback (i.e., within the Preliminary RNHS but not Key Features, an additional 55 trees will require removal to facilitate the proposed works. Within the Enhancement Adjacent to Key Features area an additional 53 trees will be removed to facilitate construction of the LID. Most of the existing trees in this location are planted Apple (remnants of an old orchard), White Spruce, Eastern White Cedar, and Paper Birch.	• Implement tree protection recommendations of Arborist Report (Kuntz Forestry Consulting, 2023). • Removal of trees will be addressed by plantings (Kuntz Forestry Consulting 2023) in the Greenbelt Plan area (tableland woodland), the Significant Woodland, Buffers, and Enhancement Areas.	Neutral
Wildlife	**Light effects on Migration, Wake-Sleep Cycles, etc.**	Lighting type and operation	Birds guided by moonlight can be disoriented by artificial lights. Most fauna on the Subject Lands rely on sunlight to help maintain their circadian rhythm (sleep-wake cycles). It should be noted that there is recently lighting associated with the structures on the Subject Lands and streetlighting along Bronte Road that influences the adjacent natural features.	• Implement lighting that would minimize sky-glow and the intrusion of unwanted lighting into adjacent natural areas during and post construction • Require construction lighting to be turned off when there is no construction activity	Neutral
	Noise effects on Animal Behaviour	Site Preparation, Grading, Servicing	Excessive noise can alter animal behaviour and/or induce stress responses. The site is situated immediately adjacent to Bronte Road which results in a high level of ambient noise across most of the Subject Lands. There will be increased noise during the construction phase, but over the long term, it is not anticipated that the proposed residential uses will generate excessive noise that will be disruptive to wildlife. Furthermore, the main sensitive ecological receptors are associated with the valleylands which are physically separated from the development.	• Excessive noise during construction is anticipated to be short in duration. • Following construction, ambient noise from Bronte Road is anticipated to exceed noise generated from the residential development.	Neutral
Wildlife (continued)	**Birds**	Vegetation Clearing	Through the breeding bird surveys completed by Beacon in 2021, it was determined that the majority of the species observed in the proposed development area consist of open land bird species commonly found in anthropogenic rural settings. No significant change in diversity is expected to occur post development. All the interior and edge species that occur within the Greenbelt are expected to remain subject to the usual annual variation.	• Undertake vegetation / tree clearing between August and April so as not to impact breeding birds and not contravene the *Migratory Birds Convention Act.* • Establish buffers and fencing at development limits adjacent to the NHS to reduce human encroachments and predation by pets. • Post signage to keep pets and people out of the wooded features (except where potential future trails may allow).	Neutral
	Reptiles	Grading, Servicing and Development	Background review and field surveys have identified three reptile species onsite. These include a Midland Painted Turtle, Gartersnake and DeKay's Snakes. Midland Painted Turtles have not been observed at the artificial ponds during	• The loss of potential foraging habitats for snakes can be mitigated by retaining habitat within the buffer around the Greenbelt.	Neutral

