



GUIDING SOLUTIONS IN THE  
NATURAL ENVIRONMENT

# Bradford Highlands Golf Club Environmental Impact Study

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*Prepared For:*

**Bradford Highlands Joint Venture**

*Prepared By:*

**Beacon Environmental Limited**

*Date: Project:*

**October 2023 220036**

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## Report Versions Issued

Version	Date	Revisions
1.	August 2022	
2.	October 2023	Response to Agency Comments: Draft Plan Revisions

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## 1. Introduction

Beacon Environmental Limited (Beacon) has been retained by Bradford Highlands Joint Venture to prepare an Environmental Impact Study (EIS) triggered by a proposal to redevelop the former Bradford Highlands Golf Club (the “subject property”) to accommodate low / medium density residential uses.

The subject property is primarily composed of the former Bradford Highlands Golf Club. The subject property is approximately 60 ha (147 acres) in area, with frontage onto Brownlee Drive and Sixth Line. Much of the property consists of manicured vegetation associated with a golf course. Natural features present on the subject property include several irrigation ponds, drainage features, wetlands, and wooded areas. There are also several buildings on the property including a club house, a maintenance shed and an old farmhouse. Several of the houses located along Brownlee Drive back onto the golf course. The subject property falls within the jurisdiction of the Lake Simcoe Region Conservation Authority (LSRCA) and is entirely within the area subject to the Lake Simcoe Protection Plan (LSPP). In addition, part of the southern half of the property lies within the plan area for the Greenbelt Plan (**Figure 1**).

Currently these lands are located outside of, but immediately adjacent to, the Bradford Urban Area (Schedule A, Bradford West Gwillimbury Official Plan) and are designated as part of a Rural Area. These lands may be planned for urban uses following an Urban Area boundary expansion as part of a municipal comprehensive review following allocation from the County. For the purposes of this Environmental Impact Study (EIS), we have assumed that the subject property will be reclassified to allow for urban development. This EIS has been prepared to address an Official Plan Amendment (OPA) application on behalf of the Bradford Highland Joint Venture to redevelop the subject property for residential land use (MGP 2020). The OPA application is being filed on the basis that there is an opportunity for certain growth in the Town to be located within the subject property. Council is aware of the scope of the project as per a deputation to Council and a subsequent public meeting.

The Greenbelt Plan (2005), the LSPP (2009), the County of Simcoe Official Plan (2023) and the Town of Bradford West Gwillimbury Official Plan (2021) contain policies that that require an EIS, or a comparable study, be prepared in support of development proposals that occur on lands that are adjacent to the various natural heritage systems / areas that are defined within these documents. These policies are discussed further in **Section 2** of this report based on the premise that the subject property will be reclassified to bring it into the Settlement area and allow for Residential development.

## 2. Environmental Policy Framework

The following sections summarize key environmental legislation policies and regulations that will apply to the subject property within the context of the proposed development application should the lands be brought into the Town of Bradford West Gwillimbury Urban Planning Area through this OPA.

## 2.1 Federal *Fisheries Act*

Fish and fish habitat are protected under the federal *Fisheries Act* which is administered by the Fish and Fish Habitat Protection Program within Fisheries and Oceans Canada (DFO). The protection provisions of the *Fisheries Act* apply to all fish and fish habitat throughout Canada and the Act sets out authorities for the regulation of works, undertakings or activities that risk harming fish and fish habitat. Specifically, the protection provisions include two core prohibitions. One is against persons carrying on works, undertakings or activities that result in the “death of fish by means other than fishing” (subsection 34.4[1]), and the other is “harmful alteration, disruption or destruction of fish habitat” (subsection 35[1]; also referred to as “HADD”). The protection provisions are applied in conjunction with other applicable federal laws and regulations related to aquatic ecosystems, including the federal *Species at Risk Act* (SARA).

Fish habitat is defined in subsection 2(1) of the *Fisheries Act* to include all waters frequented by fish and any other areas upon which fish depend directly or indirectly to carry out their life processes. The types of areas that can directly or indirectly support life processes include, but are not limited to, spawning grounds and nursery, rearing, food supply and migration areas.

Proponents are responsible for planning and implementing works, undertakings or activities in a manner that avoids harmful impacts, specifically the death of fish and HADD. Where proponents believe that their work, undertaking or activity will result in harmful impacts to fish and fish habitat, DFO will work with proponents to assess the risk of their proposed work, undertaking or activity resulting in the death of fish or HADD of fish habitat and provide advice and guidance on how to comply with the *Fisheries Act*.



Due to the proximity of the Holland River, the drainage features within the subject property have been assessed to determine if they have connections to downstream habitat (i.e., Holland River) and if they provide direct, indirect or no fish habitat.

## 2.2 Federal *Species at Risk Act*

The Federal *Species at Risk Act* (SARA 2002) is intended to prevent federally endangered or threatened wildlife (including plants) from becoming extinct from the wild, and to help in the recovery of these species. This Act is also intended to help prevent species listed as special concern federally from becoming endangered or threatened. To ensure the protection of Species at Risk (SAR), SARA contains prohibitions that make it an offence to kill, harm, harass, capture, take, possess, collect, buy, sell, or trade an individual of a species listed in Schedule 1 of SARA as endangered, threatened, or extirpated.

SARA applies primarily to lands under Federal jurisdiction and relies upon provincial legislation to protect SAR habitat. On private lands, SARA prohibitions only apply to aquatic species and migratory birds listed in the *Migratory Birds Convention Act* (1994).



<b>Site Location</b>		<b>Figure 1</b>
Bradford Highlands Golf Course Redevelopment EIS		
		Project: 220036 Last Revised: October 2023
Client: Bradford Highlands Joint Venture		Prepared by: BD Checked by: CS
	1:11,000	Inset Map: 1:90,000
Contains information licensed under the Open Government License— Ontario Orthoimagery Baselayer: 20201(FBS)		

## 2.3 Provincial *Endangered Species Act* (2007)

Ontario's ESA came into effect on June 30, 2008, and replaced the former 1971 Act. The ESA protects species listed as endangered and threatened by the Committee on the Status of Species at Risk in Ontario (COSSARO). The purposes of the ESA are:

- To identify species at risk based on the best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge;
- To protect species that are at risk and their habitats, and to promote the recovery of species that are at risk; and
- To promote stewardship activities to assist in the protection and recovery of species that is at risk.

Section 9 of the ESA prohibits the killing, harming, harassing, possession, collection, buying and selling of extirpated, endangered, and threatened species on the Species at Risk in Ontario (SARO) List; and Section 10 prohibits the damage or destruction of protected habitat of species listed as extirpated, endangered, or threatened on the SARO List.

There are several species protected under the ESA that occur within the County of Simcoe with some degree of regularity. Seasonally appropriate field studies are typically required to determine if these species are present or using the landscape to fulfill a part of their life cycle.

## 2.4 Provincial Policy Statement (2020)

The 2020 version of the *Provincial Policy Statement* (PPS) replaced the 2014 PPS as of May 1, 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;*
- *Significant habitat of endangered and threatened species;*
- *Fish habitat;*
- *Significant woodlands;*
- *Significant valleylands;*
- *Significant Areas of Natural and Scientific Interest (ANSIs); and*
- *Significant wildlife habitat.*

In terms of implementation, identification of the various natural heritage features noted above is a responsibility shared by the MECP, Ministry of Natural Resources and Forestry (MNR), the municipal planning authority, and the proponent. The MECP is involved with confirmation of habitat of endangered species and/or threatened species; however, such identification is the responsibility of the proponent. The MECP is also responsible for regulation of habitat of endangered or threatened species under the



ESA. The MNRF is responsible for keeping record of Provincially Significant Wetlands (PSWs) and Areas of Natural and Scientific Interest (ANSIs). Local and regional planning authorities are responsible for the identification of Significant Woodlands, Significant Valleylands, and Significant Wildlife Habitat, with support from applicable guidance documents (i.e., Natural Heritage Reference Manual, OMNR 2010; Significant Wildlife Habitat Technical Guidelines [OMNR 2000]; Significant Wildlife Habitat Criteria for Ecoregion 7E [MNRF 2015a]).

In addition to balanced protection of natural heritage and water resources, the PPS also includes policy direction regarding reducing the potential risk to Ontario's residents from natural or human-made hazards. Section 3.1 of the PPS generally discourages development within identified natural hazards (i.e., areas that are at risk of flooding and / or erosion).

Policy 3.1.4 allows for development and site alteration in certain areas associated with the flooding hazard along river, "where the development is limited to uses which by their nature must locate within the floodway, including flood and/or erosion control works or minor additions or passive non-structural uses which do not affect flood flows."

LSRCA also regulates development and site alteration in and around natural hazards, including areas prone to flooding and erosion.

## 2.5 Greenbelt Plan (2017)

The southernmost portion of the subject property falls within the Greenbelt Plan Area. The Greenbelt Area includes lands within the Niagara Escarpment Plan, the Oak Ridges Moraine Area, the Parkway Belt West Plan Area, and lands designated as Protected Countryside within the Greenbelt Plan (2005). There are three types of policies that apply to specific lands within the Protected Countryside: Agricultural System, Natural System and Settlement Areas.

*Schedule 1 – Greenbelt Plan Area, Schedule 2 – Holland Marsh and Schedule 4 – Natural Heritage System* identifies that a portion of the southern half of the subject property is located within the Greenbelt Area – Protected Countryside and the Greenbelt Area – Natural Heritage System.

New development or site alteration within or adjacent to the Greenbelt Natural Heritage System (NHS) will be addressed in the context of the Regional and Town OPs policies as outlined in the sections below.

Key Natural Heritage Feature (KNHF), include:

- *Significant Habitat of endangered species and threatened species;*
- *Fish habitat;*
- *Wetlands;*
- *Life science ANSIs;*
- *Significant valleylands;*
- *Significant woodlands;*
- *Significant wildlife habitat (including habitat of special concern species);*
- *Sand barrens, savannahs and tallgrass prairies; and*
- *Alvars.*

Key Hydrologic Feature (KHF) include:

- *Permanent and intermittent streams;*
- *Lakes (and their littoral zones);*
- *Seepage areas and springs; and*
- *Wetlands.*

For lands within a key natural heritage feature or a key hydrologic feature in the Protected Countryside, development or site alteration is not permitted in the KNHF/KHFs within the NHS, including any associated vegetation protection zones, with the exception of:

- Forest, fish and wildlife management;
- Conservation and flood or erosion control projects; and
- Infrastructure, aggregate, recreational, shoreline and existing uses.

For wetlands, seepage areas and springs, fish habitat, permanent and intermittent streams, lakes and significant woodlands, the minimum vegetation protection zone shall be a minimum of 30 m wide measured from the outside boundary of the feature.

