BEACON ENVIRONMENTAL

GUIDING SOLUTIONS IN THE NATURAL ENVIRONMENT

# Environmental Impact Study 3225 5th Concession Road, City of Pickering

*Prepared For:*

**869547 Ontario Inc.**

*Prepared By:*

**Beacon Environmental Limited**

*Date:* *Project:*

**September 2023** **221050**

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# 1. Introduction

Beacon Environmental Limited (Beacon) has been retained by 869547 Ontario Inc. to prepare an Environmental Impact Study (EIS) for the proposed development of 3225 5th Concession Road in the City of Pickering, Durham Region (hereinafter the "subject property").

The subject property is approximately 17.9 ha, is undeveloped is bisected by Carruthers Creek and associated treed valleyland. The subject property is located on the east side of Balsam Road, north of 5th Concession Road (including a portion of unopened road allowance) and west of Audley Road (**Figure 1**). The subject property contains meadow communities, woodland and wetlands. The subject property is within the jurisdiction of the Toronto and Region Conservation Authority (TRCA). It is our understanding that the Ontario Ministry of the Environment, Conservation and Parks (MECP) has classified Carruthers Creek within the subject lands as occupied Redside Dace (*Clinostomus elongatus*) habitat, a provincially and federally endangered fish species.

The subject property is located entirely within the Birchwood Estates Areas as identified in the City of Pickering Official Plan. These lands were approved for a "country residential" development in 1998; the detailed concept is awaiting subdivision approval and zoning. The plan states that there was to be a maximum of 23 residential lots approved for the subject property. As the subject property has been identified on the Region's and City's Official Plans as containing a natural feature, an EIS is required as a component of the *Planning Act* application with a Zoning By-law Amendment and Draft Plan of Subdivision application to redevelop the site with residential buildings consisting of 23 lots (the "proposed project").

Given this geographical setting, development applications concerning the subject property are subject to the natural heritage policies outlined in the following documents: the Provincial Policy Statement (PPS), Greenbelt Plan, the City of Pickering Official Plan, the Durham Region Official Plan, as well as the TRCA regulations and policies.

The purpose of this EIS is to:

- Characterize natural heritage resources and ecological functions on the subject property;
- Identify significant natural heritage resources and functions;
- Identify environmental constraints and confirm development limits;
- Describe the proposed development plan;
- Assess potential impacts of the proposed development plan on significant natural heritage features and ecological functions;
- Recommend mitigation measures for avoiding or minimizing potential development related impacts to significant natural heritage features and functions;
- Describe restoration and compensation measures including the channel re-alignment and naturalization; and
- Demonstrate conformity of the proposed development with the applicable natural heritage legislation, regulations and policies.

A Functional Servicing and Stormwater Management Report (FSSR; Candevcon 2023), Functional Grading and Servicing Plan (Candevcon East Limited 2023), Arborist Report (Beacon 2023a), and Geomorphic Assessment (Beacon 2023b) have also been prepared for the subject property. This EIS should be read in conjunction with these companion reports.

# 2. Natural Heritage Policy Review

A policy review was undertaken to identify environmental planning considerations and requirements, as applicable to the subject property and proposed development and site alteration activities.

## 2.1 Federal *Fisheries Act* (1985)

Fish and fish habitat are protected under the Federal *Fisheries Act* (1985), which was last updated August 2019. In Ontario, Fisheries and Oceans Canada (DFO) manages fish habitat and the Ministry of Natural Resources and Forestry (MNRF) manages fisheries. Section 35 (1) of the Federal *Fisheries Act* precludes "No person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat", or "HADD".

The *Fisheries Act* defines 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." Further, DFO provides guidance regarding the need for their review of a project.

## 2.2 Provincial Policy Statement (2020)

Section 2.0 of the PPS provides direction to regional and local municipalities regarding planning policies specifically for the protection and management of natural heritage features and resources.

Section 2.1 of the PPS describes eight natural heritage features and provides planning policies for each. The Natural Heritage Reference Manual (MNR 2010) is a technical document used to help assess the natural heritage features listed below:

- Significant wetlands;
- Significant coastal wetlands;
- Habitat of endangered and threatened species;
- Fish habitat;
- Significant woodlands;
- Significant valleylands;
- Significant Areas of Natural and Scientific Interest (ANSIs); and
- Significant wildlife habitat (SWH).

Each of these features is afforded varying levels of protection subject to guidelines, and in some cases, regulations. Identification of the various natural heritage features noted above is a responsibility shared by MNRF, MECP, DFO, and the local planning authority.

MNRF is responsible for the ANSIs, while MECP is responsible for the confirmation of habitat of endangered species or threatened species, and for its regulation under the *Endangered Species Act* (ESA).



| Site Location | Figure 1 |
|---|---|
| Frisque EIS | |
| BEACON ENVIRONMENTAL | Project: 221050<br>Last Revised: September 2023 |
| Client: 869547 Ontario Inc. | Prepared by: BD<br>Checked by: KQ |
| N 1:4,800 | Inset Map: 1:50,000 |



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Local and regional planning authorities are responsible for the identification of Significant Wetlands, Significant Woodlands, Significant Valleylands, and SWH, with support from applicable guidance documents (i.e., *Natural Heritage Reference Manual* [MNR 2010]; *Significant Wildlife Habitat Technical Guidelines* [MNR 2000]; and *Significant Wildlife Habitat Criteria for Ecoregion 6E*, [MNRF 2015]). Local and regional planning authorities in southern Ontario also typically work with their local conservation authority to identify and confirm significant natural heritage features that may have significance at the local or regional level. Identification and verification of fish habitat is now self-regulated although enforcement of the related policies and regulations is still managed by MNRF and regulated by the DFO.

In areas where significant natural heritage features are present, the boundaries of natural heritage features are further refined through site-specific studies undertaken as part of the planning process and in accordance with the requirements of municipal policies.

Sections 2.1.5 states that development and site alteration shall not be permitted in natural features unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. Development of lands adjacent to natural features unless the ecological function has been evaluated and it has been demonstrated that there will be no negative impacts on features or functions. Further Sections 2.1.6 and 2.1.7 state that development shall not be permitted in fish habitat or habitat of threatened and endangered species, expect in accordance with provincial and federal requirements.

## 2.3 Greenbelt Plan (2017)

The Greenbelt Plan identifies areas where urbanization should not occur in order to provide protection for the agricultural land base within the “Greater Golden Horseshoe” area and protection of ecological features and functions occurring on the landscape.

The property is designated as part of the “Protected Countryside” and “Natural Heritage System” (NHS) of the Greenbelt Plan.

However, being located within an existing Rural Settlement Area, with a pre-existing Country Residential Subdivision application, recognized by both the Region’s and City’s Official Plans, as noted above, policy 5.2.1 of the Greenbelt Plan recognizes pre-existing designations without requiring conformity to the Greenbelt Plan. The Subject Lands are recognized as being subject to a pre-existing Country Residential Subdivision application (No. 33), which permits a maximum of 23 lots.

Specifically, policies 4.5 and 5.2.1 of the Greenbelt Plan recognizes existing land uses, previous land use approvals including expansion of similar land uses, through *Planning Act* Amendments and required demonstration of greater conformity to provisions of the Plan.

> *5.2.1 Decisions on applications related to previous site-specific approvals*
> *Where an official plan was amended prior to December 16, 2004 to specifically designate land use(s), this approval may continue to be recognized through the conformity exercise addressed in section 5.3 and any further applications required under the Planning Act or the Condominium Act, 1998 to implement the official plan approval are not required to conform with this Plan.*

For the purposes of this EIS, the currently permitted and designated land use being a Country Residential Subdivision will be implemented through the proposed Draft Plan of Subdivision, Draft Plan of Condominium (Common Element) and regulated through the proposed Zoning By-law Amendment.

## 2.4 *Endangered Species Act* (2007)

The ESA (2007) came into effect on June 30, 2008, with over 200 species in Ontario identified as extirpated, endangered, threatened, or of special concern. MECP provides oversight of the ESA for the regulation of Species at Risk (SAR) in Ontario. Under the ESA, native species that are in danger of becoming extinct or extirpated from the province are identified as being extirpated, endangered, threatened and special concern. Under the ESA, protection is provided to threatened or endangered species and their habitat, as well as providing stewardship and recovery strategies for species. Permitting is required to conduct works within habitat regulated for threatened or endangered species. Species of Special Concern require management plans from the MECP but are not directly protected under the ESA.

Seasonally appropriate field investigations for target species may be necessary to determine the presence or absence of species subject to the provision of the ESA.

## 2.5 Regional Municipality of Durham Official Plan (2020 Office Consolidation)

The Official Plan for Durham Region provides direction on land use within the Region. The Durham Regional Official Plan, Consolidation May 26, 2020, is the most current version of the Regional Official Plan.

Durham's Official Plan contains a number of policies intended to preserve, conserve and enhance the Region's natural environment and protect its natural heritage features through its defined Greenlands System.

Greenlands include the following Key Natural Heritage Features (KNHF). The list of KNHFs is similar, but not identical, to the PPS list:

- Significant habitat of endangered and threatened, special concern and rare species;
- Fish habitat;
- Wetlands;
- Life Science ANSIs;
- Significant valleylands;
- Significant woodlands;
- SWH;
- Sand barrens, savannahs and tallgrass prairies; and
- Alvars.

The Official Plan also recognizes the following Key Hydrologic Features (KHFs):

- Permanent and intermittent streams;
- Wetlands;
- Lakes and their littoral zones;

- Kettle lakes and their surface catchment areas;
- Seepage areas and springs; and
- Aquifers and recharge areas.

In Regional Structure Map (Schedule A – Map A4) of the Durham Official Plan, the subject lands are shown as 'Major Open Space Areas' of the Greenlands System.

Schedule B (Map B1d) - Greenbelt NHS & Key Natural Heritage and Hydrologic Features identifies KNHFs and KHFs within the Greenbelt NHS within the subject property and surrounding area.

As per Section 2.3.14, the location and extent of key natural heritage and/or hydrologic features may be further confirmed through an EIS.

According to Section 2.3.15 of the Official Plan development of site alteration is not permitted in KNHFs or KHFs, including any associated vegetation protection zone, with very limited exceptions.

Section 2.3.16 of the Durham Region Official Plan states that:

> *Within Urban Areas and Rural Settlements, the vegetative protection zone [to Key Natural Heritage Features] shall be determined through an environmental impact study, in accordance with Policy 2.3.43*.

Which states that:

> *Any proposal for development or site alteration in proximity to key natural heritage or hydrologic features shall be required to include an Environmental Impact Study as part of a complete application*.

The subject property falls within an Urban Area and the vegetation protection zone for any features present on or adjacent to the property shall be determined through an EIS completed in accordance with Policy 2.3.43 of the Plan.

## 2.6 City of Pickering Official Plan (2022)

The City of Pickering published its latest Official Consolidated Plan (Edition 9) dated March 2022. It builds on the framework presented in the Durham Region's Official Plan and protects natural heritage features through the Open Space System, which incorporates three types of natural areas: core areas, corridors and linkages. Schedule III C – Resource Management: Key Natural Heritage Features/Key Hydrologic Features identifies Shorelines, Significant Valley Lands and Stream Corridors (May include Hazardous Lands) on the subject property.