Category	Feature/Function	Proposed Activity	Potential Impacts	Recommended Mitigation/Management	Effect
			field surveys in 2021. The development of the tablelands is not expected to negatively impact reptile species.	• Prior to construction and pond removal, the ponds should be resurveyed. Should any turtles be detected, they should be relocated to suitable habitat in the adjacent landscape. A Wildlife Rescue Plan shall be prepared and necessary MNRF permits or authorizations obtained.	
	Amphibians	Grading, Servicing and Development	Surveys to investigate breeding amphibian habitat on the Subject Lands were completed by Dance Environmental in 2013 and by Beacon in 2021. A total of three amphibian species were heard calling within the Subject Lands as discussed in **Section 4.5**. No significant breeding calls were observed.	• The loss of potential habitats for amphibians can be mitigated by retaining habitat within the Greenbelt and through the creation of small pocket wetland features and a naturalized channel which are not anticipated to require any regular maintenance (GEO Morphix 2023). • A Wildlife Rescue Plan shall be prepared and necessary MNRF permits or authorizations obtained.	Neutral
	Mammals	Grading, Servicing and Development	Presence of mammalian species within the Subject Lands was compiled from incidental observations from field surveys completed to date. All the mammal species that are currently present on and adjacent to the Subject Lands are urban tolerant species and expected to remain in the post development environment. It is anticipated there will be a slight shift in species assemblages toward a greater number of species that are more tolerant of urban environments. For example, Deer use is expected to decrease, while Raccoon and Striped Skunk populations could increase. Wildlife movement patterns in the general vicinity are expected to change as landscape resistance will increase as a result of development. It is expected that future wildlife movement will be more concentrated to the valleyland corridor and buffers associated with Bronte Creek.	• Encourage wildlife passage through the Greenbelt / Valleylands, through the use of fencing along the property lines, as a means of reducing the potential for vehicular impacts and human/wildlife interactions.	Neutral
	Significant Wildlife Habitat (SWH)	Artificial Pond Removal, Servicing/Stormwater and BCT-1 Restorative Works	SWH is present within the Greenbelt significant woodland and adjacent Bronte Creek Provincial Park lands. The proposed development will be situated outside the Greenbelt and will not impact on SWH on the Subject Lands or broader Study Area, save for the restorative works in BCT-1.	• Limit tree removals to only those necessary to conduct erosion protection work safely. Note that proposed tree removals adjacent to BCT-1 have potential to be undercut and fall into BCT-1 in the future. • Restore areas disturbed for creation of naturalized channel using locally native vegetation. • Implement recommended buffers and plant with native species, in accordance with CH Guidelines • Install fencing at rear lots adjacent to the RNHS to mitigate human encroachment or disturbance • Control access to RNHS	Neutral-Positive

Wildlife (continued)	**Fish and Fish Habitat**	Artificial Pond Removal, Servicing/Stormwater and BCT-1 Restorative Works	The two artificial waterbodies are exempt from the protection provisions of the *Fisheries Act*. However, there is an introduced (unnatural) fish population within the large pond. Therefore, all appropriate permits from relevant agencies will be obtained to facilitate the removal of the ponds including fish and wildlife collection and relocation.
			
			The proposed natural channel outlet to BCT-1 will be constructed in the area between the two artificial ponds. Most of the required footprint to enable the installation of the natural channel design and associated pocket wetlands will occur within the boundaries of the small artificial pond; however, the channel extends below the existing berm and ties into the existing channel at the upper reach of BCT-1, within the boundaries of the Subject Lands.
				• Potential indirect impacts to fish and fish habitat can be avoided and/or reduced by implementing the following mitigation measures:
				  • Prior to construction, a detailed Erosion and Sediment Control Plan will be developed in accordance with the *Erosion and Sediment Control Guide for Urban Construction* (TRCA 2019).
				  • Any grading or site alteration related activities should be confined to the established limit of development.
				  • Minimize non-essential vegetation clearing and grading, and integrate a phasing workplan for grading and construction;
					Neutral

Category	Feature/Function	Proposed Activity	Potential Impacts	Recommended Mitigation/Management	Effect
			A portion of the restoration works will occur within the indirect fish habitat identified for the BCT-1a reach. The function of the indirect habitat is to provide water and nutrients to downstream habitats. During construction, the function of the indirect habitat may be temporarily affected. However, provided the duration of the work is kept minimal and the recommended environmental protection and mitigation measures are applied it is anticipated that the proposed work will comply with the fish and fish habitat protection provisions of the *Fisheries Act* and shall avoid causing the death of fish and the HADD of fish habitat. Furthermore, it is expected that the proposed restoration will result in positive residual effects on the fish habitat within BCT-1. The proposed design removes an existing artificial pond which is currently discharging warm water into BCT-1 at a volume that has caused erosion within the upper reach and replace it with a low flow channel, pocket wetland features and an alternating keystone cascade morphology that will aid in stabilizing the high gradient channel within the BCT-1a reach.	• Fencing at the development limit should be regularly inspected and maintained in good working order throughout the construction period. Fencing should be removed upon completion of construction after exposed soils have been stabilized. Standard Best Management Practices, including the provision of sediment control measures, should also be employed during the construction process. • Timing restrictions for in-water works shall be implemented to protect the sensitive life stages/processes of migratory and resident fish. • If dewatering is necessary, fish screens will be used to avoid entrainment of fish in pumps or hoses. • Manage all water from dewatering operations to prevent erosion and / or release of sediment laden or contaminated water into a waterbody. • Any fish isolated in any in-water work areas shall be transferred (using appropriate capture, handling and release techniques to prevent harm and minimize stress) downstream or away from the construction area. • All appropriate permits from relevant agencies will be obtained to facilitate any in-water work including fish and wildlife collection and relocation. • All equipment shall be operated, stored, and maintained in a manner that prevents the entry of any deleterious substances to any nearby waterbodies. All refueling should occur beyond 30m from a waterbody, and a spill tray should be used when completing maintenance and refueling. • An isolation/containment plan shall always be implemented to isolate any temporary in-water work zones to maintain clean flow downstream/around the work zone. • Design any water management system and dewatering operations for in-water construction activities to maintain flow (if applicable) to the reaches downstream of the construction area and to prevent erosion and/or release of sediment-laden or contaminated water any nearby waterbodies. • A spill management plan (including materials, instructions regarding their use, education of contract personnel, and emergency contact numbers) shall be always kept on site for implementation in event of an accidental spill during construction. • Mitigation measures for flood control, water quality, and erosion are noted above under Surface Water.	
Habitat of Endangered or	**Bat SAR**	Grading, Servicing and Development	There are four endangered bat species in Ontario: Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis and Tricoloured Bat. Based on bat exit surveys conducted by Beacon (2021) one SAR species was identified foraging	• Undertake surveys of the abandoned garage and select trees along BCT-1 to confirm potential for SAR Bat habitat.	Neutral