Any proposed new development or site alteration within 120 m of a key natural heritage feature within the Natural Heritage System or a key hydrologic feature anywhere within the Protected Countryside requires a natural heritage evaluation and hydrological evaluation, to identify a vegetation protection zone which:

- *Is of sufficient width to protect the key natural heritage feature or key hydrologic feature and its functions from the impacts of the proposed change and associated activities that may occur before, during, and after construction, and where possible, restore or enhance the feature and/or its function; and*
- *Is established to achieve and be maintained as natural self-sustaining vegetation.*

In relation to policies regarding development in the Protected Countryside designation of the Greenbelt Plan Area; all proposed development is subject to and approved under the *Canadian Environmental Assessment Act*, the *Environmental Assessment Act*, the *Planning Act*, the *Aggregate Resources Act*, or the *Telecommunications Act* or by the National or Ontario Energy Boards, or which receives a similar environmental approval, is permitted within the Protected Countryside, subject to the policies of this section and provided it meets one of the following two objectives:

- a) It supports agriculture, recreation and tourism, Towns/Villages and Hamlets, resource use or the rural economic activity that exists and is permitted within the Greenbelt; or*
- b) It serves the significant growth and economic development expected in southern Ontario beyond the Greenbelt by providing for the appropriate infrastructure connections among urban centres and between these centres and Ontario's borders.*

Any proposed development in the Protected Countryside is subject to the following:

- a) Planning, design and construction practices shall minimize, wherever possible, the amount of the Greenbelt, and particularly the Natural Heritage System and Water Resource System, traversed and/or occupied by such infrastructure;*

- b) *Planning, design and construction practices shall minimize, wherever possible, the negative impacts on and disturbance of the existing landscape, including, but not limited to, impacts caused by light intrusion, noise and road salt;*
- c) *Where practicable, existing capacity and co-ordination with different infrastructure services shall be optimized so that the rural and existing character of the Protected Countryside and the overall hierarchy of areas where growth will be accommodated in the GGH established by the Greenbelt Plan and the Growth Plan are supported and reinforced;*
- d) *New or expanding infrastructure shall avoid key natural heritage features, key hydrologic features or key hydrologic areas unless need has been demonstrated and it has been established that there is no reasonable alternative;*
- e) *Where infrastructure does cross the Natural Heritage System or intrude into or result in the loss of a key natural heritage feature, key hydrologic feature or key hydrologic areas, including related landform features, planning, design and construction practices shall minimize negative impacts on and disturbance of the features or their related functions and, where reasonable, maintain or improve connectivity.*

In addition to the above noted policies pertaining to proposed development within the Protected Countryside, stormwater management systems are prohibited in KNHF's and KHF's, and their associated vegetation protection zones.

## **2.6 Lake Simcoe Protection Plan (2009)**

The LSPP was developed by the Province of Ontario in 2009 under the *Lake Simcoe Protection Act*, 2008, and is a plan that addresses the promotion and protection of Lake Simcoe proper, its shoreline, and the natural heritage features and functions associated with the entire Lake Simcoe watershed. The subject property is located within the Lake Simcoe Watershed and is therefore subject to the corresponding policies of this plan.

As noted above, this EIS has been prepared to address an OPA application on behalf of the Proponent to redevelop the golf course for residential land use. However, section 6.35-DP of the LSPP states that, where lands have been incorporated into a settlement area after the effective date of Town's OP, an application for development or site alteration within those lands are subject to the policies (i.e., policies 6.20 – 6.29) that apply to areas outside of existing settlement areas and outside of the Greenbelt area and Oak Ridges Moraine area. As the subject property was outside of a Settlement Area at the time the plan came into effect it will remain subject to the policies for lands outside of Settlement Areas, even if an OPA is granted.

KNHFs are wetlands, significant woodlands, significant valleys lands and natural areas abutting Lake Simcoe, and KHF's are wetlands, permanent/intermittent streams, and lakes other than Lake Simcoe. Development and site alteration is not permitted within a KNHF, a KHF or a related vegetation protection zone, except for select restricted uses as outlined in Policy 6.23.

As per Section 3.2 of the Technical Definitions and Criteria for Identifying Key Natural Heritage Features and Key Hydrologic Features for the Lake Simcoe Protection Plan (MNRF, 2015b), states that wetlands less than 0.5 ha in size are not considered a KNHF/KHF if it can be demonstrated that the wetland does not constitute or provide one or more of the following functions:

- An important groundwater hydrologic linkage to an adjacent key hydrologic feature;
- An important component of, or ecological linkage to, an adjacent key natural heritage feature;
- A wetland feature with one (or more) of the following characteristics:
  - Permanent or intermittent surface water connection between the wetland and an adjacent key hydrologic feature;
  - Significant recharge to the underlying aquifer (generally considered to be any small wetland underlain by at least 3 m of mineral soil having a hydraulic conductivity of 10-4 cm/s or more); and
  - Direct hydraulic connections between the wetland and an underlying aquifer (e.g., along fracture zones or granular soil conduits).

As per Section 5.2 of the Technical Definitions (MNRF 2015b):

*Ephemeral streams generally flow only during and for short periods following precipitation or snow melt and flow in lows areas that may or may not have well-defined channels. Intermittent streams which are more or less predicable are distinguished from ephemeral stream, which contain water on a more or less unpredictable basis.*

Where no detailed mapping has been completed all permanent and intermittent streams other than ephemeral streams, associated seepage areas and springs, lakes, canals, and all ponds other than isolated manmade ponds (not connected to the stream) shall be deemed to be a KHF unless it can be demonstrated to the satisfaction of the approval authority that the feature does not constitute a KHF. Ephemeral streams and constructed ponds are not included as KHFs.

As per Section 7.2 of the Technical Definitions (MNRF, 2015b), woodlands are generally defined as treed area, woodlot or forested area, other than a cultivated fruit or nut orchard or a plantation established for the purpose of producing Christmas trees. The identification of significant woodlands within the Lake Simcoe watershed have been divided into two geographic areas to account for differences in forest cover. The subject property is within the "South Area" and significance is based on meeting a size requirement for each of the following criteria: overall size, natural composition, age or tree size, proximity (to other significant features) or rarity. A woodland that meets any on of the criteria below is considered significant:

- Size: any woodlands of 4 ha or greater; or
- Natural composition: any woodlands 1 ha or greater with naturally occurring (not planted occurrences of the mid to late succession or site-restricted tree species listed in the Technical Definitions (MNRF 2015);
- Age or tree size: any woodland 1 ha or greater with either:
  - 10 or more trees per hectare that are either greater than 100 years old or 50 cm or more in diameter; or
  - Containing a basal area of at least 8 squares meters per ha in native trees that are 40 cm or more in diameter.
- Proximity: any woodlands 1 ha or greater that is wholly or partially within 30 m of: a significant woodland, a naturalized lake, a permanent stream, a PSW, or significant habitat of an endangered or threatened species; and
- Rarity: any woodland 0.5 ha or more containing a provincially rare, treed vegetation community with an S1, S2 or S3 in its ranking by the MNRF NHIC, or habitat of a woodland plant species with and S1, S2 or S3 in its ranking or an 8, 9, or 10 in its southern Ontario

coefficient of Conservatism of 10 or more individual stems or 100 or more square meters of leaf coverage.

Further to the foregoing chart, a significant woodland must have an average minimum width of 40 metres measured to crown edges where the criterion size threshold is 0.5 to 4 hectares, and 60 metres where the criterion size threshold is 10 hectares. The details of the criteria listed above mean that the significance of some woodlands can only be confirmed with site specific assessments.

Policy 6.24 states that the minimum vegetation protection zone for all KNHFs and KHF is 30 m. An application for development or site alteration within 120 m of a KNHF or KHF requires a NHE (or equivalent) to be completed in accordance with Policy 6.26.

## 2.7 Lake Simcoe Region Conservation Authority

The LSRCA regulates hazard lands including watercourses, valleylands, shorelines, and wetlands, as well as lands adjacent to these features under Ontario Regulation 179/06 (Regulation for Development, Interference with Wetlands and Alterations to Shorelines and Watercourses) of the *Conservation Authorities Act*. LSRCA Ontario Regulation 179/06 Implementation Guidelines (2023) provides the parameters against which LSRCA administers Ontario Regulation 160/06 under Section 28 of the *Conservation Authorities Act*.

There are ongoing changes to the *Conservation Authorities Act* associated with the More Homes Built Faster Act, 2022, which revokes the individual regulations set out for each conservation authority. A new generic regulation is proposed by the province, which will specify the requirements that apply to all conservation authorities across the province.

One regulation (Ontario Regulation 686/21) is already in force which focuses the scope of the conservation authorities to regulations specifically associated with flooding and natural. In this regard, it is understood that LSRCA will review a project related to the risk of natural hazards, including watercourses and wetlands, within its jurisdiction and in accordance with *Ontario Regulation 179/06* until a new generic regulation comes into effect.

The subject property is located within the Lake Simcoe Watershed and the West Holland Subwatershed. There are wetland features and several drainage features that flow through the subject property of which LSRCA may apply.

### 2.7.1 *Ontario Regulation 179/06 Implementation Guidelines for Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (2023)*

The LSRCA regulates all watercourses which are defined as an “identifiable depression in the ground in which a flow of water regularly or continuously occurs”, which can be further described as all intermittent and perennially flowing watercourses. Intermittent watercourses are defined in the Implementation Guideline (2023) as “watercourses that contain water or are dry at times of the year that are more or less predictable, generally flowing during wet seasons of the year but not the entire year, and where the water table is above the stream bottom during parts of the year” and defines a permanent watercourse as “a stream that continually flows during an average year”.

With respect to floodplain and valleylands, the regulation extends 15 m from the greater level of constraint. With respect to wetlands, the regulated area extends to 120 m from a Provincially Significant Wetland (PSW) and 30 m from all other wetlands. According to the LSRCA's Ontario Regulation 179/06 Implementation Guidelines (2023), wetlands are regulated if they meet the following definition:

- Seasonally or permanently covered by shallow water or has a water table close to or at its surface;
- Directly contributes to the hydrologic function of a watershed through connection with a surface watercourse;
- Has hydric soils, the formation of which has been caused by the presence of abundant water; and
- Has vegetation dominated by hydrophytic plants or water tolerant plants, the dominance of which has been favoured by the presence of abundant water.

But does not include periodically soaked or wet land that is used for agricultural purposes and no longer exhibits a wetland characteristic referred to in clause (c) or (d) (*Conservation Authorities Act*, R.S.O. 1990).

With respect to alteration to watercourses, which includes the straightening, changing, diverting, or interfering in anyway with the existing channel of a river, creek, stream or watercourse. Watercourse is defined as a identifiable depression in the ground in which a flow of water regularly or continuously occurs (*Conservation Authorities Act*, R.S.O. 1990). The LSRCA may grant permission for the alteration of a watercourse provided that:

- *no reasonable alternative for the proposed alteration to the watercourse/shoreline exists and the alteration has been assessed through an Environmental Assessment or through site specific studies (e.g., geomorphological, flood plain), which are applicable based upon the scale and scope of the proposed works; and*
- *the alteration is designed in accordance with natural channel design principles where possible; and*
- *the alteration will not increase either upstream or downstream flood elevations, flood frequencies or rates of erosion; and*
- *the alteration will not adversely affect the ecological function of the watercourse and surrounding riparian area and will result in a net environmental improvement; and*
- *the alteration will not adversely affect neighboring properties.*

Channel realignments may be permitted to improve hydraulic and fluvial processes or aquatic habitat provided that:

- *the need for the watercourse alteration has been demonstrated to the satisfaction of the Authority; and*
- *the alteration is designed in accordance with natural channel design principles; and*
- *the alteration will not increase either upstream or downstream flood elevations, flood frequencies or rates of erosion; and*
- *the alteration will not adversely affect the ecological function of the watercourse and surrounding riparian area; and*
- *the realigned channel may not be located any closer to a property line than the location of the original channel so that the development ability of the neighboring property (i.e., buffers, setbacks) is not affected.*

Subject to conformity with the applicable Official Plan, and completion of appropriate studies and completion of the LSRCA permit process, development may be permitted within a regulated area. Application for development and interference in regulated areas requires the issuance of a permit from the LSRCA. Obtaining a permit generally requires an EIS. Once the requested studies have been completed there may be a requirement for features to be maintained and/or for protective buffers to be placed on features or hazard lands within the subject property.