Chapter 13 – Rural Settlements indicates that 13 rural settlement areas have been identified in Pickering. The subject property is known as Settlement 7: Birchwood Estates.

> *Birchwood Estates is located on the east side of Sideline 4, at the Fifth Concession Road road allowance. The rural settlement area includes open space lands associated with a tributary of Carruther's Creek. Lands identified as Birchwood Estates were approved for a "country residential" development in 1998 for a maximum of 23 residential lots; the detailed development concept is still awaiting subdivision approval and zoning. The rural*

*development proposes that siting and layout of development is to avoid environmental features such as the valleys of Carruther's Creek and its tributaries. Country residential developments typically comprise large modern homes on large lots on a public street with private individual water supply and sewage disposal services.*

Schedule IV-7 Settlement 7: Birchwood Estates identifies open Space System – Natural Areas running north-south through the centre of the property with Country residential areas on either side. The entire property falls within a rural settlement boundary.

The Settlement 7 section indicates that Lands identified as Birchwood Estates were approved for *"*country residential*"* development in 1998 with a maximum number of 23 residential lots approved. City Policy 13.9 b states that "City Council shall ensure that development is undertaken in a manner that respects environmental features such as Carruther's Creek and its tributaries to the satisfaction of the City and the conservation authority*"*; and 12.9 c states that "City Council shall endeavour to ensure the country residential environment of the settlement is maintained once developed".

## 2.7 Toronto and Region Conservation Authority Regulations and Guiding Policies

There are ongoing changes to the *Conservation Authorities Act* associated with Ontario's Bill 23 (*More Homes Built Faster Act*, 2022), which revokes the individual regulations set out for each conservation authority. A generic regulation is proposed by the province that will specify the requirements that apply to all conservation authorities across the province. One new regulation (Ontario Regulation 686/21) which defines Mandatory Programs and Services, has been issued by the province which focuses the scope of the conservation authorities to regulations specifically associated with flooding and natural hazards and prevents them from commenting on natural heritage. In this regard, TRCA will review a project related to the risk of natural hazards within its jurisdiction and in accordance with Ontario Regulation 166/06, until such time as the new regulation is brought into force.

## 2.8 *Ontario Regulation 166/06 (2006)*

The TRCA regulates land use activities in and adjacent to wetlands, watercourses and valleylands under Ontario Regulation 166/06 (*Regulation for Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*), made under the *Conservation Authorities Act*.

The TRCA may grant permission to develop within regulated areas: "if, in its opinion, the control of flooding, erosion, pollution or the conservation of land will not be affected by the development". As part of its permitting process, the TRCA typically requires the proponent to prepare an EIS, which must demonstrate that the development can proceed without resulting in any alteration to a watercourse or interference to the hydrologic function of a wetland. The TRCA have recently implemented a Wetland Risk Assessment tool to guide the determination as to whether a feature-based water balance is required.

Generally, development within the flood limit of a watercourse is not allowed. However, subject to conformity with the applicable Official Plans and the completion of appropriate studies and Conservation Authority permits, development *may* be permitted within other regulated areas. The TRCA generally

requires that all watercourses be protected from adjacent development. This is often achieved using a vegetative buffer.

The subject property is regulated by the TRCA as Carruthers Creek, wetlands and the associated valley corridor crosses the subject property. There are also floodlines and a meander belt identified on the subject property associated with Carruthers Creek.

A permit from TRCA is required for any works proposed within the regulated areas.

### 2.9 Toronto and Region Conservation Authority Living City Policies for Planning and Development (2014)

The Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority (LCP) was approved by the Authority Board on November 28, 2014.

With respect to hazard lands, which are TRCA's core mandate, Section 8.4.8. prescribes the following buffers to natural hazards:

- **Valley or Stream Corridors** – a 10 metre buffer from the greater of the long term stable top of slope/bank, stable toe of slope, regulatory flood plain, meander belt, and any contiguous natural features or areas; and
- **Wetlands** – a 30 metre buffer from provincially significant wetlands and a 10-metre buffer for all other wetlands.

## 3. Methodology

To characterize natural heritage resources and functions associated with the subject property and adjacent lands, Beacon completed a review of available background information. A summary of the background information and field investigations undertaken is summarized below.

### 3.1 Background and Policy Review

Background information was gathered and reviewed at the outset of the project. This involved consideration of the following documents or information sources relevant to the subject property:

- PPS (2020);
- Greenbelt Plan (2017);
- Durham Region Official Plan (Office Consolidation 2020);
- City of Pickering Official Plan (2022);
- TRCA regulations and policies;
- MNRF resource information;
- MECP information; and
- ESA (2007).

Other sources of information such as current and historical aerial photographs, topographic data, soil geology and physiography mapping, wildlife atlas data, and natural resource mapping were also reviewed prior to commencing field investigations.

## 3.2 Desktop Species at Risk Screening

A desktop review of available information sources was undertaken to determine potential species at risk. As part of the desktop screening, the following information sources were reviewed:

- Natural Heritage Information Centre (NHIC) Data via the Make-A-Map application;
- Databases of the Ontario Breeding Bird Atlas (OBBA) project;
- Ontario Reptile and Amphibian Atlas (ORAA);
- SAR range maps https://www.ontario.ca/environment-and-energy/species-risk-ontario-list;
- Aquatic SAR maps http://www.dfo-mpo.gc.ca/species-especes/fpp-ppp/index-eng.htm;
- High Resolution aerial photography of the property; and
- Natural and physical feature layers from Land Information Ontario (LIO).

The information sources referenced above were reviewed in a Geographic Information System (GIS) mapping environment that Beacon uses to assess the likelihood that sensitive fish habitat or potential endangered or threatened species are present in an area of interest. This system allows Beacon to combine the most current information provided by MNRF through the LIO portal with GIS layers from provincial floral and faunal atlases. All relevant layers can then be overlaid on the most recent high resolution ortho-imagery. The screening process helps identify areas that can then be targeted (for example, potential habitat) during field assessment to maximize the efficiency and effectiveness of on-site investigations.

## 3.3 Field Investigations

Field investigations on the subject property were undertaken by Beacon staff in 2021 and 2022 (**Table 1**). Seasonal surveys included: aquatic habitat assessment, vegetation community mapping, floral inventory, and breeding bird surveys.

**Table 1. Field Investigation Dates**

| Field Investigation | Date |
|---|---|
| Aquatic Habitat Assessment | November 4, 2022 |
| Breeding Bird Surveys | June 4, 15, and 21, 2021 |
| Ecological Land Classification and Flora Inventory | July 15, 2021 |
| Feature Staking with TRCA | August 11, 2021 |

### *3.3.1 Aquatic Habitat Assessment*

An aquatic habitat assessment was completed within Carruthers Creek and its tributary as they traverse the subject property. Aquatic habitat classification was measured using the Ontario Stream Assessment Protocol (OSAP) and summaries the habitat based on per cent composition of pools, riffles and glides, per cent cover quality, sediment type and size; and per cent composition of vegetation type.

As the watercourse is considered occupied Redside Dace habitat, no fish community sampling was undertaken, however, TRCA data was reviewed.

### 3.3.2 Ecological Land Classification

Vegetation surveys and community mapping took place on July 15, 2021. Vegetation units within the study area were described and mapped on current colour ortho-photography of the lands using the Ecological Land Classification (ELC) system for southern Ontario (Lee *et al*. 1998). This is the standard method used for describing vegetation communities in southern Ontario.

Additionally, a search for Butternut (*Juglans cinerea*) trees was conducted during the vegetation community survey.

### 3.3.3 Breeding Bird Surveys

Three breeding bird surveys were conducted on the mornings of June 4, 15, and 21, 2021, on days with low to moderate winds (0-3 Beaufort Scale), no precipitation and temperatures within 5°C of seasonal averages. Start times were between 6:15 am and 8:45 am to capture the peak period of avian vocalization. The breeding bird community was surveyed using a roving type survey focusing on the eastern and western tablelands and adjacent woodland edges. These areas were walked to within 50 m and all birds heard or observed and showing some inclination toward breeding were recorded as breeding species. Results included birds detected more distantly from within the central valley, although this area was not surveyed exhaustively. All birds heard and seen were recorded in the location observed on an aerial photograph of the site.

### 3.3.4 Endangered or Threatened Species

Beacon staff completed an in-house desktop screening for endangered or threatened species. The list of species was screened against potential habitat which was confirmed through field investigations and seasonal, species-specific surveys.

### 3.3.5 Incidental Wildlife

Wildlife observations and any evidence observed of wildlife presence or breeding or foraging habitat, were noted during all field activities throughout the field program.

### 3.3.6 Agency Site Walks

A site visit was conducted on August 11, 2021 with TRCA staff, Jamie Milnes (Ecologist) and Stephanie Dore (Planner) to review and stake the dripline and top of bank of the valley feature present on the subject property.

# 4. Existing Conditions

Seasonal and species-specific field investigations were conducted through 2021 to document existing natural heritage features and functions of the subject property. The subject property is bisected by Carruthers Creek and associated treed valleyland. The subject property contains meadow, woodland and wetland communities. Carruthers Creek has been identified as occupied habitat for Redside Dace, a provincially and federally endangered fish species.

## 4.1 Aquatic Habitat Assessment

Carruthers Creek is a small watershed with a drainage area of approximately 3748 hectares located entirely in Durham Region. The watershed begins at the mouth of Lake Ontario in the Town of Ajax and stretches north to the headwaters that originate south of the Oak Ridges Moraine in the City of Pickering (TRCA 2017). The subject property is in the upper region of the watershed within the east branch of Carruthers Creek. Data was acquired from TRCA's Carruthers Creek Watershed Plan (2017) to obtain aquatic habitat data within the subject property as well as the respective fish community.

Aquatic habitat has been assessed within the subject property and the background data from a station just south (downstream) of the subject property is being used to characterize this portion of Carruthers Creek.

## 4.2 Aquatic Habitat

The portion of Carruthers Creek that runs directly through the subject property had a well-mixed representation of different habitat types, approximately 45% of pools, 20% of riffles and 35% of glides were present. Particles were well sorted throughout the reach; silts and sands were well represented in pools and cobble and gravel were present within the riffle sections providing sufficient habitat for aquatic species. The reach contained a good mix of cover for fish species; approximately 15% of woody debris, 30% of cobble, 25% aquatic vegetation and bank coverage was approximately 25%. Aquatic vegetation was present with an abundance of watercress and filamentous; attached algae were present. Grasses and terrestrial plants were also noted in the channel. Average channel width throughout the reach varied slightly from approximately 1 m in width to 2 m. Riparian vegetation directly along the creek banks was predominantly scrubland along both banks that transitioned into forest. Some scour and erosion were evident throughout 25% of the entire reach. No fish barriers were observed. Thermal regime within this section of the creek was classified as "cool" (19°celcius - 21°celcius).

The tributary to Carruthers, referenced as Reach CCT-1 in the Geomorphic Assessment (Beacon 2023) was characterized as a minimally sinuous, poorly-defined gully feature situated within a confined valley setting. The reach displayed a moderate gradient and low degree of entrenchment. Riparian vegetation consisted of mature trees with some shrubs and herbaceous understory, with <10% overhanging vegetation cover. The channel lacked riffle-pool morphology and exhibited signs or active erosion, such as scour. Bankfull widths and depths ranged from 1.4-1.5 m and 0.35-0.40 m, respectively, where defined. The wetted width and depth at the time of assessment were approximately 0.3 m and 0.05 m, respectively. Substrate consisted predominantly of silt/clay.