Category	Feature/Function	Proposed Activity	Potential Impacts	Recommended Mitigation/Management	Effect
Threatened Species (SAR) *(see also **Significant Woodland**)*			over the Subject Lands: Northern Myotis. There is the potential for this species to be roosting in woodlands associated with the Greenbelt. Development is not proposed within this habitat; however, removal of the abandoned garage in ELC Unit 1 and select trees along BCT-1 could potentially affect habitat.	Should habitat be confirmed, the necessary authorizations under the *Endangered Species Act* will be obtained.	
	Tree SAR	Vegetation Clearing, Grading, Servicing and Development	No impact to Tree SAR. A species at risk habitat assessment revealed the presence of five Butternut and three Black Ash. As discussed in **Section 4.4** the three Butternut trees that are proposed to be impacted by development do not qualify for protection or mitigation under the *Endangered Species Act*. Black Ash habitat is within the Significant Woodland (ELC Unit 12), outside the Subject Lands, and these trees are approximately 70 m from the closest proposed works (restorative works along BCT-1); therefore, no impact to their habitat is anticipated.	• Submission of Butternut Health Assessment to MECP (see Kuntz Forestry Consulting, Appendix A). • No mitigation necessary nor required by the ESA for Black Ash. If design conditions change, mitigation and regulatory requirements will be reviewed.	Neutral

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10. Monitoring Recommendations

The EIA TOR require that an environmental monitoring framework be developed to evaluate the effectiveness of the various mitigation and environmental management strategies that have been identified in the EIA, FSR and other technical reports. A proposed monitoring framework has been prepared by the Study Team and is presented in **Table 10.** This table is intended to be read in conjunction with the inspection and maintenance requirements that are described in technical reports by Urbantech (2023) and GEO Morphix (2023).

Under this framework, environmental monitoring is proposed to be undertaken prior to development, during development, and following development.

Monitoring prior to development is intended to establish baseline conditions. Much of this baseline monitoring has already been completed to characterize the existing biophysical conditions and is documented in the EIA and other technical studies.

During development/construction monitoring is proposed to verify that the various environmental management systems and mitigation measures have been implemented and are operating as recommended.

Post-Development monitoring is proposed to evaluate the performance of the environmental management systems and confirm that management objectives recommended in the EIA and FSR are being realized.

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Table 10. Proposed Environmental Monitoring Framework