The LSRCA recently updated their Ecological Offsetting Policy (2021), which states:

*Development proposals and infrastructure projects subject to Planning Act or Environmental Assessment Act approvals that will result in the loss of wetland and/or woodland natural heritage features, despite having followed the mitigation hierarchy, (i.e., avoid, minimize, mitigate) will be required to compensate for the loss of these features. Certain exceptions may apply and are further described in sections 3.2.1, 3.3.1.1 and 3.3.2.1.*

The exceptions that pertain to wetlands are provided in Section 3.3.1.1:

*Ecological offsetting will not be required for wetlands that are smaller than 0.5 ha or manmade features where it can be demonstrated to the satisfaction of the LSRCA, that the wetland or feature does not provide any of the following features or functions:*

- *A groundwater hydrologic linkage to an adjacent key hydrologic or protected feature.*
- *A component of or ecological linkage to an adjacent key natural heritage or protected feature.*
- *A surface water hydrologic linkage (permanent or intermittent surface water connection) between the wetland and an adjacent key hydrologic or protected feature.*

## **2.8 County of Simcoe Official Plan (2023 Office Consolidation)**

According to Schedule 5.1 – Land Use Designations of the Official Plan, most of subject property lies within a Rural Designation, however this would change if the OPA were approved to pull the subject property in to the Bradford Urban Area to redevelop the golf course for residential land use. There are no County Greenlands identified on or adjacent to the subject property per Schedule 5.1. There are no Provincially or Locally Significant Wetlands identified on Schedule 5.2.2 Streams and Evaluated Wetlands. Schedule 5.3.3 – Greenbelt Plan designates a portion of the southern half of the subject property as within the Greenbelt NHS and as a Rural designation of the Protected Countryside. While there will be no new development or site alteration within the Greenbelt, Section 3.2.2. of the Greenbelt Plan and Section 3.12.12 of the County Official Plan denote that there shall be no negative effects on key natural heritage features or key hydrologic features (within the Greenbelt NHS) or their functions, including any associated vegetation protection zones.

Section 3.8 of the County Official Plan identifies the County Greenlands as significant features and functions, as well as hazard lands unsuitable for development. The County's Greenland in the following natural heritage features and areas:

- *Habitat of endangered species and threatened species;*

- *Significant wetlands, significant coastal wetlands, other coastal wetlands, and all wetlands 2.0 ha or larger in area which have been determined to be locally significant, including but not limited to evaluated wetlands;*
- *Significant woodlands;*
- *Significant valleylands;*
- *Significant wildlife habitat;*
- *Significant Areas of natural and scientific interest (ANSIs);*
- *Regional Areas of natural and scientific interest (ANSIs);*
- *Fish Habitat;*
- *Linkage areas in accordance with Section 3.3.16; and,*
- *Public lands as defined in the Public Lands Act.*

There are no mapped County Greenlands with the subject property, however if any lands are determined to be one of the listed feature types, even if they are not mapped in Schedule 5.1, those lands are to be protected in accordance with the applicable policies.

The County OP defines woodland according to the *Forestry Act* definition or the Province's ELC system definition for "forest". Section 3.8.14 of the County OP speaks to criteria for determining a woodland as significant. The OP identifies that local municipalities shall determine whether a woodlot is a significant woodland within a settlement area based on criteria established within the local official plan. However, outside of a settlement area where a woodlot is determined not to be ecologically or economically important, its potential importance shall be determined by a meeting a minimum size criterion established by the MNRF:

- i. Where woodland cover is less than 5% of the land cover in the local municipality, woodlands 2 ha in size or larger should be considered significant.*
- ii. Where woodland cover is 5-15% of the land cover in the local municipality, woodlands 4 ha in size or larger should be considered significant.*
- iii. Where woodland cover is 16-30% of the land cover in the local municipality, woodlands 20 ha in size or larger should be considered significant.*
- iv. Where woodland cover is 31-60% of the land cover in the local municipality, woodlands 50 ha in size or larger should be considered significant.*

For the purposes of this definition, a patch is a distinct, separate area of contiguous woodlands, the edge of a patch is delineated by the outermost dripline. Woodlands remain contiguous even if interrupted by natural clearings, or clearings for agricultural uses, other rural land uses, or infrastructure, provided the clearing is not more than 20 metres wide, edge to edge and patch size is not deemed to terminate if the woodland crosses municipal, county, or regional boundaries.

Section 4.5.25 states that "new development and redevelopment should be sufficiently set back from rivers, streams, and lakes within the County in order to develop vegetative corridors along shorelines and watercourses". Setback distance should be determined through an EIS.

## **2.9 Town of Bradford West Gwillimbury Official Plan (2021)**

Schedule B – *Land Use* depicts the subject property as rural. Schedule D-1- *County & Greenbelt Features* depicts the Greenbelt NHS along the southern most portion of the subject property and Schedule D2- *Wetlands and Areas of Natural and Scientific Interest* mapped the wetlands along the



southern portion of the subject property (associated with the North Canal) as Unevaluated Wetlands and the North Canal and a southern drainage feature as watercourses.

Town OP has not mapped any Natural Heritage Systems on the OP schedules and instead has deferred to the mapped County Greenlands (which is the County NHS) and Greenbelt Features as policy areas related to Section 4.6 – *Natural Heritage System Designation* of the Town OP. As mentioned above, a portion of the southern half of the subject property falls within the Greenbelt Plan Area. For this designation the Town OP states that all development and site alteration shall conform to the Greenbelt Plan.

The Town OP identifies influence areas as lands adjacent and contiguous to lands designated Natural Heritage Systems. Section 4.6.3 of the Town OP state that development proposed within the influence areas shall be supported by an EIS or subwatershed study demonstrating the proposal shall have no negative impact on the features of the Natural Heritage System or their ecological function.

The identification of significant woodlands shall occur through development applications and using the criteria of Section 3.8.14 of the County OP for proposed site alteration or development outside of settlement areas (refer to Section 2.8 above).

Furthermore, the Town OP states that development shall be located outside the flooding and erosion hazard limit of all watercourses and to ensure conformity with the PPS, the County OP and the policies and regulations of the LSRCA. Minor modifications to the flood plain may be permitted provided it is demonstrated that the change is in conformance with the LSRCA's procedures, guidelines, and applicable Ontario Regulations. Any minor changes to the existing floodplain can only occur in conformity with accepted engineering practices, standards, and procedures for floodplain development (e.g., satisfactory cut and fill balance). Approval is required from the LSRCA and Town in order to implement any floodplain modification.

## 3. Study Methodology

### 3.1 Background Review

In preparation for field investigations, and using the resources listed below, Beacon conducted a background review and SAR screening. This review determines the likelihood that SAR, SAR habitat and/or other significant natural heritage features and functions may be present in an area of interest. The review allows Beacon to combine the most current information provided by MNRF and the Ministry of Environment, Conservation and Parks (MECP) through the Land Information Ontario (LIO) portal with GIS layers from provincial floral and faunal atlases (listed below). All relevant layers can then be overlaid on the most recent high resolution orthoimagery. The review process helps identify areas that can then be targeted (e.g., potential habitat) during a field assessment to maximize the efficiency and effectiveness of field investigations. The following information sources were reviewed as part of the review:

- LIO (MNRF 2023) Base Mapping Data for:
  - Fish community records, fish habitat data and watercourse thermal regime information;

- Designated natural areas (e.g., ANSIs, wooded areas, PSWs / Locally Significant Wetlands (LSW) / unevaluated wetlands, provincial parks);
- Wildlife habitats; and
- Natural Heritage Information Centre (NHIC) provincially tracked species;
- Aquatic Species at Risk Distribution (Range) Mapping (DFO 2023);
- Wildlife Atlases:
  - The Toronto Entomologist's Association Ontario Butterfly Atlas (OBA);
  - Ontario Breeding Bird Atlas (OBBA);
  - Ontario Reptile and Amphibian Atlas (ORAA);
  - iNaturalist Herps of Ontario Project;
  - Atlas of the Mammals of Ontario;
  - Bat Conservation International (BCI) Species Profiles;
  - SAR range maps <https://www.ontario.ca/environment-and-energy/species-risk-ontario-list>; and
  - DFO Species at Risk Online Mapping Tool;
- Planning Documents and Guidelines:
  - In-water Work Timing Window Guidelines (MNRF, 2013);
  - Ontario Restricted Activity Timing Windows for the Protection of Fish and Fish Habitat (DFO 2013);
  - Significant Wildlife Habitat Technical Guide (MNRF, 2000);
  - Significant Wildlife Habitat Criteria Schedule for Ecoregion 6E (MNRF, 2015);
  - Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement – Second Edition (MNRF, 2010);
  - Lake Simcoe County Official Plan and Schedules (2023);
  - Town of Bradford West Gwillimbury Official Plan and Schedules (2021);
  - Technical Definitions and Criteria for Identifying Key Natural Heritage Features and Key Hydrologic Features for the Lake Simcoe Protection Plan (2015);
  - LSRCA regulation and watershed mapping (2019);
  - LSRCA Implementation Guidelines (2023); and
  - West Holland River Subwatershed Management Plan (LSCRA 2010).

### **3.2 Feature Staking**

The limits of regulated wetland and woodland features on the subject property were staked and surveyed with LSRCA staff, Ms. Lisa-Beth Bulford (Planner) and Ms. Kate Lillie (Natural Heritage Ecologist) on September 12, 2016. Ms. Leanne Penner, a Planner with the Town of Bradford West Gwillimbury was invited however was not able to attend. LSRCA confirmed at this meeting that no other features (i.e., small wetland pockets) on the property would require staking. A subsequent wetland staking exercise was conducted on the subject property with LSRCA staff (Julie Marko) on June 8, 2022.

The staked feature limit has been added to the final development plan.

### 3.3 Field Investigations

Beacon ecologists undertook field investigations on the subject property in 2022 for the purposes of documenting natural heritage resources. A summary of the field visits and survey dates is presented in **Table 1**. More detailed survey descriptions are provided in the subsections that follow.