### 4.2.1 Fish Community

Fish community has been monitored and sampled by the TRCA since 2001. One station monitored by TRCA is located south (downstream) of the subject property and the fish community data is presented in **Table 2**. Data for the downstream section only contains the fish species captured within the last 10 years (2013 - 2023). There are no documented fish barriers south (downstream) of the subject property, therefore it is likely fish present in the downstream portion have access to the subject property reach. Historically the species richness of the watershed was high with a total of 42 species. Immediately downstream of the subject property only 12 species were present. Majority of the fish species prefer a coolwater thermal regime, with the exception of Rainbow Trout (*Oncorhynchus mykiss*) which prefers coldwater and Fathead Minnow (*Pimephales promelas*), Bluntnose Minnow (*Pimephales notatus*), and Pumpkinseed *(Lepomis gibbosus*) preferring a more warmwater thermal regime. The majority of the fish species are native to Ontario with the exception of Common Carp (*Cyprinus carpio*). No Redside Dace have been captured within the last 10 years however habitat conditions are suitable for the species.

Although no permanent barriers are present within the western tributary to Carruthers Reach CCT-1, seasonal barriers in the form of large tree roots and small log jams are present that would affect fish movement, and flows preclude migration through much of the year.

**Table 2. Fish Community Present within Carruthers Creek and Downstream of Subject Property**

| Scientific Name | Common Name | Thermal Regime | Historically Captured | Downstream of Subject Property |
|---|---|---|---|---|
| *Lethenteron appendix* | American Brook Lamprey | Cold | X | |
| *Oncorynchus mykiss* | Rainbow Trout | Cold | X | X |
| *Salvelinus fontinalis* | Brook Trout | Cold | X | |
| *Umbra limi* | Central Mudminnow | Cool | X | |
| *Esox lucius* | Northern Pike | Cool | X | |
| *Catostomus commersonii* | White Sucker | Cool | X | X |
| *Notropis stramineus* | Sand Shiner | Warm | X | |
| *Clinostomus elongatus* | Redside Dace | Cool | X | |
| *Notropis rubellus* | Rosyface Shiner | Warm | X | |
| *Cyprinella spiloptera* | Spotfin Shiner | Warm | X | |
| *Chrosomus eos* | Northern Redbelly Dace | Cool | X | X |
| *Rhinichthys cataractae* | Longnose Dace | Cool | X | |
| *Cyprinus carpio* | Common Carp | Warm | X | |
| *Luxilus cornutus* | Common Shiner | Cool | X | X |
| *Semotilus atromaculatus* | Creek Chub | Cool | X | X |
| *Notropis atherinoides* | Emerald Shiner | Cool | X | |
| *Pimephales promelas* | Fathead Minnow | Warm | X | X |
| *Chrosomus neogaeus* | Finescale Dace | Cool | X | |
| *Notemigonus crysoleucas* | Golden Shiner | Cool | X | |
| *Hybognathus hankinsoni* | Brassy Minnow | Cool | X | |
| *Pimephales notatus* | Bluntnose Minnow | Warm | X | X |
| *Rhinichthys atratulus* | Blacknose Dace | Cool | X | X |
| *Noturus flavus* | Stonecat | Warm | X | |
| *Ameiurus nebulosus* | Brown Bullhead | Warm | X | |
| *Fundulus diaphanus* | Banded Killifish | Cool | X | |
| *Gasterosteus aculeatus* | Threespine Stickleback | Cool | X | |
| *Culaea inconstans* | Brook Stickleback | Cool | X | X |
| *Morone americana* | White Perch | Warm | X | |

| Scientific Name | Common Name | Thermal Regime | Historically Captured | Downstream of Subject Property |
|---|---|---|---|---|
| *Morone chrysops* | White Bass | Warm | X | |
| *Micropterus dolomieu* | Smallmouth Bass | Warm | X | |
| *Lepomis gibbosus* | Pumpkinseed | Warm | X | X |
| *Ambloplites rupestris* | Rock Bass | Cool | X | |
| *Micropterus salmoides* | Largemouth Bass | Warm | X | |
| *Pomoxis nigromaculatus* | Black Crappie | Cool | X | X |
| *Sander vitreus* | Walleye | Cool | X | |
| *Etheostoma olmstedi* | Tesselated Darter | Cool | X | |
| *Etheostoma caeruleum* | Rainbow Darter | Cool | X | |
| *Perca flavescens* | Yellow Perch | Cool | X | |
| *Percina caprodes* | Logperch | Warm | X | |
| *Etheostoma nigrum* | Johnny Darter | Cool | X | X |
| *Cottus bairdii* | Mottled Sculpin | Cold | X | |
| *Neogobius melanostomus* | Round Goby | Warm | X | |
| | | | Species Richness: 42 | Species Richness: 12 |

Adapted from TRCA's Carruthers Creek Watershed Plan (2017)

### 4.2.2 Redside Dace

The Redside Dace is a small colourful minnow that reaches a maximum length of about 12 cm. In Canada, this species is present only in southern Ontario where it occurs most frequently in streams between Oshawa and Hamilton, in the Holland River drainage, one tributary of the Grand River and three tributaries of Lake Huron. This is an endangered fish species that is regulated under the ESA.

Redside Dace require cool, clear flowing water with riffle-pool morphology and overhanging streamside vegetation. Stream sections flowing through open terrestrial habitats with overhanging vegetation, undercut banks and submerged branches and logs are most suitable. Channel depths are typically less than 1 m and substrate can vary from fine sediment to cobbles and boulders; however, they are most often present in gravel/cobble bed habitat and often with a shallow surface covering of silt or detritus (RDRT 2010). Redside Dace are a coolwater species and are usually associated with water temperatures of less than 24°C and dissolved oxygen concentration are at least seven milligrams per litre (McKee and Parker 1982).

The Carruthers Creek is designated occupied Redside Dace habitat by the MECP. In accordance with *Ontario Regulation 832/21* the limit of Redside Dace habitat is defined through the vegetated area or agricultural lands that are within 30 m of the meander belt to a watercourse. A meander belt study was completed by Beacon (2023) to confirm the extent of Redside Dace habitat that is regulated by MECP.

The lack of overhanging vegetation and riffle-pool morphology, as well as the silt dominant substrate and shallow wetted depth present in the western tributary to Carruthers (Reach CCT-1) are not preferred habitat characteristics for the Redside Dace. It is unlikely that this reach supports direct Redside Dace habitat; however it does providing a contributing function.

## 4.3 Geomorphic Assessment

The purpose of this geomorphic assessment is to characterize existing geomorphic conditions for the portions of watercourse relevant to the subject property, contribute to the determination of development limits through the delineation of Redside Dace occupied habitat limits (referencing 30 m from the meander belt).

To facilitate a systematic evaluation of the relevant portion of Carruthers Creek, the watercourse was delineated into reaches. Reaches are homogenous sections of channel with regard to form and function and can, therefore, be expected to behave consistently along their length to changes in hydrology and sediment inputs, as well as to other modifying factors (Montgomery and Buffington 1997; Richards *et al.* 1997).

For the purposes of this study, the section of Carruthers Creek (eastern tributary) within the subject property was delineated as two reaches (Reach CC-1 and CC-2) and the western tributary to Carruthers Creek was delineated as CCT-1. The determination of reach extents was initially based on a desktop assessment of transitions in riparian vegetation, degree of valley confinement and meander geometry (channel planform) based on available aerial imagery and topographic mapping. Verification of reach extents was subsequently undertaken in the field to confirm that mapped reach extents accurately reflect existing conditions and underlying geomorphic controls.

The meander belt width is generally defined as the lateral extent that a meandering channel has historically occupied and will likely occupy in the future. Where the watercourse is confined, such as for Reaches CC-1, CC-2 and CCT-1, the valley wall acts a constraint to channel migration. According to the *Technical Guide – Rivers and Streams: Erosion Hazard Limit* document (MNR 2002), in the case of unconfined river systems, the meander belt width plus an erosion access allowance is defined to determine the erosion hazard limit. Conversely, in the case of confined valley systems, the erosion hazard is governed by geotechnical considerations, including the stable slope allowance and an applicable toe erosion allowance (i.e., channel migration component). As Ontario Regulation 832/21 does not distinguish between confined and unconfined systems, delineation of the meander belt referenced historical and current channel processes, but also considered valley floor (floodplain dimensions).

Following the TRCA (2004) *Belt Width Delineation Procedures* document, meander belt dimensions of 57 m and 33 m were recommended for Reaches CC-1 and CC-2, respectively (**Figure 2**).

## 4.4 Ecological Land Classification

Vegetation units on the subject property were mapped and described according to the ELC system for southern Ontario (Lee *et al*. 1998). Vegetation communities on the subject property are illustrated on **Figure 2** and described below.

### 4.4.1 Wetland Communities

**White Cedar – Hardwood Mineral Mixed Swamp (SWM1-1)**

This community has a mixed canopy of White Cedar (*Thuja occidentalis*), Yellow Birch (*Betula alleghanensis*) and White Birch (*Betula papyrifera*). All trees are less than 50 cm in diameter and the canopy is slightly open. The understory and ground flora are spare and include Red-Osier Dogwood (*Cornus stolonifera*), Sensitive Fern (*Onoclea sensibilis*), Water Plantain (*Alisma subcordatum*), Spotted Jewelweed (*Impatiens capensis*), and Watercress (*Nasturtium officinale*).

### 4.4.2 Forest Communities

**Fresh-Moist White Cedar Coniferous Forest (FOC4-1)**

This community is a pre-dominantly White Cedar with scattered White Ash (*Fraxinus americana*), Red Maple (*Acer rubrum*) and Large Tooth Aspen (*Populus grandidentata*). The majority of trees are less than 50 cm in diameter and form a dense canopy. Understory and ground flora is limited due to the dense canopy coverage. Scattered occurrences of Cinnamon Fern (*Osmundastrum cinnamomeum*), Heart-leaved Aster (*Symphyotrichum cordifolium*) and Poison Ivy (*Toxicodendron radicans*).

**Dry-Fresh White Cedar – Aspen Mixed Forest (FOM4-2)**

This community has a mixed canopy of White Cedar with Large Tooth Aspen with Trembling Aspen (*Populus tremuloides*), White Pine (*Pinus strobus*), and Sugar Maple (*Acer saccharum*). The majority of trees are less than 50 cm in diameter. Understory flora includes Pagoda Dogwood (*Cornus alternifolia*), Chokecherry (*Prunus virginiana*) and European Buckthorn (*Rhamnus cathartica*). Ground flora is a mixed composition and includes Heart-leaved Aster, Rose Twisted-Stalk (*Streptopus lanceolatus*), May-Apple (*Podophyllum peltatum*), and Enchanter's Nightshade (*Circaea canadensis*). The ground flora along the edge of this community is dominated by Dog Strangling Vine (*Vincetoxicum rossicum*).