Project Component	Objective(s)/Rationale	Monitoring Parameter(s)	Monitoring Indicator(s)	Methods/Protocols/Analyses	Frequency & Duration*			Comments
					Pre-Development	During Construction	Post-Development	
Erosion & Sediment Control (ESC) Measures Also see recommendations in FSR (Urbantech 2023)	To confirm that all ESC measures have been implemented and are performing as per specification	Condition of ESC Measures	All ESC fencing, check dams, and sediment pond or equivalent are in good working order.	Visual inspection prior to and following all significant rainfall events (10 mm) or days of cumulative rainfall, after significant snowmelt events, and daily during extended rain or snowmelt periods.	ESC measures are generally installed as the first step of construction. As such, the monitoring will be further detailed as part of the “During Construction” monitoring.	Comprehensive inspection immediately following installation but prior to grading or site alteration. Weekly reporting during active construction. Routine inspections also required following all significant (i.e., 10 mm or more) rainfall events, following significant snowmelt events, and during extended rain or snowmelt periods.	During construction monitoring will apply until the site is stabilized, at which time the relevant ESC measures will be removed and the ESC monitoring will cease.	No monitoring stations as monitoring is to occur throughout the site along the development - and wherever ESC measures are installed.
Geomorphic monitoring of BCT-1	To ensure that: a) the restored channel is stable and functioning properly in the post-construction conditions b) no excess erosion within the receiving reaches is occurring downstream of the outlet in the post-construction conditions.	Channel morphology and sediment character	Cross section geometry, channel gradient, erosion pin exposure, and sediment grain sizes remaining consistent with baseline conditions.	Monitoring of the proposed restoration will allow issues to be identified and addressed promptly. The features should be monitored for a period of five years after construction. Monitoring should include general observations, identification of any erosion issues, monumented cross sections within the feature to measure potential changes to the feature’s geometries, monumented photographs and a yearly survey of prescribed plant materials. General observations should also be completed after construction and after the first large flooding event to identify any areas of potential erosion. The proposed monitoring plan will be finalized during the detailed design phase.	Establish baseline conditions in receiving reaches.	Installation of monitoring cross sections and erosion pins in the restored channel.	5 years of annual monitoring surveys for both the restored channel and existing receiving reaches, following build-out. Additional site visits following large flood events.	Monitoring will ensure that the restored channel is stable and functioning properly as designed and will also ensure that the receiving reach is not negatively affected. Standard geomorphological methods will be utilized.
Naturalization Plantings in Buffer and Enhancement Areas	To assess the survival and condition of the naturalization plantings to ensure that: a) the plantings are installed and established as per the approved landscape plans; and b) over time, the areas become self-sustaining naturalized communities.	Naturalization Plantings	Plantings healthy, well-established and in general conformance with the landscaping plans.	The condition of these plantings will be assessed using visual assessments and comparisons with contractor drawings. These observations will be supplemented with plot-based data collected from select areas of the buffer and Enhancement Areas	Not Applicable	Once at time of installation, and at 2 years following installation.	Once at 5 years following build-out.	Note the standard two-year warranty period for plantings typically starts from the date of planting, and therefore the warranty for replacement plantings will typically extend beyond the initial two years.
Bio-filtration Swale and Naturalized Channel Plantings – See	Same as above	Bio-filtration Swale and	Same as above	Same as above	Not Applicable	Same as above	Same as above	Same as above

Project Component	Objective(s)/Rationale	Monitoring Parameter(s)	Monitoring Indicator(s)	Methods/Protocols/Analyses	Frequency & Duration*			Comments
					Pre-Development	During Construction	Post-Development	
Urbantech (2023) and GEO Morphix (2023) reports for further details		Naturalized Channel						
Human-Related Activities in the Buffer and Enhancement Areas	To document and assess human-related activities within the buffer and Enhancement Areas for the purposes of evaluating effectiveness of impact mitigation measures.	Human-Related Activities	Location, type and extent of human related activities	Select areas of the RNHS, including the buffer and Enhancement Areas will be evaluated by undertaking field inspections. The locations of any observations of human related activities will be photographed and recorded based on activity type and extent. These observations will be used to map and track such activities over time.	Once prior to development.	None	Once at 5 years following build-out	No monitoring is proposed within Key Features, except the restorative works on BCT-1.