**Table 1. Dates of Field Investigations**

Survey	Date of Survey(s)
Ecological Land Classification & Floristic Inventory	August 23 and 24, 2023
Amphibian Surveys	April 21, May 11 and June 22, 2022
Breeding Bird Surveys	June 1, 8 and 22, 2022
Headwater Drainage Feature Assessments	April 4, May 10 and June 12, 2022
LSRCA Feature Staking	September 12, 2016 and June 8, 2022

#### 3.3.1 Ecological Land Classification and Floristic Inventory

Vegetation communities on the subject property were mapped and described following the protocols of the Ecological Land Classification (ELC) System for Southern Ontario (Lee *et al.* 1998). This involved delineating vegetation communities on aerial photographs of the property. For each vegetation community, information on dominant species cover, community structure, level of disturbance, presence of indicator species, vascular plant species and other notable features was recorded.

The floristic inventory on the subject property was completed by surveying all of the vegetation communities identified during the ELC delineation. These communities were surveyed to document vascular plant species populations.

#### 3.3.2 Amphibian Breeding Surveys

A nocturnal call survey is the primary method for identifying breeding habitat for anurans (frogs and toads). Some frogs breed early in the spring, while others breed later; therefore, three surveys were completed to detect the full range of anuran species present on a site. Surveys focussed on potential anuran breeding habitat such as wetlands and ponds. The survey locations are illustrated in **Figure 2**. The surveys were conducted after dusk during suitable weather conditions between April and June, a minimum of two weeks apart. Weather details (i.e., air temperature, precipitation, wind speed, and cloud cover) at the time of survey were recorded (see **Table 2**). Surveys were conducted using the point count method whereby the surveyor stands at a set point for a specific period of time and record all species that can be heard calling over that time from within a 100 m radius sample area. Each survey station was surveyed for a minimum of three minutes. The approximate locations of calling anurans were noted on a standard MMP data sheet and chorus activity for each species was assigned a call code as follows:

- Code 0: No calls;
- Code 1: Individual calls do not overlap and calling individuals can be discretely counted;
- Code 2: Calls of individuals sometimes overlap, but numbers of individuals can still be estimated; and



**Legend**

- Subject Property
- Ecological Communities
- Ponds
- Amphibian Survey Locations
- Chimney Crayfish
- ◆ Eastern Wood-Pewee
- Greenbelt
- 100 Year Floodline (UEL 2023)
- Regional Floodline (UEL 2023)
- Staked Dripline (LSRCA June 2022)
- Staked Wetland Limit (LSRCA June 2022)
- Headwater Drainage Feature

Code	Wetland Communities
SWT2-2	Willow Mineral Thicket Swamp
MAS2-1	Cattail Mineral Shallow Marsh
MAM2-2	Reed-cannary Grass Mineral Meadow Marsh
SWD2-2	Green Ash Mineral Deciduous Swamp
SWD4-1	Willow Mineral Deciduous Swamp
<b>Aquatic Communities</b>	
SAF	Floating-leaved Shallow Aquatic
OAO	Open Aquatic
<b>Forest Communities</b>	
FOM	Mixed Forest
FOD4	Dry - Fresh Deciduous Forest
FOD7	Fresh - Moist Lowland Deciduous Forest
FOD8-1	Fresh - Moist Poplar Deciduous Forest
<b>Cultural Communities</b>	
CUP1	Deciduous Plantations
CUP3-2	White Pine Coniferous Plantation
CUP3-9	Norway Spruce - European Larch Coniferous Plantation
CUW1	Mineral Cultural Woodland
CUT1	Mineral Cultural Thicket
CUM1-1	Dry - Moist Old Field Meadow
<b>Other Communities</b>	
ANT	Anthropogenic
HE	Hedgerow

<b>Existing Conditions</b>		<b>Figure 2</b>
<b>Bradford Highlands Golf Course Redevelopment EIS</b>		
<b>BEACON ENVIRONMENTAL</b>		Project: 220036 Last Revised: October 2023
Client: Bradford Highlands Joint Venture		Prepared by: BD Checked by: CS
	1:4,800	
Contains information licensed under the Open Government License— Ontario Orthoimagery Basemap: 2021 (FBS)		

- Code 3: Overlap among calls seems continuous (full chorus), and a count estimate is impossible.

**Table 2. Amphibian Survey Details (2022)**

	Survey 1	Survey 2	Survey 3
Start Time	8:40 PM	9:05 PM	9:35 PM
Temperature (°C)	14°C	22°C	25°C
Wind Speed (km/h)	Light	None	Light
Cloud Cover (%)	85	None	85
Precipitation	Periodic drizzle	None	None

### 3.3.3 Breeding Bird Surveys

Surveys for breeding birds took place in the early morning on days with low winds (1 or less on the Beaufort scale), temperatures within 5°C of normal and no precipitation. The property was walked such that all singing birds could be heard or observed and recorded on an aerial photograph of the site. Survey details are presented in **Table 3**.

**Table 3. Breeding Bird Survey Details**

	Survey 1	Survey 2	Survey 3
Date	June 1, 2022	June 8, 2022	June 29, 2022
Start Time	7:15 AM	7:00 AM	8:15 AM
End Time	10:15 AM	10:00 AM	11:45 AM
Temperature (°C)	22	12 - 19	21
Wind (Beaufort)	0-1	1-2	2
Cloud Cover (%)	100	0	50
Precipitation	None	None	Light rain 9 am to 10 am, none otherwise

### 3.3.4 Headwater Drainage Feature Assessment

Part 1 of the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Area and Credit Valley Conservation 2014) is to collect data on the identified features. Data is collected according to the *Ontario Stream Assessment Protocol Headwater Drainage Feature Module* (Stanfield *et al.* 2013) on the identified features, scoped for data relevance and adapted to a reach-based approach. Per the OSAP HDFA Module (Stanfield *et al.* 2013) sampling should occur between March and the middle of June in southern Ontario. In support of the assessment three site visits were undertaken by Beacon staff on April 4, 2022, May 10, 2022, and June 12, 2022. The collected data is then used to evaluate and classify each feature according to the Guidelines (TRCA and CVC 2014). These guidelines use an integrated approach for the evaluation of key attributes of drainage features including hydrology, riparian vegetation, fish and fish habitat and terrestrial habitat.

Part 2 of the HDFA Guidelines (TRCA and CVC 2014) provides an approach to classify headwater drainage features by providing a step-by-step characterization of specific functions that may be

associated with the features assessed, including hydrology, riparian function and provision of fish or terrestrial habitat.

Part 3 of the HDFA Guidelines (CVC/TRCA 2014) provides guidance on linking the characteristics and functions of features to specific management recommendations that may be applied to those features. To assist, the HDFA Guidelines include a flow chart that provides direction on management options. Management recommendations can include the following:

- *Protection – Important Functions: i.e., swamps with amphibian breeding habitat; perennial headwater drainage features; seeps and springs; Species at Risk (SAR) habitat; permanent fish habitat with woody riparian cover.*
- *Conservation – Valued Functions: i.e., seasonal fish habitat; with woody riparian cover; marshes with amphibian breeding habitat; or general amphibian habitat with woody riparian cover.*
- *Mitigation – Contributing Functions: i.e., contributing fish habitat with meadow vegetation or limited cover.*
- *Recharge Protection – Recharge Functions: i.e., features with no flow with sandy or gravelly soils.*
- *Maintain or Replicate Terrestrial Linkage – Terrestrial Functions: i.e., features with no flow with woody riparian vegetation and connects two other natural features identified for protection.*
- *No Management Required – Limited Functions: i.e., features with no or minimal flow; cropped land or no riparian vegetation; no fish or fish habitat; and no amphibian habitat.*

## 4. Existing Conditions

The following sections detail the existing natural heritage conditions on an immediately adjacent to the subject property based on background data and seasonal field investigations.

### 4.1 Soils

The subject property is located within the Schomberg Clay Plains physiographic region (Chapman and Putnam 2007). The topography of the property can generally be described as gently rolling table lands that descend gradually to the south towards the Holland River.

Soils on the property generally consist of Schomberg Silty Clay Loam and Bondhead Loam. Some muck (organics) was also identified along the southern edge of the property (LIO 2014). The Schomberg soils series developed from deep deposits of stratified clay and silt loam, underlain by a drumlinized till plan. The average depth of clay is 4.5 m but there are areas with much deeper deposits. These areas have been separated by historical and recent watercourses over time. This has resulted in moderately to steeply rolling topography with short slopes. The Schomberg soil series is well drained and has low to moderate stoniness (Hoffman, Wicklund and Richards 1962).

The Bondhead soil series contains light grey, calcareous, loam and sandy loam till materials. The surface soil is slightly stoney and porous and has good drainage. The potential for erosion is moderate to high, particularly on steep slopes with no vegetation. In West Gwillimbury, Bondhead soils occur on the top of some hills and ridges but not along the lower slopes, where Schomberg series soils are present (Hoffman, Wicklund and Richards 1962).

Muck soils are typically found in low lying areas where water collects. These areas are saturated with water for much of the year and accumulate organic debris (Hoffman, Wicklund and Richards 1962).

## 4.2 Site Topography and Drainage

A review of the topographic data suggests that lands across the subject property slope in a north to south direction, towards the West Holland River North Canal (herein referred to as the “North Canal”) with a geodetic elevation between approximately 251 metre above sea level (masl) and 219 masl. The North Canal borders the southern boundary of the subject property. The West Holland subwatershed is one of 18 subwatersheds that drain into Lake Simcoe (LSRCA 2010). The subwatershed is drained by the West Holland River, which generally flows in a northeasterly direction and ultimately drains into Cook’s Bay.

There are five drainage features and three online ponds on the subject property. Features A, B & C, which are located on the northern half of the property, (**Figure 2**) are truncated at the eastern boundary of the subject property into a SWM Facility within the Bradford Capital subdivision. The Bradford Capital SWM Facility drains to a tributary of the North Canal on the east side of Simcoe Road. This tributary drains northeast towards the main channel of the North Canal. Correspondence with the LSRCA, dated June 12, 2017, confirmed that these features do not meet the definition of a KNHF under the LSPP (**Appendix A**) and that drainage should be addressed through SWM planning. Both drainage feature D and E ultimately drain, directly or indirectly, into the North Canal.

### 4.2.1 Headwater Drainage Features

In 2017, nine shallow piezometers (MP-01 through MP-09) were installed adjacent to the existing drainage features. Groundwater water level readings were then collected throughout year in April, May, and October. Preliminary results of the monitoring program were provided in the Preliminary Hydrogeological Assessment (2023) as provided by WSP. The assessment indicates that recharging groundwater conditions occur at nearly all monitored locations, and throughout the year. The drainage features were found to be dry over much of the year, and groundwater discharge conditions were only recorded at the features on the north end of the subject property and only during one spring event.

### Drainage Features A, B and C

In April 2022 a reconnaissance level investigation of these features was completed. Drainage Feature A was observed to be dry, however a shallow ponded area was recorded approximately 60 m from the eastern boundary. Drainage Feature B was observed to have standing water. Drainage Feature C contained standing water with areas of minimal flow. As mentioned above, these features and a portion of the associated pond was removed as part of the development to the east of the subject property. Any remnant flow is now directed into SWM Facility within the subdivision east of the subject property.