**Fresh-Moist Sugar Maple – Hemlock Mixed Forest (FOM6-1)**

This community has a mixed canopy of Sugar Maple, American Beech (*Fagus grandiflora*), Eastern Hemlock (*Tsuga canadensis*), and White Cedar. Associated species include Ironwood (*Ostrya virginiana*), Blue Beech (*Carpinus caroliniana*), and Black Cherry (*Prunus serotina*). Understory flora includes Pagoda Dogwood, Chokecherry and Purple Flower Raspberry (*Rubus odoratus*). Ground flora includes May-apple, Cinnamon Fern, Long-Stalked Sedge (*Carex pedunculata*), Zig-zag Goldenrod (*Solidago flexicaulis*), and White Baneberry (*Actaea pachypoda*).

**Fresh-Moist Lowland Deciduous Forest (FOD7)**

This community has an open canopy dominated by mature White Willow (*Salix alba*) with Manitoba Maple (*Acer negundo*). Understory flora includes European Buckthorn, Tatarian Honeysuckle (*Lonicera tatarica*) and Pussy Willow (*Salix discolor*). Ground flora is dense and composed of Canada Goldenrod (*Solidago canadensis*), Dogbane (*Apocynum cannabinum*), Coltsfoot (*Tussilago farfara*), and Hog Peanut (*Amphicarpaea bracteata*).


| Existing Conditions | Figure 2 |
|---|---|
| Frisque EIS | |

## Legend

- Subject Property
- Ecological Communities
- Staked Feature Limit (TRCA, August 2021)
- Watercourse (Beacon 2022)
- Contours
- Contributing Redside Dace Habitat
- Meander Belt (Beacon 2023)
- Limit of Redside Dace Occupied Habitat (Meander Belt + 30 m)

| Code | Wetland Communities |
|---|---|
| SWM1-1 | White Cedar - Hardwood Mineral Mixed Swamp |
| | **Forest Communities** |
| FOC4-1 | Fresh - Moist White Cedar Coniferous Forest |
| FOD7 | Fresh - Moist Lowland Deciduous Forest |
| FOM4-2 | Dry - Fresh White Cedar - Aspen Mixed Forest |
| FOM6-1 | Fresh - Moist Sugar Maple - Hemlock Mixed Forest |
| | **Cultural Communities** |
| CUM1-1 | Dry - Moist Old Field Meadow |
| CUP3 | Coniferous Plantations |
| | **Other Communities** |
| HE | Hedgerow |

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Project: 221050
Last Revised: September 2023

Client: 869547 Ontario Inc.

Prepared by: BD
Checked by: KQ

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### 4.4.3 Cultural Communities

**Coniferous Plantation (CUP3)**

This community is comprised of Norway Spruce (*Picea abies*) and Colorado Blue Spruce (*Picea pungens*) with sparse understory and ground flora.

**Dry-Moist Old Field Meadow (CUM1-1)**

This community has a mixed composition of species common to disturbed environments including Viper's Bugloss (*Echium vulgare*), Rough Cinquefoil (*Potentilla recta*), Oxeye Daisy (*Leucanthemum vulgare*), Dandelion (*Taraxacum officinale*), Timothy (*Phleum pratense*), Quack Grass (*Elymus repens*), Bird's-foot Trefoil (*Lotus corniculatus*), Queen Anne's Lace (*Daucus carota*), and Kentucky Bluegrass (*Poa pratensis*).

Portions of this community were roughly tilled during the 2021 seasonal investigation.

## 4.5 Flora Inventory

A total of 117 species was recorded on the subject property, with native species accounting for 64% of the species recorded (**Appendix A**). Collectively the subject property supports a moderate level of native species diversity. The majority of native species were recorded within the forest and wetland communities associated with the Carruthers Creek valley corridor with the cultural dominated by non-native species.

No SAR (i.e. provincially endangered, threatened or special concern species) were observed within or directly adjacent to the subject property and all native species are ranked secure (S4 and S5). One regionally uncommon species, Canada Goldenrod, was recorded in the Carruthers Creek valley corridor (Varga *et al*., 2005).

## 4.6 Breeding Birds

A total of 21 species was documented on the subject property (**Appendix B**). This diversity is reflective of the habitats present which include large open anthropogenic spaces and meadows as well as a variety of woodland communities.

The avian community was typical of rural settings. The most abundant species was Song Sparrow (*Melospiza melodia*) with five territories recorded throughout the open areas. Other common species recorded in the meadows and forest edges included Gray Catbird (*Dumetella carolinensis*), Indigo Bunting (*Passerina cyanea*), and American Goldfinch (*Spinus tristis*), as well as more uncommon Mourning Warbler (*Geothlypis philadelphia*) and Field Sparrow (*Spizella pusilla*).

Detailed surveys were not conducted for the valley corridor, however, numerous woodland species were detected from the outside of the forested valley. Birds detected here and along the wooded edges of the subject property included a variety of common forest species: Great Crested Flycatcher (*Myiarchus crinitus*), Red-eyed Vireo (*Vireo olivaceus*), Blue Jay (*Cyanocitta cristata*), Black-capped Chickadee (*Poecile atricapillus*), and American Robin (*Turdus migratorius*). Also recorded were three

forest species which are area-sensitive: Hairy Woodpecker (*Dryobates villosus*), Pileated Woodpecker (*Dryocopus pileatus*) and Veery (*Catharus fuscescens*). These species typically require larger tracts of suitable habitat in which to breed or are those that have a higher breeding success in larger areas of wooded habitat. One pair of each was recorded. Note that targeted surveys of the woodland would have the potential to detect additional individuals or species within this habitat feature.

No species provincially ranked as S1 through S3 (Critically Imperiled through Vulnerable), nor any species regulated under the ESA were recorded as breeding on the subject property. However, one woodland species listed as special concern was recorded, Wood Thrush (*Hylocichla mustelina*), with one territory detected in the valley in the centre of the property. This species is special concern provincially and threatened federally based on a declining trend over its range and is typically found in mature forests. Habitat of species of special concern is not regulated under the ESA.

The majority of bird species observed are ranked by the TRCA as L4, L5, or L+, reflective of species that occur and are generally secure throughout the region or are somewhat tolerant of urban stressors. Rankings of L1 to L3 are given to species of conservation concern within the TRCA jurisdiction, meaning they are more sensitive to habitat loss and disturbance. Six (6) such species were recorded as breeding: Pileated Woodpecker, Alder Flycatcher, Wood Thrush, Mourning Warbler, and Field Sparrow with L3 rankings, and Veery ranked L2. One pair of each of these species were recorded, apart from Mourning Warbler with two pairs.

## 4.7 Incidental Wildlife

It is assumed that common mammals of rural and urban areas are present on the property. The following species were observed: Eastern Cottontail (*Sylvilagus floridanus*) and Northern Raccoon (*Procyon lotor*) while other species likely present include White-Tailed Deer (*Odocoileus virginianus*), Gray Squirrel (*Sciurus carolinensis),* Red Squirrel *(Tamisciurus hudsonicus),* Eastern Chipmunk *(Tamius striatus)* and Red Fox (*Vulpes vulpes*).

## 4.8 Arborist Report

An Arborist Report and Tree Inventory and Preservation Plan (TIPP) has been prepared by Beacon (2023a) and should be read in conjunction with this report. Per the Arborist Report,

> *A total of 139 individually tagged trees with a minimum DBH of 15 cm was inventoried and assessed within the subject property and adjoining properties. A total of 81 individual trees are proposed or recommended for removal including 74 trees that are proposed for removal to accommodate development and seven (7) trees that are recommended for removal due to their condition. There are 58 trees that are recommended for preservation.*

Per tree compensation calculations provide in the report, a total of 114 replacement trees is required to compensate for the removal of trees at least 15 cm DBH in size in accordance with City of Pickering tree compensation guidelines.

## 4.9 Endangered or Threatened Species

As described in the preceding sections, Beacon staff conducted both desktop and on-site investigations to assess whether any endangered or threatened species were likely to occur on or adjacent to the subject property. **Table 3** provides Beacon's assessment based on the results of field investigations combined with knowledge of the habitat preferences and natural history of the species being considered.

### Table 3. Endangered or Threatened Species

| Species | Status on SARO List | Were Species and/or Habitat Documented during on-site Assessment? |
|---|---|---|
| **Vascular Plants (Dicots)** | | |
| Butternut, *Juglans cinerea* | END | **No,** the subject property and adjacent trees were searched for Butternut and none were found. |
| **Birds** | | |
| Bank Swallow, *Riparia riparia* | THR | **No**, suitable habitat is absent on the subject property as vertical exposed banks (suitable habitat) are not present at this location. Breeding bird surveys did not record any foraging birds of this species. |
| Barn Swallow, *Hirundo rustica* | THR | **No**, a comprehensive habitat assessment was undertaken for this species and no nests were identified. |
| Chimney Swift, *Chaetura pelagica* | THR | **No,** a suitable vertical column is absent on the property and no Chimney Swift were noted during breeding bird surveys. |
| Bobolink, *Dolichonyx oryzivorus* | THR | **No**, this species was not recorded during breeding bird surveys as it requires extensive meadow habitat which is absent. |
| Eastern Meadowlark, *Sturnella magna* | THR | **No**, Eastern Meadowlark were not present on the property during breeding bird surveys as this species requires extensive meadow habitat. |
| **Aquatic Species** | | |
| Redside Dace | END | **Yes**, occupied habitat is present in Carruthers Creek within the subject property. The western tributary and associated wetland to Carruthers represents contributing habitat. |
| **Mammals** | | |
| Little Brown Myotis, *Myotis lucifugus*<br><br>Northern Myotis, *Myotis septentrionalis*<br><br>Eastern Small-footed Myotis, *Myotis leibii*<br><br>Tri-colored Bat, *Perimyotis subflavus* | END | **Potential**, suitable habitat for endangered bats is present in the treed communities on the subject property, based on the provincial habitat guidelines (FOM4-2, FOM6-1, FOC4-1, FOD7-A, CUP3). Targeted surveys have not been undertaken at this time, and a habitat assessment will be conducted in the fall of 2023 in leaf-off conditions for areas proposed for removal. |

Key: SARO Species at Risk in Ontario List EN: Endangered; THR Threatened; ORAA Ontario Reptile and Amphibian Atlas; NHIC Natural Heritage Information Centre

## 4.10 Significant Wildlife Habitat

SWH designation is the responsibility of the planning authority and determination of it on a site by site basis is generally not an appropriate manner in which to determine this constraint given that it is necessary to understand the context of the habitat within the local environment. In this case, the City of Pickering has not identified SWH within their jurisdiction. There is guidance provided in two provincial documents: the Significant Wildlife Technical Guide (OMNR 2000) and the Natural Heritage Reference Manual (MNRF 2010).

The *Significant Wildlife Habitat Technical Guidelines* (MNRF 2000) identify four broad categories of SWH:

- 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, each intended to capture a specialized type of habitat that may or may not be captured within other existing feature-based categories (e.g., significant wetlands, significant woodlands).

As the identification of SWH is the under the jurisdiction of the planning authority (i.e., Municipality or Region) any types of SWH discussed below have been identified as potential SWH for the purposes of this study (**Table 4**).