11. Policy Conformity

A summary of federal, provincial and municipal environmental protection and planning policies and regulations applicable to the Subject Lands was provided in **Section 2**. A summary evaluation of how the redevelopment proposal complies with the applicable environmental policies and legislation is summarized below in **Table 11.**

Table 11. Policy Conformity Analysis

Applicable Policy / Legislation	Relevant EIA Findings and Recommendations	Policy Compliance
Federal *Fisheries Act (1985)*	As explained in **Section 5.7**, the two artificial ponds are exempt from the prohibitions identified as protection provisions of the *Fisheries Act*. The fish habitat within the BCT-1 feature is divided by an impediment to fish movement (located at the downstream end of the BCT-1a reach break). For this reason, the BCT-1a reach can be defined as indirect fish habitat due to its flow duration and, more importantly, its lack of connection to a natural fish bearing waterbody. Reaches BCT-1b and BCT-1c have been identified as direct fish habitat due to their intermittent flow and unimpeded connection to Bronte Creek, especially during periods of flooding. Therefore, the proposed restorative works identified within the BCT-1a reach should undergo DFO project review.	Yes (subject to DFO project review)
***Endangered Species Act* (2007)**	Based on the background review and ecological surveys, the proposed redevelopment will not impact on the habitats of any threatened or endangered species. Surveys for endangered bats that may potentially be associated with the garage structure or woodland trees that will be affected by restorative works along BCT-1, will be undertaken and if potential roosts of listed species are noted, the necessary authorizations will be obtained from MECP.	Yes.
Greenbelt Plan (2017)	A small area of active erosion in BCT-1a reach within the Greenbelt Plan (approximately 100 m^2) is proposed to be restored using natural channel design principles. The natural channel design will reinforce the existing alignment of BCT-1a with alternating cascades, and vegetated rock buttresses. This work will be completed with small machinery and/or by hand and will not negatively impact Key Natural Heritage Features. This work complies with Greenbelt Plan policy as an erosion control project. Greenbelt Policy 3.2.5.1(b) provides the following exemption to site alteration within key natural heritage features: *Conservation and flood or erosion control projects, but only if they have been demonstrated to be necessary in the public interest and after all alternatives have been considered* Through this EIA and the accompanying FSR, it has been demonstrated that this restoration work is beneficial to the NHS. As noted in **Section 8.3.1**, this reinforcement of BCT-1 is the preferred of two reasonable alternatives that were evaluated by the Study Team. A "do nothing" alternative would result in continued erosion along the slopes of BCT-1, additional tree fall, and further downstream sedimentation, and would not be in the public interest.	Yes.

Applicable Policy / Legislation	Relevant EIA Findings and Recommendations	Policy Compliance
Provincial Policy Statement (2020)		
2.1.5 (a) Significant Wetlands	There are no significant wetlands associated with the Subject Lands. Negative impacts to the Significant Wetland associated with Bronte Creek, at the edge of the Study Area, are not anticipated.	Yes.
2.1.5 (b) Significant Woodlands	The Subject Lands support Significant Woodlands, including the forested features to the west, north and south. Restoration of BCT-1 is proposed within the significant woodlands on the Subject Lands. The proposed restoration design intends to minimize impacts the RNHS while addressing existing erosion within the BCT-1a reach to ensure that no further negative impacts to the Significant Woodland occur and that the function of that feature is maintained.	Yes.
2.1.5 (c) Significant Valleylands	The Bronte Creek valley is considered a Significant Valleyland. The hazards associated with this valley (i.e., stable top of slope) have been determined and serve to delineate the extent of the Significant Valleyland. A portion of the proposed BCT-1 restorative works overlap with the Significant Valleyland, and such work will help to maintain the form and function of the Key Feature in the long term. No negative impacts to this Key Feature are expected.	Yes.
2.1.5 (d) Significant Wildlife Habitat	Portions of the Subject Lands that have the capacity to support candidate SWH are associated with the forested habitat within the Bronte Creek valleylands and tableland woodland. No direct impacts to SWH are anticipated save for the restorative works in BCT-1. No negative impacts to this Key Feature are expected.	Yes.
2.1.5 (e) Significant Areas of Natural and Scientific Interest	The significant woodlands on the Subject Lands overlap with portions of the Bronte Creek Provincial Park Nature Reserve Zone Life Science ANSI and will not be negatively impacted by the redevelopment.	Yes.
2.1.6 Fish Habitat	The two artificial waterbodies are exempt from the prohibitions identified as protection provisions of the *Fisheries Act*. The PPS policies only pertain to waterbodies where the prohibitions of the *Fisheries Act* (1985) apply. The fish habitat within the BCT-1 feature is divided by an impediment to fish movement (located at the downstream end of the BCT-1a reach break). For this reason, the BCT-1a reach can be defined as indirect fish habitat due to its flow duration and, more importantly, its lack of connection to a natural fish bearing waterbody. Reaches BCT-1b and BCT-1c have been identified as direct fish habitat due to their intermittent flow and unimpeded connection to Bronte Creek, especially during periods of flooding. Therefore, the proposed restorative works identified within the BCT-1a reach should undergo DFO project review.	Yes (subject to DFO review).
2.1.7 Habitat for Threatened and Endangered Species	There are no species regulated by the ESA within the portion of the Subject Lands proposed for redevelopment. The Significant Woodland and structures contained therein, could potentially support endangered bats as discussed in **Section 5.1**. Prior to tree removals in the woodland to facilitate removal of the garage and BCT-1 restoration, bat habitat assessments should be completed to confirm habitat for listed bats. If confirmed, MECP will be contacted and the necessary permits under the ESA shall be obtained, such that there will be no negative impact to the Key Feature.	Yes.
2.2 – Water	The water resource system associated with the Subject Lands and Study Area has been identified and consists of the Bronte Creek, BCT-1 and associated natural heritage features and functions. Water quality will be improved through the removal of the artificial ponds (i.e., thermal impacts) and stormwater management is proposed to minimize stormwater volumes and contaminant loads. Existing erosion along BCT-1 will be mitigated, resulting in improved water quality downstream. No negative impacts to	Yes.