## **Drainage Feature D**

This feature entered the subject property from the west, as a swale through an agricultural field. The channel became defined upon entering the subject property and was contained within the fairway as a narrow (1 m wide) vegetated corridor (less than 1 m on either side, transitioning to mowed lawn). The channel continued as a semi-channelized drainage ditch through the residential development associated with Brownlee Drive. The roadside drainage ditches join with the feature before it re-entered the golf course lands adjacent to a backyard pond. This pond was not online; however, it may overflow into the channel during flood events. The reach downstream of Brownlee Drive continued, as an incised channel (bankfull depth > 1m), through a small, wooded area with small patches of riparian wetland before it entered the southern fairway area and eventually drained into a large online irrigation pond. A CSP overflow pipe was observed on the south shoreline of the pond. The underground drain continued for approximately 75 m ultimately draining into the deciduous swamp that borders the North Canal. This irrigation pond is connected to another irrigation pond, via a constructed drainage channel, approximately 90 m east of the larger pond. Substrate was composed mainly of sand with some silt.

Based on the change in the surrounding land use and riparian conditions, this feature has been divided into two reaches: HDF-D (1) and HDF-D (2).

In 2016 HDF-D (1) was dry during both the April and June assessments and HDF-D (2) had exhibited minimal flow during the April assessment and was dry during the June assessment. In 2022, HDF-D (1) was identified as having minimal flow (with areas of standing water) during the April assessment, standing water during the May assessment, and was observed to be dry by the June assessment. HDF-D (2) was identified as having minimal flow during the April assessment and areas of minimal flow and standing water during the May assessment and was observed to be dry, with areas of standing water, by the July assessment.

Amphibians were not found breeding at the survey station (Station 1; **Figure2**) within HDF-D (1), however, calls were noted nearby (~ 100 m) during the second round. For the Station 4 and 5 associated with HDF-D (2), two American Toads (call code 1) were heard at station 5 in round two.

The Hydrogeological Assessment (WSP 2023) identified the installation of MP-05, MP-6 and MP-07 adjacent to this feature. Flowing water was documented at all locations in April and at only MP-05 in May. No flowing water was documented at any of the monitoring locations during the October monitoring event. Data collected during the May monitoring event identified that the depth to groundwater was above the measured water level in the drainage feature at MP-06, which may indicate a potential for groundwater discharge condition at that time. Groundwater was not measured above the surface, or at surface water level, during any of the other monitoring events. Other than the single May event, results of the monitoring were generally indicative of recharging groundwater conditions at most of the investigation locations along the feature throughout most of the year (WSP 2023).

This feature transports allochthonous materials to downstream fish-bearing reaches of North Canal. Fish are unable to access this feature due to the length and gradient of the underground connection.

## **Drainage Feature E**

This feature has been altered upstream of the property within the adjacent agricultural field. It enters the property within a wide shallow valley, and its flow was concentrated within a narrow (3-4 m wide), densely vegetated corridor. Two golf cart paths cross this feature within the limits of the subject property.



At the southern limit of the subject property the feature is associated with a narrow riparian wetland (MAM2-10), then continues through a deciduous swamp community adjacent to a private driveway. Outside the boundary of subject property, the feature crosses through a CSP culvert under the private driveway and transitions into a roadside ditch along 5<sup>th</sup> Line to the North Canal. There was an approximate 1m drop, down a steep embankment, from the roadside ditch to the water in the North Canal.

In 2016, the feature contained intervals of minimal flow and standing water during the April assessment, and damp to dry conditions during the June assessment. In 2022, minimal flow was observed in April, minimal flow (with areas of standing water) was observed in May and dry conditions with areas of standing water (at low points within culverts) was observed in July.

Amphibians were not found breeding at the survey station 2 or 3 within HDF-E during any of the survey rounds, however, calls were noted nearby (~ 100 m) during the second round.

The Hydrogeological Assessment (WSP 2023) identified the installation of MP-08 and MP-09 adjacent to the feature. Flowing water was documented at both locations in April. Flowing water was not observed at either location during in May or October. Groundwater was not measured above the surface, or at surface water level, during any of the monitoring events. These results indicate that discharging groundwater conditions do not occur within the feature (WSP 2023).

This feature transports allochthonous materials to downstream fish-bearing reaches of North Canal. Fish are unable to access this feature due to the gradient of the roadside ditch (along 5<sup>th</sup> Line) and vertical drop at the river embankment.

Representative photographs of these features are provided in **Appendix B**.

#### *4.2.1.1 Classification and Management Recommendations*

As mentioned in **Section 3.3.4**, HDFFA Guidelines includes a flow chart to determine the management recommendation for the features on the subject property. However, in some instances the management recommendations resulting from the HDFFA Guidelines are not always warranted, given that the HDFFA Guidelines do not cover every possible scenario, and in these instances, the guidelines permit flexibility to suggest alternate management recommendations. Therefore, a final management recommendation column has been added to identify the long-term recommendation.

**Table 4** highlights the key component of this analysis based on the three rounds of assessments completed for HDF-D (1), HDF-D(2) and HDF-E in 2022. Management recommendations are expanded on in **Section 7.2**.

**Table 4. Summary of Functional Classifications and Management Recommendations**

Drainage Feature Segment	Step 1		Step 2	Step 3	Step 4	Management Recommendation per HDFA Guidelines	Comments/ Rational	Final Management Recommendation
	Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat			
HDF-D (1) (upstream reach)	<b>Contributing Function:</b> minimal flow present in early spring transitioning to standing water by late spring. Channel was observed to be dry by summer. Limited substrate sorting and channel form.	Online pond at terminal end of feature.	<b>Important Function:</b> narrow meadow marsh (MAM2-2) riparian corridor (< 4 m wide) surrounded by manicured grass.	<b>Contributing Function:</b> may contribute to the transport of allochthonous materials to downstream fish habitat, however inputs are limited by online pond at terminal end of feature.	<b>Contributing Function:</b> riparian condition code is wetland (narrow corridor). No breeding amphibians were recorded within feature. Riparian wetland may function as corridor connecting two habitat features.	Conservation – <i>Valued Functions (i.e., seasonal fish habitat; with woody riparian cover; marshes with amphibian breeding habitat; or general amphibian habitat with woody riparian cover).</i>	Presence of narrow riparian wetland corridor that has been fragmented to downstream wetland communities due to Brownlee Drive subdivision.  No fish habitat or connection to downstream fish habitat.  No recorded breeding amphibians and general habitat lacking woody riparian cover.  No records of groundwater discharge conditions or observed groundwater indicators.	Mitigation – <i>Contributing Functions (i.e., contributing fish habitat with meadow vegetation or limited cover).</i>
HDF-D (2)	<b>Valued Function:</b> minimal flow was observed into late spring. Standing water observed in summer. In this reach channel became more defined and there was evidence of substrate sorting. Evidence of groundwater influence.	Online pond at terminal end of feature.	<b>Important Function:</b> narrow, fragmented meadow marsh riparian corridor (~ 3 m in width) that transitions to deciduous forest (FOD4) before entering online pond.	<b>Contributing Function:</b> may contribute to the transport of allochthonous materials to downstream fish habitat, however inputs are limited by online pond at terminal end of feature.	<b>Contributing Function:</b> riparian condition code is wetland (narrow corridor). Minimal records of individual amphibians calling during only one of three rounds. Riparian wetland may function as corridor connecting two habitat features.	Conservation	Presence of narrow riparian wetland corridor and riparian woodland.  No fish habitat or connection to downstream fish habitat.  Marginal breeding amphibian habitat (i.e., low call code or heard outside of station). However, general amphibian habitat with areas of woody riparian cover that may provide steppingstone habitat (stop over to higher quality habitat).  One seasonal groundwater discharge event was recorded and groundwater indicator (i.e., watercress) was observed in the channel.  Seasonal groundwater discharge contributions may support an intermittent flow.	Conservation
HDF-E	<b>Valued Function:</b> minimal flow observed early spring mix of minimal flow and standing water present into late spring. Standing water observed in summer. Possible wetland contributions. No recorded groundwater discharge conditions. Minimal substrate sorting. Densely vegetated and minimal channel definition (upstream)	n/a	<b>Important Function:</b> narrow, fragmented marsh meadow (MAM2-10) wetland riparian corridor (~3 m width) that transitions to a deciduous swamp (SWD4-1) and then into roadside drainage.	<b>Contributing Function:</b> contributes to the transport of allochthonous materials to downstream fish habitat (i.e., North Canal).	<b>Contributing Function:</b> riparian condition code is wetland (narrow corridor). No breeding amphibians were recorded within feature. Riparian wetland may function as corridor connecting two habitat features.	Conservation.	Presence of narrow wetland corridor and deciduous swamp in riparian area.  Indirect fish habitat (i.e., contributes to the transport of allochthonous materials to downstream fish habitat).  No recorded breeding amphibians were recorded within feature. However, general amphibian habitat with areas of woody riparian cover that may provide steppingstone habitat (stop over to higher quality habitat).  No records of groundwater discharge conditions or observed groundwater indicators.	Conservation

Drainage Feature Segment	Step 1		Step 2	Step 3	Step 4	Management Recommendation per HDFA Guidelines	Comments/ Rational	Final Management Recommendation
	Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat			
	however channel becomes more defined downstream.							

## 4.3 Vegetation Communities

Vegetation communities and drainage features on the subject property are illustrated on **Figure 2**.

Most of the subject property consists of former golf course lands with greens and fairways or grassy areas with planted trees and scattered irrigation ponds. Despite the golf course being no longer operational, relatively large sections of fairways and greens are maintained through regular mowing. Areas that are maintained or heavily influenced by human activity are characterized as Anthropogenic (ANT). As such, the maintained golf course lands are classified as ANT (**Photograph 1**). Additionally, several buildings associated with the golf course operation, occupied single family dwellings, driveways, and associated landscaped yard areas within the subject property are included as ANT. Anthropogenic areas are not considered ELC communities under formal ELC methodologies, however they have been included to document current land use. Relatively small portions of golf course greens and fairways have been left unmaintained and have transitioned into cultural meadows (CUM1). There are also hedgerows (HE) present primarily along the property boundaries. Although these are not botanical communities, these primarily planted linear treed areas contained a combination of deciduous and coniferous trees of varying age and composition such as Norway Spruce (*Picea abies*), Eastern White Cedar (*Thuja occidentalis*), Basswood (*Tilia americana*), and Common Apple (*Malus pumila*), and Manitoba Maple (*Acer negundo*), among others. Some naturalized woodland and wetland features were also identified on the southern half of the subject property.