### Table 4. Assessment of Potential Significant Wildlife Habitat for the Subject Property

| Wildlife Habitat Category | Presence or Absence on Subject Property Based on MNRF Criteria for Ecoregion 6E | |
|---|---|---|
| | **Absent** | **Potential Presence** |
| **Seasonal Concentration Areas for Wildlife Species** | | |
| Waterfowl Stopover and Staging Areas (Terrestrial) | X | |
| Waterfowl Stopover and Staging Areas (Aquatic) | X | |
| Shorebird Migratory Stopover Area | X | |
| Raptor Wintering Area | X | |
| Bat Hibernacula | X | |
| Bat Maternity Colonies | | Forest and swamp communities (FOC, FOM, SWC, SWM) provide potential habitat. |
| Bat Migratory Stopover Area | X | |
| Turtle Wintering Areas | | |
| Reptile Hibernaculum | X | |
| Colonially-Nesting Bird Breeding Habitat (Bank and Cliff) | X | |
| Colonially-Nesting Bird Breeding Habitat (Tree/Shrubs) | X | |

| Wildlife Habitat Category | Presence or Absence on Subject Property Based on MNRF Criteria for Ecoregion 6E | |
|---|---|---|
| | Absent | Potential Presence |
| Colonially-Nesting Bird Breeding Habitat (Ground) | X | |
| Migratory Butterfly Stopover Areas | X | |
| Land bird Migratory Stopover Areas | X | |
| Deer Yarding Areas | X | |
| Deer Winter Congregation Areas | X | |
| **Rare Vegetation Communities** | | |
| Cliffs and Talus Slopes | X | |
| Sand Barren | X | |
| Alvar | X | |
| Old Growth Forest | X | |
| Tallgrass Prairie | X | |
| Savannah | X | |
| Provincially Rare S1, S2 and S3 vegetation communities | X | |
| Regionally or Locally Rare vegetation communities | X | |
| **Specialized Habitats of Wildlife** | | |
| Waterfowl Nesting Area | X | |
| Bald Eagle and Osprey Nesting, Foraging and Perching Habitat | X | |
| Woodland Raptor Nesting Habitat | X | |
| Turtle Nesting Areas | X | |
| Seeps and Springs | X | |
| Amphibian Breeding Habitat (Woodland) | X | |
| Amphibian Breeding Habitat (Wetlands) | | Potential within wetland community within the valley corridor. |
| Woodland Area-Sensitive Bird Breeding Habitat | X | |
| **Habitats of Species of Conservation Concern considered SWH** | | |
| Marsh Bird Breeding Habitat | X | |
| Open Country Bird Breeding Habitat | X | |
| Shrub/Early Successional Bird Breeding Habitat | X | |
| Terrestrial Crayfish | X | |
| Special Concern and Rare Wildlife Species | | Potential presence within the valley corridor. |
| **Animal Movement Corridors** | | |
| Amphibian Movement Corridors | | Potential presence within the riparian valley corridor |
| Deer Movement Corridors | X | |

In summary, this analysis has considered that there are four potential SWH types on the subject property. None of these areas have been identified as potential SWH by the City. All potential SWH types on the subject property are associated with the Carruthers Creek valleylands to be buffered and conveyed to public ownership as NHS.

### 4.11 Landscape Connectivity

Landscape connectivity and natural linkages have become common parlance when discussing environmental planning. The idea is that variously sized habitat patches, so-called "core" natural areas, and supporting features are linked by natural corridors in an often-fragmented landscape of land uses. Current planning policy typically includes provisions for the maintenance of such corridors. For example, as in section 2.1.2 of the Provincial Policy Statement (MMAH 2020):

> *The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.*

The wooded valley and watercourse running through the central portion of subject property provides connectivity within the local landscape, as it provides a continuous vegetated conduit for the movement of both aquatic and urban-tolerant terrestrial species. This north-south linkage for movement will be maintained post development and will observe an increase in area with the implementation of plantings associated with an edge management plan to be established at the detailed design stage.

## 5. Summary of Natural Features and Functions

The findings of the background review, seasonal surveys and agency site walks have been relied upon to confirm whether the subject property supports any of the natural heritage components recognized under the PPS, Regional and City policies. The Natural Heritage Reference Manual (MNRF 2010) was consulted to provide additional technical guidance where required.

| Key Features | Functions & Attributes |
|---|---|
| Fish Habitat/ Watercourses | • Carruthers Creek is a permanent watercourse in the central portion of the subject property. The watercourse provides direct fish habitat.<br>• Carruthers Creek west tributary enters Carruthers Creek at the north end of the subject property. This feature is intermittent/ephemeral and provides contributing or indirect habitat function. |
| Wetlands | • There is a small riparian wetland located within the valley corridor, it is approximately 0.12 ha in area and is a marsh community.<br>• The wetland is not Provincially Significant. |
| Significant Woodlands | • The valley corridor on the central property of the subject property is entirely wooded and meets the criteria to be considered significant. |
| Significant Valleyland | • The wooded valley corridor associated with the Carruthers Creek meets the criteria to be significant. The greater of the top of bank or woodland associated with the valley have been staked in the field with the TRCA. |

| Key Features | Functions & Attributes |
|---|---|
| Endangered Species- Redside Dace and Bats | • Carruthers Creek has been identified as occupied habitat for the provincially endangered Redside Dace.<br>• Carruthers Creek west tributary and the associated wetland provides contributing habitat for Redside Dace.<br>• The woodland communities (FOM4-2, FOM6-1, FOC4-1, FOD7-A, CUP3) have potential to provide habitat for endangered bats. |

# 6. Proposed Development

The subject property has a total area of 17.9 ha. The proposed development will consist of thirteen (13) low density single family residential estate lots with approximately 7.5 ha proposed for development and the remaining 10.4 ha being dedicated as open space. The proposed subdivision will include residences, private driveways and 6.5 m wide paved condominium roads. The proposed development is illustrated in **Figure 3**.

## 6.1 Site Servicing

A summary of the FSSR completed by Candevcon East Limited (2023) with respect to water servicing and stormwater is provided below.

### *6.1.1 Water Servicing*

The proposed development will be serviced by a proposed network within the roadway and through the lots adjacent to the existing watermain on 5th Concession Road to which it will connect.

### *6.1.2 Stormwater Management*

Under existing conditions, the site generally drains towards Carruthers Creek located in the central portion of the site.

Under proposed conditions, two (2) separate storm sewers are proposed for each the east and west group of residential lots and each will outlet to Carruthers Creek. The storm sewers have been designed to convey flows from the front of the lots including approximately half of the roof areas, the driveways and the roads. Rear roof leaders will be directed to splash pads with flows being conveyed overland as sheet flow towards Carruthers Creek.

Major system flows will be captured and detained on site in portions of the storm sewer system that will be over-sized to store and release the major system flows in accordance with the Carruthers Creek unit rates. Should the storm sewer become 100% blocked or an event in excess of the 100-year storm occurs, the major system flows will pond and spill towards Carruthers Creek via the overland flow route.

The outlet headwall locations were determined as part of the Frisque Lands Geomorphic Assessment completed by Beacon (July 2023). The routing and preliminary sizing of the storm sewer to service the development are shown on the Functional Servicing Plan (Candevcon 2023).

The TRCA Stormwater Erosion Criteria (2012) document provides the following general guidance for the location of proposed SWM outfall structures so that minimal risk to the structure will occur over time due to erosion:

- Place infrastructure (e.g., outfall and plunge pool) outside of the meander belt wherever possible;
- Avoid placing outfalls, plunge pools and/or outfall channels in erosion prone areas;
- Avoid disturbance to low flow channel where possible; and
- Orient outfall and/or outfall channel appropriately to minimize impact on the receiving watercourse.

Two (2) storm outfalls are proposed in support of the development. The storm outfall for the west portion of the subject property is proposed to be located at the toe of valley slope (Frisque Lands Functional Servicing and Stormwater Management Report Figure 3; Candevcon 2023), outside of the Redside Dace habitat. Results of the field investigation noted a floodplain drainage feature along the toe of slope in this area that will function to convey released flows to Carruthers Creek. The storm outfall for the east portion of the subject property is proposed to utilize an existing outfall structure, also located outside of the meander belt. Based on the proposed outfall locations, field observations and results of the stormwater erosion analysis, both SWM outfall locations can be supported from a geomorphic perspective.

Minor system flows from external drainage areas will be conveyed by a drainage swale flowing southerly parallel to the road on the east portion of the site, where the flows will then be conveyed under the road via culvert, draining westerly discharging to Carruthers Creek an outlet. These flows are considered clean and will not be captured by the storm system (Candevcon 2023).

### *6.1.3 Water Distribution*

The watermain distribution system for the proposed development will consist of watermains located within the private roads and connecting into the existing 400 mm diameter watermain on 5th Concession Road (Candevcon 2023).

### *6.1.4 Water Balance*

An Updated Water Balance Assessment was completed by R.J. Burnside & Associates Limited (August 2023) which considered increases in runoff related to impervious areas such as driveways, roads and roof areas. To assess the potential impact on infiltration as a result of the construction of the proposed development the post development infiltration volume was calculated, assuming no measures in place to mitigate runoff. In this scenario, there is the potential to reduce infiltration by about 4%.

The report concludes that development related impacts to groundwater from reduction in infiltration could be mitigated by adding topsoil depth, disconnected rear roof leaders to lawn areas, allowing the flows to infiltrate over the rear yard. Based on achieving the criterion for erosion control, the strategy also includes soakaway pits for the rear roof leaders. With the applications of these mitigation

| Proposed Development | Figure 3 |
|---|---|
| Frisque EIS | |

## Legend

- Subject Property
- Proposed Development
- Staked Feature Limit (TRCA, August 2021)
- Staked Feature Limit + 10 m
- Watercourse (Beacon 2022)
- Encroachment (0.11 ha)
- Meander Belt (Beacon 2023)
- Limit of Redside Dace Occupied Habitat (Meander Belt + 30 m)
- TRCA Floodline (Approximate)
- TRCA Floodline + 10 m

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measures, post-development there is a 4% increase in infiltration volume and will serve to mitigate the infiltration deficit.

# 7. Impact Assessment

The following sections identify the potential impacts of the proposed site development, either during the construction phase or following completion of construction, on the natural features and functions present on the subject property.

## 7.1 Tree and Vegetation Removal

The proposed development will require the removal of the cultural meadow communities on the tableland portions of subject property. This area provides habitat for urban tolerant birds and wildlife.

The Arborist Report and TIPP Beacon (2023a) notes that a Eastern White Cedar hedgerow is proposed for removal due to conflict with the proposed development, as well as four additional individual trees. Seven (7) other trees will be removed due to condition, as they are dead or dying and would pose a hazard to workers and the development. The remaining trees will be retained on site.

Additional tree removals to accommodate the stormwater outfalls will be assessed at detailed design.

## 7.2 Encroachment into Feature Buffers

The proposed development will result in the removal of a total of approximately 0.11 ha of buffer area outside of the dripline of the staked woodland community on the subject property (**Figure 3**) as follows:

- Encroachment of 0.03 ha on the western portion of the subject property to accommodate the road, water pumping station and regional easement; and
- Encroachment of 0.08 ha on the eastern portion of the subject property to accommodate the drainage conveyance swale.

The stormwater outfalls will be situated within the woodland communities (i.e., FOM6-1, FOC4-1) within the central valley feature. The footprint of these outfalls and the related impacts, including tree removals and encroachment into potential bat habitat, will be assessed at detailed design.