Applicable Policy / Legislation	Relevant EIA Findings and Recommendations	Policy Compliance
	sensitive surface or ground water features are anticipated. The removal of the existing large pond is anticipated to allow groundwater to return to its natural flow path, that would have existed prior to the creation of the artificial pond.	
3.1 – Natural Hazards	The redevelopment of the Subject Lands will be limited to areas outside of natural hazards including the Regional Storm floodplain and stable top of slope. Existing structures within the erosion hazard will be removed and these areas will be naturalized with native plants. Negative impacts to natural hazards are not expected.	Yes.
Halton Region Official Plan		
Halton Region Official Plan (2018 Consolidation)	In accordance with ROP policy an EIA has been prepared in support of this redevelopment proposal. The EIA has refined the boundary of the RNHS in accordance with ROP policy 116.1 in the form of a Preliminary RNHS. The proposed development has been located outside of this Preliminary RNHS The EIA has also demonstrated that the proposed redevelopment will not negatively impact on Key Features of the RNHS in accordance with ROP policies 118(2)(b) and 118(3). As noted in **Section 8.3**, the proposed redevelopment includes a biofiltration swale LID adjacent to the Preliminary RNHS. This 20 m wide biofiltration swale LID is proposed to be located outside the 10 m Buffer to the Significant Woodland. No negative impacts to Key Features are anticipated. Ecological benefits of this LID feature include improved surface water quality, storage, and habitat by way of native vegetation, which will result in increased ecological resilience/function. Such benefits are supportive functions and are recognized as Enhancement Adjacent to the Key Features. As such, the area of the 20 m wide biofiltration swale LID and associated native vegetation communities and natural channel design are proposed to be included in the Final RNHS.	Yes.
Town of Oakville Official Plan		
Town of Oakville Official Plan (2021 Consolidation) and Zoning By-Law 2014-014	The Town of Oakville OP identifies a portion of the Subject Lands as a Natural Area. This same area is zoned Natural Area in the Town's Zoning By-Law 2014-014. Permitted uses in the Natural Area designation, as outlined in Policy 16.1.1 of the OP include fish, wildlife and conservation management, essential public works including watershed management and flood and erosion control facilities and passive recreation features such as trails, walkways and bicycle paths. Permitted uses within the Natural Area Zone, as outlined in Section 13.2 of the Zoning By-Law include: conservation uses, public and private parks and stormwater management facilities. Within the Natural Area designation and zone, the following uses are proposed: (1) LID for stormwater management purposes (which is a permitted use in the Natural Area Zone); (2) naturalized channel that replaces an existing man-made pond and returns the area to a more natural landscape (which would be considered conservation management and watershed management, which are permitted uses in the Natural Area designation and a conservation use, which is a permitted use in the Natural Area Zone); (3) restoration works within BCT-1 to mitigate existing erosion (which would be considered conservation management and watershed management which are permitted	Yes.