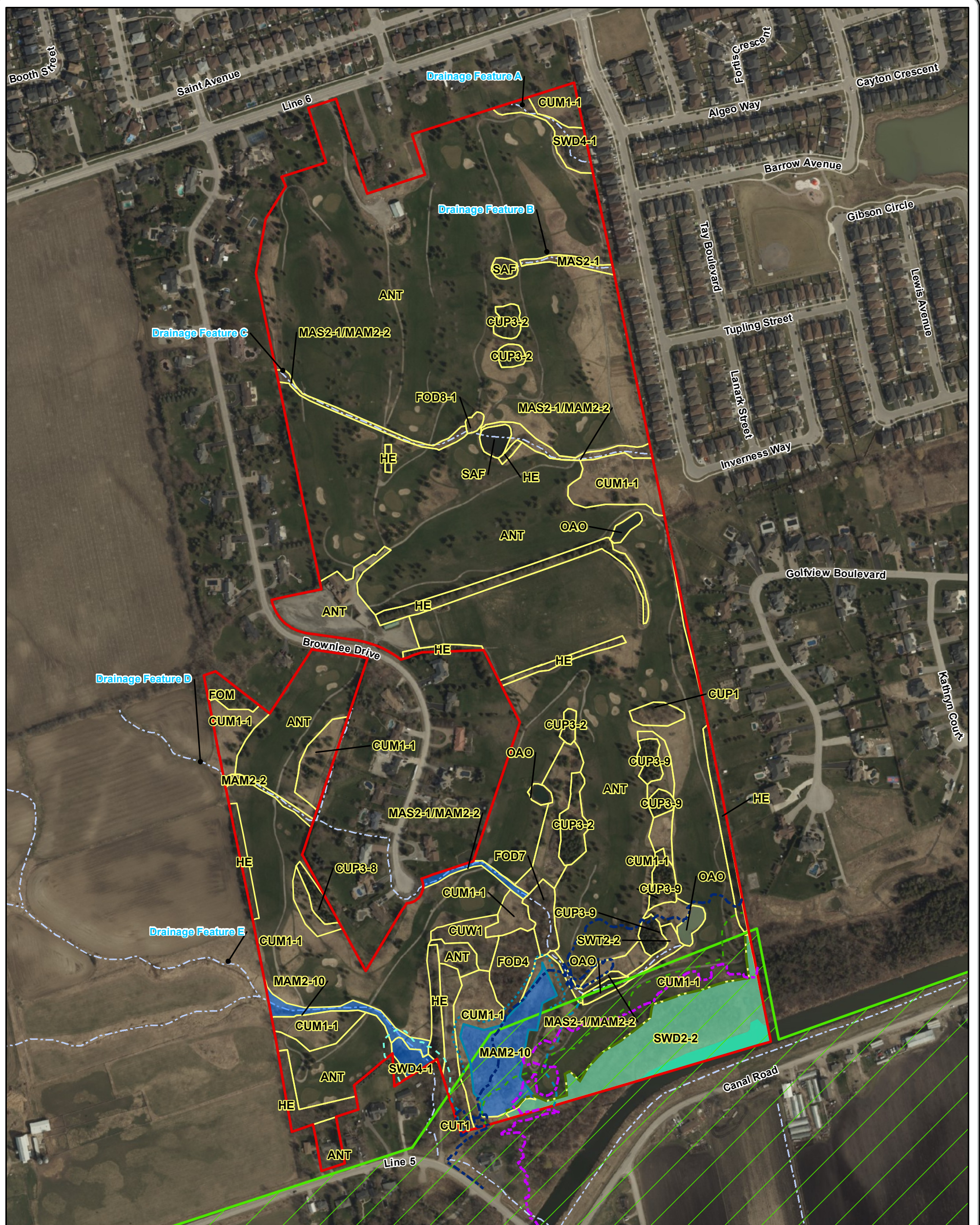
### 4.3.1 Cultural Communities

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

These meadow communities are located between the actively manicured golf fairways and hedgerows. The meadows are composed of typical old field species that include grasses (*Poa pratensis*, *Festuca rubra*, *Bromus inermis*, and *Phleum pratense*), and forbs such as goldenrods (*Solidago altissima* and *S. canadensis*), asters (*S. novae-angliae*, and *S. lanceolatum*), Queen Anne's Lace (*Daucus carota*), Canada Thistle (*Cirsium arvense*), and Wild Mustard (*Sinapis arvensis*), among others. See **Photograph 1**.

#### **Mineral Cultural Woodland (CUW1)**

This community is located on the southern half of the subject property. Dominant species within the canopy and sub-canopy include Manitoba Maple, Green Ash (*Fraxinus pennsylvanica*), with the occasional American Elm (*Ulmus americana*) and Basswood. Species present within the shrub layer include Common Buckthorn (*Rhamnus cathartica*), Common Apple, hawthorn species (*Crataegus* spp.) with the occasional Riverbank Grape (*Vitis riparia*) and Thicket Creeper (*Parthenocissus vitacea*). The ground cover layer includes in meadow species within canopy openings. In areas of dense canopy, the ground layer includes primarily Garlic Mustard (*Alliaria petiolata*), Enchanter's Nightshade (*Circaea canadensis*), Wood Avens (*Geum urbanum*).



- Legend**
- ▭ Subject Property
  - ▭ Ecological Communities
  - ▭ Greenbelt
  - ▬ Staked Dripline (LSRCA June 2022)
  - ▬ 100 Year Floodline (UEL 2023)
  - ▬ Regional Floodline (UEL 2023)
  - ▬ Staked Dripline + 30 m
  - ▬ Staked Wetland Limit (LSRCA June 2022)
  - ▬ Staked Wetland Limit + 10 m
  - ▬ Staked Wetland Limit + 30 m
  - ▬ Wetland (SWD4-1) + 10 m
  - ▬ Headwater Drainage Feature

- Key Natural Heritage and Hydrologic Features**
- ▭ Fish Habitat
  - ▭ Significant Woodland
  - ▭ Wetlands

Code	Wetland Communities
SWT2-2	Willow Mineral Thicket Swamp
MAS2-1	Cattail Mineral Shallow Marsh
MAM2-2	Reed-canary Grass Mineral Meadow
SWD2-2	Green Ash Mineral Deciduous Swamp
SWD4-1	Willow Mineral Deciduous Swamp
<b>Aquatic Communities</b>	
SAF	Floating-leaved Shallow Aquatic
OAO	Open Aquatic
<b>Forest Communities</b>	
FOM	Mixed Forest
FOD4	Dry - Fresh Deciduous Forest
FOD7	Fresh - Moist Lowland Deciduous Forest
FOD8-1	Fresh - Moist Poplar Deciduous Forest
<b>Cultural Communities</b>	
CUP1	Deciduous Plantations
CUP3-2	White Pine Coniferous Plantation
CUP3-9	Norway Spruce - European Larch Coniferous Plantation
CUW1	Mineral Cultural Woodland
CUT1	Mineral Cultural Thicket
CUM1-1	Dry - Moist Old Field Meadow
<b>Other Communities</b>	
ANT	Anthropogenic
HE	Hedgerow

<b>Constraints</b>		<b>Figure 3</b>
<b>Bradford Highlands Golf Course Redevelopment EIS</b>		
<b>BEACON ENVIRONMENTAL</b>		Project: 220036 Last Revised: October 2023
Client: Bradford Highlands Joint Venture		Prepared by: BD Checked by: CS
	1:4,800	
Contains information licensed under the Open Government License— Ontario Orthoimagery Basemap: 2021 (FBS)		



**Photograph 1. Maintained Golf Course Lands Part of Larger Anthropogenic Area (August 24, 2023)**



**Photograph 2. View Within CUM1 Near Southern Property Boundary (August 23, 2023)**

### **Deciduous Plantation (CUP1)**

This community is located near the eastern property boundary. The canopy is dominated by Black Locust (*Robinia pseudoacacia*), and to a lesser extent there is also scattered European Larch (*Larix decidua*), and Norway Spruce. The sub canopy is absent. The ground layer is composed of old field meadow species.

### **White Pine Coniferous Plantation (CUP3-2)**

Several of these communities are located throughout the subject property between actively maintained golf course greenways. They consist of relatively young White Pine (*Pinus strobus*) in the canopy, with the occasional Green Ash and Black Walnut sapling in the understory. The ground layer is generally absent due to a heavy layer of needle mulch, but some meadow species occur along the community edges. See **Photograph 3**.

### **Norway Spruce - European Larch Coniferous Plantation (CUP3-9)**

Located throughout the subject property, these communities are similar to other plantations and are composed of immature Norway Spruce. There is a small amount of Norway Spruce regeneration in the ground layer. See **Photograph 4**.

### **Mineral Cultural Thicket (CUT1)**

This community is located near the southern property boundary. It is mix of Common Buckthorn and Hawthorn spp. There are scattered individual Green Ash in the canopy and sub canopy, however the community is shrub dominated. The ground layer includes a variety of exotic and disturbance tolerant species.



**Photograph 3. View Within CUP3-2 (August 23, 2023)**



**Photograph 4. View Outside of Young CUP3-9 (August 23, 2023)**



### 4.3.2 Woodland Communities

#### **Mixed Forest (FOM)**

This community is located along the western property boundary, abutted by a cultural meadow to the south and continuing off property to the north, and northeast. The canopy is a mix of Black Walnut (*Juglans nigra*), Basswood, Green Ash, Manitoba Maple and planted White Pine and Norway Spruce. Majority of the Manitoba Maple and Green Ash present are dead or dying, and there is some fallen woody debris throughout the community. The understory is sparse, and includes Choke Cherry (*Prunus virginiana*), Common Buckthorn and sapling Green Ash. The ground cover layer includes the following species Garlic Mustard, Herb-Robert (*Geranium robertianum*), Virginia Waterleaf (*Hydrophyllum virginianum*), and Woolly Blue Violet (*Viola sororia*), among others.

#### **Dry - Fresh Deciduous Forest (FOD4)**

This forest community is located in the southern portion of the subject property. The canopy contains a variety of deciduous trees such as Green Ash, Balsam Poplar (*Populus balsamifera*), Trembling Aspen (*P. tremuloides*), Manitoba Maple, Common Apple, and American Elm (*Ulmus americana*). Several of the Green Ash and American Elm present are dead and or dying. Many of the trees along the edge of the community are smothered by Riverbank Grape. The lower and ground layers are dense, and include Garlic Mustard, Goutweed (*Aegopodium podagraria*), Wild Strawberry (*Fragaria virginiana*), and Yellow Avens (*Geum aleppicum*), among others (**Photograph 5**). There has been past disturbance as evident by piles of debris and fill throughout the area.