## 7.3 Disturbance to Natural Features and Functions

With the increase in people and pets and their proximity to the natural heritage features and functions of the subject property there is a potential for resulting disturbance to these functions. While it is important for people to experience the benefits that these features provide to people's health and well-being careful design can ensure this is done while ensuring limited impacts on these features.

People and pets and bring trampling of and damage to vegetation, disturbance to ground nesting birds, loss of small mammals, which can be managed through fencing, signage and trails.

## 7.4 Sedimentation and Soil Erosion

Construction works such as grading, grubbing and excavation have the potential to result in the movement of sediment into the Carruthers Creek, significant woodland and associated valley corridor.

## 7.5 Alteration to Wetland Hydrology and Hydrogeology

Construction activities or other development works which may interact with existing infiltration rates and groundwater levels could have negative effects on adjacent natural heritage features, in particular the riparian wetland within the valley (SWM 1-1, **Figure 2**).

Potential impacts of unmitigated development works could include any one or combination of the following:

- A change in existing community structure and associated habitat conditions (e.g., shift from wetland community to an upland terrestrial community);
- Decrease in infiltration and an increase in surface runoff; and
- Tree mortality.

A Wetland Risk Assessment has been prepared for the proposed development by Beacon (September 2023c).

## 7.6 Changes to Site Hydrology

The majority of the subject property is currently pervious surface, allowing for infiltration. The post-development scenario increases the amount of impervious surface with the residential development component. Without mitigation, there is a loss of infiltration area equal to that of the footprint of the development.

## 7.7 Stormwater Outfalls

Two (2) storm outfalls are proposed in support of the development. The storm outfall for the west portion of the subject property is proposed to be located at the toe of valley slope (Frisque Lands Functional Servicing and Stormwater Management Report Figure 3; Candevcon 2023), outside of 30 m from the meander belt. Results of the field investigation noted a floodplain drainage feature along the toe of slope in this area that will function to convey released flows to Carruthers Creek. The storm outfall for the east portion of the subject property is proposed to utilize an existing outfall structure, also located outside of 30 m from the meander belt.

The footprint and design of the outfalls will be developed through detailed design. As the stormwater is ultimately directed to Carruthers Creek which is regulated habitat, the design must include best efforts to maintain the following conditions:

- Discharge temperature below 24°C;
- Dissolved oxygen concentration at discharge of at least seven milligrams per litre; and
- TSS of <25 mg/L above stream background (MNRF 2016).

Further, should habitat for endangered bats be found to exist within the central valley corridor, discussion with MECP will be undertaken to ensure compliance with the ESA.

### 7.8 Noise and Light Effects on Wildlife

Acute and cumulative effects for a development associated with noise and light are very difficult to quantify. Noise may be a reason why landscape-level effects are known to occur within urban matrices even as natural areas are set aside. The effects of these stressors can be significant in previously undeveloped areas; however, a measurable effect on wildlife because of the proposed development plan is not anticipated.

# 8. Recommended Mitigation Measures

The following mitigation measures are recommended to reduce impacts of the proposed development on natural heritage features and functions.

### 8.1 Limits of Development

One of the primary design principles adopted for the development was to protect the Carruthers Creek, west tributary to Carruthers Creek, wetland, woodland and valley corridor in accordance with provincial, regional, municipal, and TRCA goals, objectives and policies related to natural heritage and hazard lands. As impact avoidance is generally the most effective means of reducing the risk of development impacts on the natural environment, the proposed development maintains the natural heritage corridor in the central portion of the property. The outer limits of natural features (i.e., woodland and valley corridor) were confirmed in the field during the site walk with the TRCA.

The limit of constraints associated with the proposed NHS are a combination of the setbacks and buffers associated with the outer limits of the wooded valley feature.

**Carruthers Creek**

The meander belt to Carruthers Creek was determined through the completion of a Geomorphic Assessment (Beacon 2023b). The meander belt to the watercourse is visualized on **Figure 3.** Development, including storm outfalls, is located greater than 30 m from the watercourse, outside of Redside Dace habitat.

**Unevaluated Wetland**

The unevaluated wetland along the western tributary to Carruthers Creek is entirely within the wooded valley and is greater than 30 m from the proposed development footprint.

**Valley Corridor**

The limit of the natural feature has been staked in the field with the TRCA. This staked limit is representative of the greater of the dripline to the significant woodland or the top of slope associated with the valley corridor. A 10 m buffer has generally been provided to the staked feature limit.

The stormwater outfalls will be necessarily located within the valley. The footprint of these outfalls and the related impacts, including tree removals and encroachment into potential bat habitat, will be assessed at detailed design.

**Redside Dace Habitat**

A meander belt assessment was conducted in order to determine the limit of the Redside Dace habitat associated with the Carruthers Creek. The habitat is represented by the meander belt plus 30 m for occupied reaches, as well as the contributing habitat of the Western Tributary and associated wetland. Development or site alteration is not proposed within occupied or contributing habitat.

## 8.2 Buffer Planting Plan

A buffer planting plan will be prepared to include additional plantings within the identified buffer areas. The addition of a planted buffer area will convert meadow along the valley to natural areas and will further bolster the utility of the buffer distance to protect the natural feature from potentially adverse impacts associated with the proposed redevelopment, in addition to increasing overall naturalized cover area.

Species should be selected that are appropriate to the NHS at this location and are native, self-sustaining species.

Landscape drawings will be prepared at detailed design.

## 8.3 Dedication of Valley Feature

The central valley feature will be dedicated to a public authority to be maintained as Environmental Protection in the long term. Rear yards abutting the valley will be fenced to prevent encroachment into the feature by humans and anthropogenic uses.

## 8.4 Erosion and Sediment Control Plan

An erosion and sediment control (ESC) plan should be developed and implemented to the satisfaction of the City of Pickering and TRCA prior to the start of construction works, and should be developed in accordance with the Erosion and Sediment Control Guide for Urban Construction (TRCA 2019).

Construction works such as grading, grubbing and excavation can cause the movement of sediment into watercourses, both on and downstream of the property. Silt fencing should be installed to minimize sediment leaving the site and should be removed when development work is completed, and exposed soils stabilized.

Standard Best Management Practices should also be employed during the construction process.

## 8.5 Wetland Risk Assessment

At the request of TRCA, a Wetland Risk Evaluation has been prepared by Beacon (2023c) for the swamp community within the valley corridor and should be read in conjunction with this report.

The results of this assessment indicate that the wetland community was determined to be Low Risk, as it is unlikely that the proposed development will have a substantial impact on the hydrology of this community.

## 8.6 Low Impact Development Techniques

It is understood that the TRCA only considers 50% TSS removal from standard oil/grit separators and as such LID measures are proposed to provide additional treatment. LID measures have been considered in order to provide a treatment train approach to SWM providing the necessary quality and erosion controls, in addition to water balance benefits.

These LID measures described below include lot level and end-of-pipe controls, as presented in the FSSR (Candevcon 2023). This will include disconnected roof leaders to increased depth of amended topsoil, soakaway pits and/or infiltration swales, and end of- pipe infiltration galleries and/or bioretention areas.

**Disconnected Roof Leaders to Topsoil Amendments** - It is proposed that all front roof leaders be disconnected to splash pads to increase the potential for at source infiltration across the front yard. The roof flows along with the runoff from the driveways will be conveyed overland across the yard towards the proposed road. Increasing the typical topsoil depth of 0.15 m to 0.45 m across the lawn and providing amendments in accordance with TRCA specifications will minimize local runoff while promoting increased infiltration.

**Soakaway Pits/Infiltration Swales**– It is proposed to infiltration clean water from rear roof areas in soakaway pits to promote the infiltration of clean flows at the source. Soakaway pits have been assumed for each lot; however, at detailed design when there are house siting designs, the feasibility and design of the soakaway pits can be re-evaluated. Alternatively, rear yard roof drains can be directed to the surface via splash pads and then collected at the rear yard in a swale. The infiltration gallery can then be installed along the rear lot line under the swale. All flows from the roof areas and rear yards

that are captured in the swale can then be infiltrated. Major system flows would continue to sheet drain overland directly to Carruthers Creek. Each soakaway pit will be sized to retain 5 mm of runoff from the roof area directed to it.

**Infiltration/Bioretention at Storm Outfalls** – This LID measure will provide the opportunity for the total flow from the site impervious areas to infiltrate or be detained in a sub-surface infiltration gallery or a surface bioretention area located at each of the two storm outfalls. Each infiltration gallery or bioretention area will be designed with 5 mm of detention storage to meet the water balance and erosion control criteria. Infiltration testing and depth to groundwater will need to be assessed at each outfall as part of the detailed design. Preliminary sizing of an infiltration gallery for each outlet has been undertaken as part of this FSSR.

**Permeable Pavement** – There are opportunities to construct the driveways with permeable pavement to encourage infiltration and retention of stormwater at the source. The bedding material of the permeable pavement would be designed to retain the first 5 mm of runoff from the impervious surface. This will be a decision of the individual homeowners and thus hasn't been included in the calculations.

**Raingardens** – Where possible runoff from front roof downspouts can be directed into raingardens but this will be at the discretion of the homeowner. This will reduce runoff by increasing evaporation, transpiration and infiltration. This will be a decision of the individual homeowners and thus hasn't been included in the calculations.

**Rain Barrels** – Again, at the discretion of the individual homeowner, rainwater can be collected.

## 8.7 Stormwater and Outfall Design Mitigation

An infiltration gallery or bioretention area is proposed at each storm outfall and will be designed with 5 mm of detention storage to meet water balance and erosion control criteria. Soakaway pits or infiltration swales are proposed to collect rear roof water and promote infiltration at the source. Each pit or swale will be designed to retain 5 mm of runoff. Feasibility of soakaway pits/ infiltration swales will be determined at the detailed design stage.

The following criteria are incorporated into the stormwater management design of the proposed development:

- Quality Control: An "Enhanced" level of protection for the minor system drainage as per Ministry of Environment guidelines is required (minimum 80% total suspended solids removal) by TRCA guidelines;
- Erosion Control: A target on-site retention of 5 mm of runoff will be provided infiltration galleries or bioretention areas at each storm outfall. A fluvial geomorphic assessment was requested by TRCA (email August 25, 2022) to determine if site requires greater than 5 mm retention; and
- Quantity Control: Control post development flows to pre-development levels for all storm events for the 2 through 100-year return period events using the unit flow relationships for Carruthers Creek using the 24 hour AES design storms.

The storm sewer system will be designed to convey the 5 year post-development flows.

With respect to achieving the water quality recommendations for Redside Dace as presented by MNRF (2016), per Candevcon (2023),

> *A best efforts approach with respect to discharging to Red Side Dace habitat has been taken. Water quality (i.e. TSS removal) requirements have been met as per the MOE Guidelines. Furthermore, best efforts with respect to water temperature and dissolved oxygen has also been provided. A bioretention and/or infiltration trench are proposed at Outlets 1 & 5, as illustrated on Figure 4 attached of the FSSMR (Candevcon East Limited 2023), to provide additional polishing and cooling to the water prior to discharging to Carruthers Creek. Lastly, the quantity control storage volumes are provided through an underground system (over sized storm sewer) which will allow for cooling of the water prior to discharge (Candevcon East Limited 2023).*

Consultation with the MECP will be required to address the detailed design of outfall structures, should any works be required in habitat, and to address the criteria for the discharge of stormwater to the Redside Dace habitat.