Applicable Policy / Legislation	Relevant EIA Findings and Recommendations	Policy Compliance
	uses in the Natural Area designation and would be considered a conservation use, which is a permitted use in the Natural Area Zone).	
CH Regulation and Policies		
Ontario Regulation 162/06	With the exception of the restorative works proposed for BCT-1 and the removal of the existing house, overlook/platform, outbuildings and garage within the 15 m regulatory allowance to the LTSTOS, development on the Subject Lands will occur entirely outside of CH's regulated area. Permits will need to be obtained from CH prior to these works taking place within the regulated areas. The proposed work within CH's regulated area is all considered to be beneficial since the structure removals will reduce the overall risk to property within the erosion hazard and the erosion protection measures proposed for BCT-1 will mitigate an existing erosion issue and stabilize the feature(s).	Yes (subject to CH approval).

12. Conclusion

This revised Scoped EIA has been prepared in support of two separate applications to redevelop the properties located at 1300, 1316, 1326, 1342, 1350 and 1354 Bronte Road, Oakville, Ontario, herein referred to as Subject Lands. The report has been prepared in accordance with the EIA TOR established through consultation with the agencies and has been revised to address comments received on the previous EIA submitted in February 2022 as well as changes to the redevelopment plans.

The information contained in this report is based on a comprehensive review of available background studies, results of site-specific field investigations and agency confirmation of feature limits, analyses and evaluations to confirm all components of the RNHS, and refinements to their boundaries. The report integrates the findings of companion technical studies prepared by members of the multi-disciplinary Study Team and is intended to be read in conjunction with the FSR and other technical studies.

In summary, this revised Scoped EIA has:

- Provided a summary of applicable federal, provincial, regional and local level environmental regulations and policies that govern land use planning and development on the Subject Lands;
- Updated the existing knowledge base of biophysical resources and ecological functions by consolidating available background information and supplementing it with more detailed information and analyses from site-specific investigations and analyses;
- Identified and confirmed the significance and sensitivities of natural heritage resources on the Subject Lands and broader Study Area by applying criteria from applicable environmental policies and regulations;
- Confirmed the limits of Key Features of the RNHS with the agencies;
- Established the limits of a Preliminary RNHS by applying ecologically appropriate buffers and natural hazard setbacks, and identified natural heritage and natural hazard constraints to development to inform the design;
- Identified opportunities for improvement/enhancement of the Key Features of the RNHS;

- Described components of the proposed redevelopment (grading, servicing, stormwater, enhancements, etc.);
- Established the limits of the Final RNHS by identifying Enhancements to Key Features;
- Assessed the potential impacts of the proposed redevelopment on Key Features of the RNHS;
- Recommended measures for avoiding and/or mitigating potential impacts to Key Features of the RNHS;
- Provided an outline for an Environmental Monitoring Framework to verify that the various environmental management systems and mitigation measures have been implemented and are operating as recommended; and
- Evaluated how the proposed development conforms to applicable environmental legislation, policies and regulations.

The proposed redevelopment plans were designed to protect, maintain, improve, and restore the RNHS Key Features and their ecological functions. The design was prepared in collaboration with the multidisciplinary Study Team to ensure that the plans and associated environmental management systems satisfy applicable environmental protection policies and regulations.

The proposed redevelopment also incorporates restorative works along BCT-1 to mitigate existing impacts related to the erosion along BCT-1. These works will improve the ecological functions and resilience of the Key Features and for this reason portions of the Subject Lands that will be subject to restoration are included in the Final RNHS as Enhancement to the Key Features.

The proposed biofiltration swale LID that is part of the SWM strategy provides quantity, quality and erosion control that will effectively improve the ecological functions of the adjacent Key Features and for these reasons is also included in the Final RNHS as an Enhancement to the Key Features. The Final RNHS encompasses all components of the Regional NHS as well as the Town's NHS. The Final RNHS forms the limits of development. All lands within the Final RNHS will be conveyed to the Town of Oakville.

In conclusion, it is the opinion of Beacon that the proposed redevelopment:

- Will not have a negative impact on the significant natural heritage features and functions associated with the Subject Lands or Study Area provided that the recommended mitigation measures specified in this report (and in the companion technical studies) are implemented; and
- Is consistent with the environmental protection legislation, policies and regulations at the provincial, regional and local levels.

Report prepared by:
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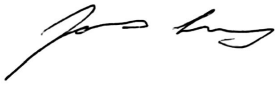

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