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

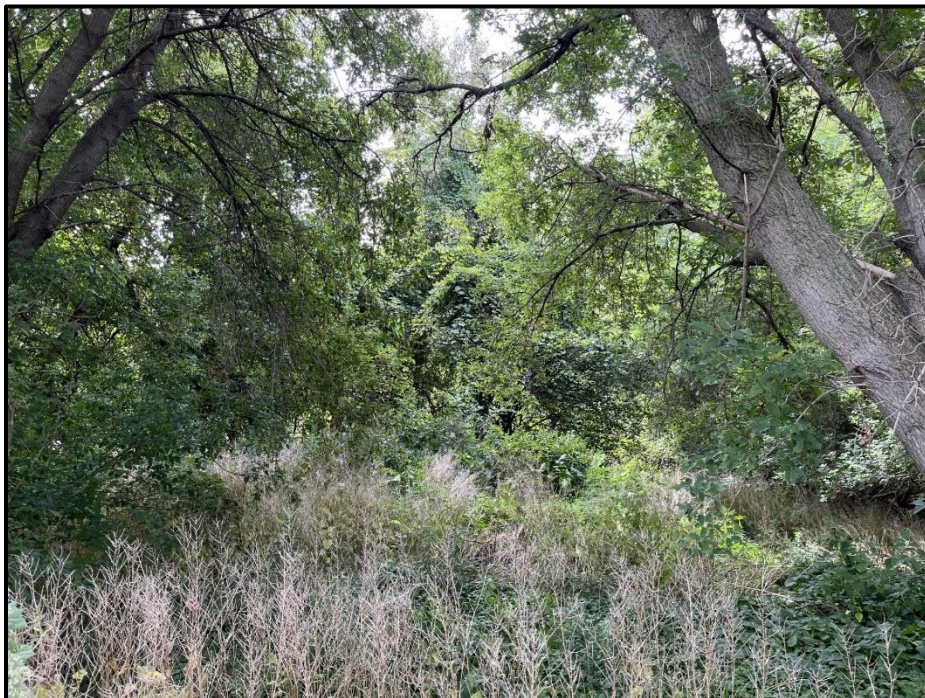
This forest community is adjacent to the previously discussed FOD4 and follows a drainage feature. The forest canopy primarily contains Manitoba Maple, Willows (*Salix alba* and *S. euxina*), Balsam Poplar, and Green Ash. The sub canopy contains some Eastern White Cedar, Alternate-leaved Dogwood (*Cornus alternifolia*), and sapling Green Ash, Willows, and Balsam Poplar. The ground layer includes but is not limited to Riverbank Grape, Thicket Creeper, Himalayan Balsam (*Impatiens balsamina*), Ground-ivy (*Glechoma hederacea*). See **Photograph 6**.

#### **Fresh-Moist Poplar Deciduous Forest (FOD8-1)**

This forest community is located in the northern portion of the subject property and is surrounded by maintained golf course fairway. The community is primarily composed of young Trembling Aspen. There are old field meadow species within the ground layer.



**Photograph 5. View Outside of FOD4 with Dense Grapevine Growth (August 24, 2023)**



**Photograph 6. View Within FOD7 (August 24, 2023)**

### ***4.3.3 Wetland / Aquatic Communities***

#### **Reed-canary Grass Mineral Meadow Marsh (MAM2-2) / Forb Mineral Meadow Marsh (MAM2-10) Complex**

These meadow marsh communities are located on the southern half of the subject property. They are dominated by a variety of wetland grass such as Reed-canary Grass (*Phalaris arundinacea*) and forb species such as Lance-leaved Aster (*Symphyotrichum lanceolatum*), Tall Goldenrod, and Queen Anne's Lace.

#### **Reed-canary Grass Mineral Meadow Marsh (MAM2-2) / Cattail Mineral Shallow Marsh (MAS2-1) Complex**

These wetland communities are generally located along the edge of the drainage features that flow across the property. They primarily consist of a mixture of Reed-canary Grass, Cattails (*Typha latifolia*, and *T. angustifolia*), and Spotted Joe-pye Weed (*Eutrochium maculatum*; **Photograph 7**).

#### **Willow Mineral Thicket Swamp (SWT2-2)**

This thicket swamp community is located in the southeastern portion of the subject property adjacent to a dug pond. There is generally a mix of willows (*Salix discolor*, and *S. bebbiana*), young Balsam Poplar, and Red Osier Dogwood (*Cornus sericea*). The ground layer includes but is not limited to Reed-canary Grass, Queen Anne's Lace, Tall and Canada Goldenrod, and Common Milkweed (*Asclepias syriaca*), and garden escapee Peppermint (*Mentha x piperita*).

#### **Cattail Mineral Shallow Marsh (MAS2-1)**

This cattail shallow marsh is located in the northeastern portion of the subject property and follows a drainage feature to a dug pond. The community is dominated by Cattails and to a lesser extent Reed-canary Grass, and Canada Thistle, among others.

#### **Reed Canary Grass Mineral Meadow Marsh (MAM2-2)**

This community is located in the southwestern portion of the subject property and follows a drainage feature west to east. The boundaries of the community are well defined, due to mowing activities for the adjacent fairway. The community is composed of almost entirely Reed-canary Grass. See **Photograph 8**.

#### **Green Ash Mineral Deciduous Swamp (SWD2-2)**

This deciduous swamp is located along the southern property boundary adjacent to the Holland River and is approximately 2.12 ha in size. The canopy and sub-canopy contain a variety of trees including Green Ash, Manitoba Maple, White Willow, Balsam Poplar, Trembling Aspen, and the occasional

Eastern White Cedar. The shrub layer consists of a variety of immature trees and shrubs including Green Ash, Manitoba Maple and Common Buckthorn.



**Photograph 7. View Within MAM2-2/ MAS2-1 (August 24, 2023)**



**Photograph 8. View Within MAM2-2 (August 24, 2023)**

### **Willow Mineral Deciduous Swamp (SWD4-1)**

Two small pockets of this habitat type have been identified adjacent the drainage features that bisect the subject property. One unit is associated with HDF-A near the northern property boundary (0.10 ha) and the other unit is associated with HDF-E near the southern property boundary (0.15 ha). The canopy is dense and includes White Willow, Black Walnut, Manitoba Maple, and Green Ash. The sub canopy is generally composed of Green Ash saplings and Common Buckthorn. The ground layer is dense and includes a variety of moisture tolerant species.

### **Floating-leaved Shallow Aquatic (SAF)**

There are two floating-leaved aquatic ponds within the northern portion of the subject property. The ponds are constructed (i.e., dug) for irrigation purposes and have naturalized to contain varying amounts of floating duckweed (*Lemna minor*), and submerged aquatic plants which generally cover the entirety of the community.

### **Open Aquatic (OAO)**

There are several ponds located throughout the subject property. These features are man made and are generally consist of areas of open water fringed with little to no wetland vegetation. See **Photograph 9**.



**Photograph 9. View Overlooking of One of Several OAO (August 24, 2023)**

## 4.4 Flora

A total of one hundred twenty-eight (128) plant taxa were observed on the subject property with over half (57%) being non-native or introduced species. The high number of exotic species reflects the disturbed nature of the site, and large number of cultural and anthropogenic communities. A complete list of flora species recorded on the subject property can be found in **Appendix C**.

Most native plant species recorded are ranked provincially as S5 (Secure) except for Red and White Ash that are ranked as S4 (Apparently Secure), and Honey Locust (*Gleditsia triacanthos*) that is ranked S2 (Imperiled). Although observed on the subject property, Honey Locust trees are native to southwestern Ontario and there are no native populations in Simcoe County. The Honey Locust recorded were planted trees on the subject property and immediately adjacent on the municipal road allowance.

White Oak (*Quercus alba*) and Pinesap (*Hypopitys monotropa*) are listed as rare in Lake Simcoe by State of the Watershed (2003). There is one individual White Oak located within the hedgerow along the eastern property boundary, and Pinesap are present in the CUP3-2 communities (**Photograph 10**). Black Walnut, Upright Yellow Wood-sorrel (*Oxalis stricta*), and Virginia Creeper (*Parthenocissus quinquefolia*) are listed as rare in Simcoe County by Riley (1989), and are generally located within the FOM, FOD4 and FOD7. All the aforementioned species are widespread provincially and ranked as S4 or S5.

No floral SAR were recorded on the subject property.



Photograph 10. Pinesap within CUP3-2 Featured Above (August 24, 2023)

## 4.5 Reptiles and Amphibians

The results of the nocturnal amphibian call surveys are summarized in **Table 5**. Amphibian vocalizations were studied at 14 locations throughout the subject property illustrated on **Figure 2**. Three species, Green Frog (*Rana clamitans*), Gray Treefrog (*Hyla versicolor*) and American Toad (*Anaxyrus americanus*), were documented vocalizing within the ponds and wetlands on the subject property during these surveys.

**Table 5. Amphibian Call Survey Findings**

Location	Survey 1	Survey 2	Survey 3
1	None heard	American Toad (4 individuals - heard outside 100 m station area)	None heard
2	None heard	American Toad (full chorus - heard outside 100 m station area)	None heard
3	None heard	American Toad (full chorus - heard outside 100 m station area)	None heard
4	None heard	None heard	Green Frog (1 individual)
5	None heard	American Toad (2 individuals - and 1 individual - heard outside 100 m station area)	None heard
6	None heard	American Toad (2 individuals)	None heard
7	None heard	American Toad (full chorus - heard outside 100 m station)	None heard
8	None heard	Green Frog (1 individuals); American Toad (2 individuals)	Green Frog (1 individual)
9	None heard	American Toad (3 individuals)	Green Frog (5 individuals)
10	None heard	American Toad (3 individuals - heard outside 100 m station)	None heard
11	None heard	American Toad (full chorus)	Green Frog (5 individuals)
12	None heard	Gray Treefrog (1 individual); American Toad (1 individual)	Green Frog (2 individuals)
13	None heard	Green Frog (3 individuals)	Green Frog (7 individuals)
14	None heard	None heard	None heard

In addition to these findings, a full chorus of Gray Treefrog) was also heard calling from a wetland to the south of the subject property during the second survey. Several Northern Leopard Frog (*Lithobates pipiens*) were visually encountered on the golf course lands during unrelated fieldwork and therefore are confirmed on site, however, were not detected vocalizing during the evening surveys. Numerous Green Frog were noted during the day throughout the wetlands and ponds on site, despite smaller numbers detected during the evening. A chorus code 2 was recorded during the daytime with approximately a dozen individuals in most of the ponds. It is worth noting that these animals do not occur statically and will move between the landscape.

The only reptile confirmed to be on site was Eastern Gartersnake (*Thamnophis sirtalis*) which was observed beside one of the irrigation ponds. Though not observed, it is possible other snake species could occur here including Dekay's Brownsnake (*Storeria dekayi*) and Red-bellied Snakes (*Storeria occipitomaculata*) due to suitable habitat and generally low detection rates. were not observed by Beacon staff. Both Snapping Turtle (*Chelydra serpentina*) and Midland Painted Turtles (*Chrysemys picta*) may be present given the habitat and anecdotal evidence from the local community; however, were not observed by Beacon staff. The wetlands and ponds throughout the golf course offer suitable foraging and overwintering habitat (of sufficient depth) and the general golf course lands including manicured areas and sand traps provide nesting opportunities for these species.

## 4.6 Breeding Birds

Most of the 36 bird species, that were recorded on or adjacent the subject property, were breeding or suspected to be breeding. This is a relatively high species diversity given the property's current use as a golf course, although numbers of pairs were generally low. A variety of habitat types occur at this location including woodland, wetland (i.e marsh and swamp) and meadow, which contribute to the observed range of avian assemblages. A list of these species and their abundance is provided in **Appendix D**.

Several of the breeding records were common species regularly found in disturbed urban or urbanizing habitats including the most abundant species, in descending order: Song Sparrow (*Melospiza melodia*), Red-winged Blackbird (*Agelaius phoeniceus*), American Robin (*Turdus migratorius*), American Goldfinch (*Spinus tristis*) and Mourning Dove (*Zenaida macroura*).

Species that were observed flying or foraging on or over the property that were not believed to be breeding were noted and included Canada Goose (*Branta canadensis*), Turkey Vulture (*Cathartes aura*), Killdeer (*Charadrius vociferus*), Ring-billed Gull (*Larus delawarensis*), and Tree Swallow (*Tachycineta bicolor*).