## 8.8 Timing of Vegetation Removal

The federal *Migratory Bird Convention Act* (1994) protects the nests, eggs and young of most bird species from harm or destruction. Environment Canada considers the general nesting period of breeding birds in southern Ontario to be between late March and the end of August. This includes times at the beginning and end of the season when only a few species might be nesting. It is recommended that during the peak period of bird nesting (i.e., between mid-April and mid-July), no vegetation clearing or disturbance to nesting bird habitat should occur.

In the “shoulder” seasons of April 1 to April 15, and July 16 to August 31, vegetation clearing could occur, but only after an ecologist with appropriate avian knowledge has surveyed the area to confirm lack of nesting. For any proposed clearing of vegetation within the breeding bird season an ecologist should undertake detailed nest searches immediately prior (within two days) to site alteration to ensure that no active nests are present.

If nesting is found, then vegetation clearing in an area around the nest, the size of which depends on the specific circumstances, has to wait until nesting has concluded. The likelihood of nesting birds being present in the “shoulder” seasons also depends on the habitat type.

From September 1 through to March 31, vegetation clearing can occur without nest surveys, but the need to ensure nest protection still applies (i.e., if an active nest is known to be present it must be protected).

Likewise, any trees which have the potential to provide habitat for bats should only be removed between October 1 and March 31, outside of the roosting window.

# 9. Policy Conformity

The natural heritage policy framework with respect to the subject property was detailed under Section 3 of this report.

## 9.1 *Endangered Species Act*

Potential habitat for endangered bats is present within the woodlands on the subject property which are being maintained and buffered, with the exception of the stormwater outfalls. Should habitat for endangered bats be found to exist within the central valley corridor, discussion with MECP will be undertaken to ensure compliance with the ESA.

Carruthers Creek is on the subject property and is identified as occupied Redside Dace habitat. A meander belt study was undertaken, and Redside Dace regulated habitat was identified as the meander belt of the watercourse plus 30 m. The west tributary to Carruthers Creek and associated wetland has been identified as contributing habitat. All lots, structures, outfalls and grading are located outside the limit of the regulated habitat. Consultation with the MECP will be required to address the detailed design of outfall structures and to address the criteria for the discharge of stormwater to the Redside Dace habitat.

## 9.2 *Fisheries Act*

In compliance with Section 35 of the Act, all works are proposed outside of the high water mark of the watercourses and outside of the Redside Dace habitat of meander belt plus 30 m of Carruthers Creek. Therefore, no works are proposed within fish habitat and a Request for Review will not be required for this project.

## 9.3 Provincial Policy Statement

The subject property was assessed for the presence of significant natural heritage features as described in the PPS.

Policy 2.1 of the PPS provides direction to regional and local municipalities regarding planning policies specifically for the protection and management of natural heritage features and resources.

Section 2.3 of the PPS provides direction to the planning authority with respect to natural heritage features and functions.

Within the PPS, natural heritage features listed and identified on the subject property are:

- Significant valleylands – present;
- Habitat of endangered or threatened species - as discussed in Sections 4.3;
- Fish habitat – present in Carruthers Creek; and
- Significant woodlands - present.

The valleyland and woodland on the subject property were delineated during the 2022 field season and are protected with a 10 m buffer. Fish habitat associated with Carruthers Creek (coolwater) provides habitat for Redside Dace which is contained within the valley corridor.

Potential significant wildlife habitat was identified within the valleyland of the property which will be retained and buffered appropriately to retain this wildlife functionality.

Habitat of endangered or threatened species was identified and will be addressed through the ESA below.

## 9.4 Greenbelt Plan

The subject property is within the Protected Countryside and contains natural Heritage System however is subject to Section 5.2.1 of the Greenbelt Plan given prior approvals.

> *Where an official plan was amended prior to December 16, 2004 to specifically designate land use(s), this approval may continue to be recognized through the conformity exercise addressed in section 5.3 and any further applications required under the Planning Act or the Condominium Act, 1998 to implement the official plan approval are not required to conform with this Plan.*

Birchwood Estates (subject property) were *approved for a "*country residential" development in 1998 for a maximum of 23 residential lots; the detailed development concept is still awaiting subdivision approval and zoning. The proposed development is comprised of 13 estate residential lots. The proposed development is outside of Key Natural Heritage and Hydologic Features and a natural corridor has been maintained.

## 9.5 Durham Region Official Plan

The Durham Region Official Plan indicates the subject property as within the Major Open Space Area within the Greenlands System. The Greenbelt NHS identified KNHFs and KHFs within the subject property and surrounding area. The Official Plan states that any proposals for development adjacent to Major Open Space Areas must be accompanied by an EIS.

This EIS has identified and delineated the Carruther Creek valley corridor and meander belt of the watercourse which are KNHF (permanent or intermittent stream and fish habitat) on the subject property. The design mitigation measures described in Section 7.2 of the EIS demonstrates no negative impacts to KNHFs and KHFs. The proposed development does not interfere with existing connectivity in the landscape along the Carruthers Creek valley corridor.

## 9.6 Pickering Official Plan

The subject property is identified as Birchwood Estates were approved for a "country residential" development in 1998 for a maximum of 23 residential lots; the detailed development concept is still awaiting subdivision approval and zoning. The proposed development is composed of 13 estate residential lots.

Part of the approval stated that "development is undertaken in a manner that respects environmental features such as Carruther's Creek and its tributaries to the satisfaction of the City and the conservation authority." The City's Official Plan identified Significant Woodlands, Stream Corridors and Permanent and Intermittent Streams throughout the subject property.

The EIS has identified and characterized the natural heritage features and functions on the subject property. The features are contained within the valley corridor which will be maintained and buffered. Mitigation measures have been recommended to ensure no negative effects occur as a result of the proposed development.

### 9.7 TRCA Regulation and Policies

The majority of the subject property is regulated due to the presence of wetlands, watercourses, valleylands on the subject property. TRCA is responsible for the regulation of hazards, including watercourses, valleylands, floodplains and wetlands, as they relate to flood attenuation.

A feature staking with the TRCA has confirmed that the limit of the valley feature determined by the greater of top of slope or dripline. Further, a meander belt study has been completed for Carruthers Creek and the limit of the floodplain has been depicted on **Figure 3**.

The proposed development does not contemplate any development or site alteration within the floodline or the 10 m setback. No adverse effects on the Carruthers Creek corridor are anticipated to occur as a result of the proposed development.

## 10. Conclusions and Recommendations

Beacon has reviewed the existing natural heritage policies as they pertain to the subject property. A comprehensive, seasonal field program was developed to understand the site conditions, context and function with respect to natural heritage features.

Natural heritage features were identified through Beacon's field program and through consultation with other members of the consulting team and included a Carruthers Creek and west tributary, woodlands, valleylands, fish habitat and habitat for endangered or threatened species.

The proposed development was described and has provided a collaborative analysis, with consideration for the other disciplines involved including the engineering team, geomorphologists and arborists. An impact analysis of the proposed development was provided and identified impacts including tree removal, an increase in impervious surfaces and impacts to wildlife and erosion and sedimentation. To address and offset the identified impacts in Section 8.1, mitigation measures were proposed including LID measures, application of buffers, an edge management plan, and vegetation removal timing. Many of these are to be refined at the detailed design stage.

Subject to the implementation of the recommended mitigation measures, the proposed redevelopment of the subject property demonstrates compliance and conformity with the relevant policies of the PPS, Greenbelt Plan, Durham Region, City of Pickering and the regulations of the TRCA. Consultation with

MECP will be required to ensure the requirements of the ESA area addressed with respect to Redside Dace and potential for endangered bats.

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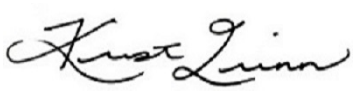

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# Appendix A

## Floral Inventory

# Appendix A

## Floral Inventory

| Scientific Name | Common Name | COSEWIC | SARO | SRank | Rank (TRCA April 2019) | DURHAM (Varga 2005) | Nat Status |
|---|---|---|---|---|---|---|---|
| *Acer negundo* | Manitoba Maple | | | S5 | L+? | | N |
| *Acer rubrum* | Red Maple | | | S5 | L4 | | N |
| *Acer saccharum* | Sugar Maple | | | S5 | L5 | | N |
| *Alisma subcordatum* | Southern Water-plantain | | | S4? | L3 | | N |
| *Rhus typhina* | Staghorn Sumac | | | S5 | L5 | | N |
| *Toxicodendron radicans* | Poison Ivy | | | S5 | | | N |
| *Daucus carota* | Wild Carrot | | | SE5 | L+ | | I |
| *Apocynum cannabinum* | Hemp Dogbane | | | S5 | L5 | | N |
| *Asclepias syriaca* | Common Milkweed | | | S5 | L5 | | N |
| *Vincetoxicum rossicum* | European Swallowwort | | | SE5 | L+ | | I |
| *Arisaema triphyllum* | Jack-in-the-pulpit | | | S5 | L5 | | N |
| *Asarum canadense* | Canada Wild-ginger | | | S5 | L4 | | N |
| *Achillea millefolium* | Common Yarrow | | | SE5? | L+ | | I |
| *Ambrosia artemisiifolia* | Common Ragweed | | | S5 | L5 | | N |
| *Arctium minus* | Common Burdock | | | SE5 | L+ | | I |
| *Bidens frondosa* | Devil's Beggarticks | | | S5 | L5 | | N |
| *Cichorium intybus* | Wild Chicory | | | SE5 | L+ | | I |
| *Cirsium arvense* | Canada Thistle | | | SE5 | L+ | | I |
| *Cirsium vulgare* | Bull Thistle | | | SE5 | L+ | | I |
| *Erigeron philadelphicus* | Philadelphia Fleabane | | | S5 | | | N |
| *Eupatorium perfoliatum* | Common Boneset | | | S5 | L5 | | N |
| *Euthamia graminifolia* | Grass-leaved Goldenrod | | | S5 | L5 | | N |
| *Leucanthemum vulgare* | Oxeye Daisy | | | SE5 | L+ | | I |
| *Rudbeckia hirta* | Black-eyed Susan | | | S5 | L4 | | N |
| *Solidago altissima* | Tall Goldenrod | | | S5 | L5 | | N |
| *Solidago canadensis* | Canada Goldenrod | | | S5 | | U | N |
| *Solidago flexicaulis* | Zigzag Goldenrod | | | S5 | L5 | | N |

| Scientific Name | Common Name | COSEWIC | SARO | SRank | Rank (TRCA April 2019) | DURHAM (Varga 2005) | Nat Status |
|---|---|---|---|---|---|---|---|
| *Sonchus arvensis* | Field Sow-thistle | | | SE5 | | | I |
| *Symphyotrichum cordifolium* | Heart-leaved Aster | | | S5 | L5 | | N |
| *Symphyotrichum lanceolatum* | Panicled Aster | | | S5 | | | N |
| *Symphyotrichum lateriflorum* | Calico Aster | | | S5 | | | N |
| *Symphyotrichum novae-angliae* | New England Aster | | | S5 | L5 | | N |
| *Taraxacum officinale* | Common Dandelion | | | SE5 | L+ | | I |
| *Tussilago farfara* | Coltsfoot | | | SE5 | L+ | | I |
| *Impatiens capensis* | Spotted Jewelweed | | | S5 | L5 | | N |
| *Podophyllum peltatum* | May-apple | | | S5 | L5 | | N |
| *Betula alleghaniensis* | Yellow Birch | | | S5 | L4 | | N |
| *Betula papyrifera* | Paper Birch | | | S5 | L4 | | N |
| *Ostrya virginiana* | Eastern Hop-hornbeam | | | S5 | L5 | | N |
| *Echium vulgare* | Common Viper's Bugloss | | | SE5 | L+ | | I |
| *Nasturtium officinale* | Watercress | | | SE | L+? | | I |
| *Thlaspi arvense* | Field Pennycress | | | SE5 | L+ | | I |
| *Lonicera tatarica* | Tatarian Honeysuckle | | | SE5 | L+ | | I |
| *Viburnum acerifolium* | Maple-leaved Viburnum | | | S5 | L3 | | N |
| *Dianthus armeria* | Deptford Pink | | | SE5 | L+ | | I |
| *Hypericum perforatum* | Common St. John's-wort | | | SE5 | L+ | | I |
| *Cornus alternifolia* | Alternate-leaved Dogwood | | | S5 | L5 | | N |
| *Cornus sericea* | Red-osier Dogwood | | | S5 | L5 | | N |
| *Thuja occidentalis* | Eastern White Cedar | | | S5 | L5 | | N |
| *Carex lacustris* | Lake Sedge | | | S5 | L4 | | N |
| *Carex pedunculata* | Long-stalked Sedge | | | S5 | L5 | | N |
| *Carex pensylvanica* | Pennsylvania Sedge | | | S5 | L4 | | N |
| *Schoenoplectus acutus* | Hard-stemmed Bulush | | | S5 | | | N |
| *Scirpus atrovirens* | Dark-green Bulrush | | | S5 | L5 | | N |
| *Athyrium filix-femina* | Common Lady Fern | | | S5 | | | N |
| *Matteuccia struthiopteris* | Ostrich Fern | | | S5 | | | N |
| *Onoclea sensibilis* | Sensitive Fern | | | S5 | L5 | | N |
| *Equisetum arvense* | Field Horsetail | | | S5 | L5 | | N |

| Scientific Name | Common Name | COSEWIC | SARO | SRank | Rank (TRCA April 2019) | DURHAM (Varga 2005) | Nat Status |
|---|---|---|---|---|---|---|---|
| *Amphicarpaea bracteata* | American Hog-peanut | | | S5 | L5 | | N |
| *Gleditsia triacanthos* | Honey Locust | | | S2? | L+ | | N |
| *Lathyrus latifolius* | Everlasting Pea | | | SE4 | L+ | | I |
| *Lotus corniculatus* | Garden Bird's-foot Trefoil | | | SE5 | L+ | | I |
| *Medicago lupulina* | Black Medick | | | SE5 | L+ | | I |
| *Melilotus albus* | White Sweet-clover | | | SE5 | L+ | | I |
| *Robinia pseudoacacia* | Black Locust | | | SE5 | L+ | | I |
| *Vicia cracca* | Tufted Vetch | | | SE5 | L+ | | I |
| *Fagus grandifolia* | American Beech | | | S4 | L4 | | N |
| *Quercus rubra* | Northern Red Oak | | | S5 | L4 | | N |
| *Ribes rubrum* | European Red Currant | | | SE5 | L+ | | I |
| *Carya cordiformis* | Bitternut Hickory | | | S5 | L4 | | N |
| *Glechoma hederacea* | Ground-ivy | | | SE5 | L+ | | I |
| *Convallaria majalis* | European Lily-of-the-valley | | | SE5 | L+ | | I |
| *Streptopus lanceolatus* | Rose Twisted-stalk | | | S5 | | | N |
| *Lythrum salicaria* | Purple Loosestrife | | | SE5 | L+ | | I |
| *Monotropa uniflora* | Indian-pipe | | | S5 | L3 | | N |
| *Fraxinus americana* | White Ash | | | S4 | L5 | | N |
| *Fraxinus pennsylvanica* | Red Ash | | | S4 | L5 | | N |
| *Circaea canadensis* | Broad-leaved Enchanter's Nightshade | | | S5 | | | N |
| *Oenothera biennis* | Common Evening-primrose | | | S5 | L5 | | N |
| *Epipactis helleborine* | Broad-leaved Helleborine | | | SE5 | L+ | | I |
| *Osmundastrum cinnamomeum* | Cinnamon Fern | | | S5 | L3 | | N |
| *Oxalis stricta* | Upright Yellow Wood-sorrel | | | S5 | L5 | | N |
| *Picea abies* | Norway Spruce | | | SE3 | L+ | | I |
| *Picea glauca* | White Spruce | | | S5 | L3 | | N |
| *Picea pungens* | Blue Spruce | | | SE1 | L+ | | I |
| *Pinus strobus* | Eastern White Pine | | | S5 | L4 | | N |
| *Pinus sylvestris* | Scots Pine | | | SE5 | L+ | | I |

| Scientific Name | Common Name | COSEWIC | SARO | SRank | Rank (TRCA April 2019) | DURHAM (Varga 2005) | Nat Status |
|---|---|---|---|---|---|---|---|
| *Tsuga canadensis* | Eastern Hemlock | | | S5 | L4 | | N |
| *Plantago major* | Common Plantain | | | SE5 | L+ | | I |
| *Agrostis gigantea* | Redtop | | | SE5 | L+ | | I |
| *Elymus repens* | Quackgrass | | | SE5 | L+ | | I |
| *Glyceria striata* | Fowl Mannagrass | | | S5 | L5 | | N |
| *Leersia oryzoides* | Rice Cutgrass | | | S5 | L5 | | N |
| *Phalaris arundinacea* | Reed Canarygrass | | | S5 | L+? | | N |
| *Phleum pratense* | Common Timothy | | | SE5 | L+ | | I |
| *Phragmites australis* | Common Reed | | | S4? | | | N |
| *Poa palustris* | Fowl Bluegrass | | | S5 | L5 | | N |
| *Poa pratensis* | Kentucky Bluegrass | | | S5 | | | N |
| *Actaea pachypoda* | White Baneberry | | | S5 | L5 | | N |
| *Anemone virginiana* | Tall Anemone | | | S5 | L5 | | N |
| *Rhamnus cathartica* | European Buckthorn | | | SE5 | L+ | | I |
| *Potentilla recta* | Sulphur Cinquefoil | | | SE5 | L+ | | I |
| *Prunus serotina* | Black Cherry | | | S5 | L5 | | N |
| *Prunus virginiana* | Chokecherry | | | S5 | | | N |
| *Rosa multiflora* | Multiflora Rose | | | SE5 | L+ | | I |
| *Rubus idaeus* | Red Raspberry | | | S5 | | | N |
| *Rubus odoratus* | Purple-flowering Raspberry | | | S5 | L5 | | N |
| *Populus alba* | White Poplar | | | SE5 | L+ | | I |
| *Populus grandidentata* | Large-toothed Aspen | | | S5 | L4 | | N |
| *Populus tremuloides* | Trembling Aspen | | | S5 | L5 | | N |
| *Salix alba* | White Willow | | | SE4 | L+ | | I |
| *Salix bebbiana* | Bebb's Willow | | | S5 | L4 | | N |
| *Salix discolor* | Pussy Willow | | | S5 | L4 | | N |
| *Penstemon digitalis* | Foxglove Beardtongue | | | S4 | L4 | R6 | N |
| *Verbascum thapsus* | Common Mullein | | | SE5 | L+ | | I |
| *Solanum dulcamara* | Bittersweet Nightshade | | | SE5 | L+ | | I |
| *Ulmus americana* | White Elm | | | S5 | L5 | | N |

# Appendix B

## Breeding Birds

# Appendix B

## Breeding Birds

| Common Name | Scientific Name | Status | | | | | # Breeding Pairs/ Territories |
|---|---|---|---|---|---|---|---|
| | | National Species at Risk COSEWICa | Species at Risk in Ontario Listing a | Provincial breeding season SRANK [b] | TRCA Status d | Area-sensitive (OMNR)c | |
| Red-tailed Hawk | *Buteo jamaicensis* | | | S5 | L5 | | 1 |
| Hairy Woodpecker | *Dryobates villosus* | | | S5 | L4 | A | 1 |
| Northern Flicker | *Colaptes auratus* | | | S4 | L4 | | 1 |
| Pileated Woodpecker | *Dryocopus pileatus* | | | S5 | L3 | A | 1 |
| Alder Flycatcher | *Empidonax alnorum* | | | S5 | L3 | | 1 |
| Great Crested Flycatcher | *Myiarchus crinitus* | | | S4 | L4 | | 1 |
| Blue Jay | *Cyanocitta cristata* | | | S5 | L5 | | 2 |
| American Crow | *Corvus brachyrhynchos* | | | S5 | L5 | | 1 |
| Black-capped Chickadee | *Poecile atricapillus* | | | S5 | L5 | | 2 |
| Veery | *Catharus fuscescens* | | | S4 | L2 | A | 1 |
| Wood Thrush | *Hylocichla mustelina* | THR | SC | S4 | L3 | | 1 |
| American Robin | *Turdus migratorius* | | | S5 | L5 | | 2 |
| Gray Catbird | *Dumetella carolinensis* | | | S4 | L4 | | 1 |
| Red-eyed Vireo | *Vireo olivaceus* | | | S5 | L4 | | 2 |
| Mourning Warbler | *Geothlypis philadelphia* | | | S4 | L3 | | 2 |
| Common Yellowthroat | *Geothlyphis trichas* | | | S5 | L4 | | 1 |
| Northern Cardinal | *Cardinalis cardinalis* | | | S5 | L5 | | 1 |
| Indigo Bunting | *Passerina cyanea* | | | S4 | L4 | | 1 |
| Field Sparrow | *Spizella pusilla* | | | S4 | L3 | | 1 |
| Song Sparrow | *Melospiza melodia* | | | S5 | L5 | | 5 |
| American Goldfinch | *Spinus tristis* | | | S5 | L5 | | 1 |

Field Work Conducted On: *May 28, June 4 and July 1 2021*

Number of Species: 21

Number of (provincial and national) Species at Risk: 1- BARS
Number of S1 to S3 Species: 0
Number of TRCA L1, L2 and L3 Species (Species of Concern): 0
Number of Forest Area-sensitive Species: 0
Number of Grassland Area-sensitive Species: 1 - SASP

KEY
a COSEWIC = Committee on the Status of Endangered Wildlife in Canada
a Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario)
END = Endangered, THR = Threatened, SC = Special Concern

[b] SRANK (from Natural Heritage Information Centre) for breeding status if:
S1 (Critically Imperiled), S2 (Imperiled),S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure)
SNA (Not applicable…'because the species is not a suitable target for conservation activities'; includes non-native species)

c Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p plus appendices.

d Toronto and Region Conservation Authority L rank (2019):
L1 to L3 Regional species of concern from highest to lowest; L4 Urban concern; L5 Secure through region; L+ Non-native