No species ranked as S1 through S3 (Critically Imperiled through Vulnerable) by the province were present, however one breeding avian Species at Risk were recorded. Eastern Wood-pewee (*Contopus virens*) is treated as a species of special concern both provincially and nationally. This species is an aerial insectivore, a group of birds that may have been declining rapidly in the past few decades to a variety of factors including potential changes in insect populations and loss of habitat on their wintering grounds in Latin America. Though pewee numbers may have declined by about 25% in the past decade, they are still common in forests throughout eastern North America and seem to be able to breed in relatively small forest patches and woodlots. One Eastern Wood-pewee pair was recorded in the southern woodland during the first breeding bird survey.

Birds that require larger tracts of suitable habitat in which to breed, or those that have a higher breeding success in larger areas of suitable habitat, as "area-sensitive" species. Four such species were recorded on the subject property and can be further broken down into woodland and grassland specialists, which require their respective habitat types to breed and rear young successfully. Forest area-sensitive species include Red-breasted Nuthatch (*Sitta canadensis*), White-breasted Nuthatch (*Sitta carolinensis*) and American Redstart (*Setophaga ruticilla*). While these species prefer to breed in larger woodlands, they however remain common breeders in smaller urban woodlots and treed areas in Southern Ontario. One pair of White—breasted Nuthatch was record and three pairs of American Redstart were recorded in the deciduous swamp units on the southern portion of the subject property.



One additional redstart territory was located in isolated trees in the northeast corner of the subject property, while one pair of Red-breasted Nuthatch was recorded in planted conifers in the centre of the study area. The only grassland specialist that was recorded on the subject property was Savannah Sparrow (*Passerculus sandwichensis*), of which a single pair was recorded. Despite being classified as an area sensitive species, this species is commonly observed in and along fence lines and hedgerows in rural environments.

#### 4.7 Landscape Connectivity

Landscape connectivity, including the concept of wildlife corridors, has become recognized as an important part of natural heritage planning. The southern portion of the property is located within the Greenbelt Plan area. The Holland River is located to the south of the property provides connectivity in the local landscape for both terrestrial and aquatic species. The wetland and woodland community that extends east and west along the Holland River and extends north onto the subject property also likely provides connectivity at the local level. This connectivity will be maintained.

#### 4.8 Threatened or Endangered 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 6** 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 6. Endangered or Threatened Species**

Species	Status on SARO List	Were Species and/or Habitat Documented during on-site Assessment?
<b>Vascular Plants (Dicots)</b>		
Butternut, <i>Juglans cinerea</i>	END	<b>No</b> , a targeted search for Butternut trees ( <i>Juglans cinerea</i> ) was conducted. This species is a provincially and nationally endangered tree species that, while still relatively common in southern Ontario, has been listed because the population has been declining due to the presence of a Butternut Canker disease. No Butternut were found.
<b>Birds</b>		
Bank Swallow, <i>Riparia riparia</i>	THR	<b>No</b> , 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.
Chimney Swift, <i>Chaetura pelagica</i>	THR	<b>No</b> , a habitat assessment was conducted for this species which nests in vertical anthropogenic structures and no nesting or foraging individuals were noted.
Bobolink, <i>Dolichonyx oryzivorus</i>	THR	<b>No</b> , this species was not recorded during breeding bird surveys as they require extensive meadow communities.

Species	Status on SARO List	Were Species and/or Habitat Documented during on-site Assessment?
Eastern Meadowlark, <i>Sturnella magna</i>	THR	<b>No</b> , Eastern Meadowlark were not present on the property during breeding bird surveys as they require extensive meadow habitats.
Eastern Whip-poor-will <i>Antrostomus vociferus</i>	THR	<b>No</b> , there is no suitable habitat for these birds that require somewhat open and large woodland tracts to breed.
Red-headed Woodpecker, <i>Melanerpes erythrocephalus</i>	END	<b>No</b> , this species was not encountered during breeding bird surveys. The Red-headed Woodpecker ( <i>Melanerpes erythrocephalus</i> ) lives in open woodland and woodland edges, and can be found in parks, golf courses and cemeteries. These areas typically have many dead trees, which the bird uses for nesting and perching.
<b>Mammals</b>		
Little Brown Myotis, <i>Myotis lucifugus</i>  Northern Myotis, <i>Myotis septentrionalis</i>  Eastern Small-footed Myotis, <i>Myotis leibii</i>  Tri-colored Bat, <i>Perimyotis subflavus</i>	END	<b>Potential</b> , suitable habitat for these noted endangered bat species may be present in the wooded communities throughout the golf course lands, which may include the forest, swamp, and cultural treed communities. A snag survey or habitat assessment will likely be required to gain a better understanding of the individual snag tree presence/density on the property, with the potential requirement for acoustic monitoring. Consultation with MECP will be undertaken to confirm how the application should proceed to ensure conformity with the ESA.  The buildings on the property were observed to be in good condition and therefore are unlikely to provide suitable habitat.

Key: SARO - Species at Risk in Ontario List; ORAA - Ontario Reptile and Amphibian Atlas; NHIC Natural Heritage Information Centre; END – Endangered; THR – Threatened; ESA – Endangered Species Act

## 4.9 Other Wildlife

Based on the existing habitat conditions on the property the potential for wildlife habitat was assessed. The property likely provides habitat for a number of common disturbance-tolerant wildlife species. Some mammals common to southern Ontario are also likely present in limited numbers. For example, Grey Squirrel (*Sciurus carolinensis*), Raccoon (*Procyon lotor*), Striped Skunk (*Mephitis mephitis*) and several other common species are likely to occur. Staff observed Muskrat (*Ondatra zibethicus*), Groundhog (*Marmota monax*) and Mink (*Neovison vison*) in association with the wetlands to the south of the property, and evidence of White-tailed Deer (*Odocoileus virginianus*), Red Fox (*Vulpus vulpus*) and Coyote (*Canis latrans*) were similarly observed.

Three areas with concentrations of chimney-shaped burrows likely belonging to the Chimney (or Digger) Crayfish (*Fallicambarus fodiens*) were observed as shown in **Figure 2**. There are two terrestrial crayfish species in Southern Ontario: Chimney Crayfish and Meadow (or Devil) Crayfish (*Cambarus diogenes*). The distribution of Chimney Crayfish extends north to the southeastern shores of Georgian Bay and east to the northeast shore of Lake Scugog, whereas the distribution of Meadow Crayfish is limited to the Niagara Peninsula as well as the northeastern shoreline of Lake Erie (Hamr 2006).

The Chimney Crayfish is presently ranked in the NHIC database as “G5” – secure and common globally; “N3” – vulnerable at moderate risk of extinction nationally; and “S4” – apparently secure but uncommon

at the provincial level. It is not designated as a SAR by MECP; therefore, it is not afforded any specific protection under the ESA.

There are several species that have occurred or that could occur that are considered to be of Special Concern either federally, provincially or both. These are discussed in the following paragraphs.

### **Eastern Wood-Pewee**

Eastern Wood-pewee was documented breeding within the southern woodland (SWD2-2) along the southern edge of the property (**Figure 2**). The Eastern Wood-pewee lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It is most abundant in intermediate age to mature forest stands with little understory vegetation.

### **Monarch**

Throughout their life cycle, Monarch butterflies (*Danaus plexippus*) use three different types of habitats. Only the caterpillars feed on milkweed plants (*Asclepias sp.*) and are confined to meadows and open areas where milkweed grows. Adult butterflies can be found in more diverse habitats where they feed on nectar from a variety of wildflowers. This species is threatened by the loss of overwintering habitat in central Mexico and southern California. Sources of food and locations for nesting are abundant in southern Ontario. This species may occasionally use the subject property, especially meadow areas where milkweed occurs.

### **Snapping Turtle**

Snapping Turtles (*Chelydra serpentina*) spend most of their lives in water. They prefer shallow waters so they can hide under the soft mud and leaf litter, with only their noses exposed to the surface to breathe. During the nesting season, from early to mid-summer, females travel overland in search of a suitable nesting site, usually gravelly or sandy areas along streams. Snapping Turtles often take advantage of anthropogenic structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits. Potentially suitable habitat for this species may be present within the ponds on the subject property or in the nearby Holland River.

Overwintering Snapping Turtles require water of sufficient depth to support dormancy below the ice to receive a constant supply of oxygen from the surrounding substrate. Therefore, these turtles could only overwinter in the deeper ponds on the property or adjacent river.

### **Midland Painted Turtle**

This species is the most commonly occurring turtle species in Southern Ontario and is often found persisting in anthropogenic environments including golf courses. These turtles are mostly aquatic (ponds, marshes, slow moving streams) and spend most of their time in water with a soft substrate and adequate basking opportunities for their thermoregulatory needs. Despite their aquatic nature, these turtles will move through the landscape and can be spotted over land as well. These turtles could occur in the wetlands on the subject property as well as the Holland River to the south.

Similar to the overwintering strategy discussed above, Midland Painted Turtles require water of a sufficient depth to support their dormancy period throughout the winter months.

#### 4.10 Significant Wildlife Habitat

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, neither the Town nor the County have 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 (MNR 2010).

The *Significant Wildlife Habitat Technical Guidelines* (MNR 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 7**).

**Table 7. Assessment of Potential Significant Wildlife Habitat for the Subject Property**

Wildlife Habitat Category	Presence or Absence on Subject Property Based on MNR Criteria for Ecoregion 6E	
	Absent	Potential Presence
<b>Seasonal Concentration Areas for Wildlife Species</b>		
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		X (Potential )
Bat Migratory Stopover Area	X	
Turtle Wintering Areas		X (Potential)
Reptile Hibernaculum	X	
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	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 (Tree/Shrubs)	X	
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	
<b>Rare Vegetation Communities</b>		
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	
<b>Specialized Habitats of Wildlife</b>		
Waterfowl Nesting Area	X	
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	X	
Woodland Raptor Nesting Habitat	X	
Turtle Nesting Areas		X (Potential)
Seeps and Springs	X	
Amphibian Breeding Habitat (Woodland)	X	
Amphibian Breeding Habitat (Wetlands)	X	
Woodland Area-Sensitive Bird Breeding Habitat	X	
<b>Habitats of Species of Conservation Concern</b>		
Marsh Bird Breeding Habitat	X	
Open Country Bird Breeding Habitat	X	
Shrub/Early Successional Bird Breeding Habitat	X	
Terrestrial Crayfish		X (Potential)
Special Concern and Rare Wildlife Species		X (Potential)
<b>Animal Movement Corridors</b>		
Amphibian Movement Corridors	X	
Deer Movement Corridors	X	

In summary, this analysis has considered that there are five potential SWH types within the boundaries of the subject property. None of these areas have been identified as confirmed or candidate SWH by the Town/County. Of the five potential SWH types on the subject property, three areas are associated

with the woodlands and wetlands in the southern portion of the property specifically Terrestrial Crayfish, Bat Maternity Colonies and Special concern and Rare Wildlife Species. These potential SWH areas may require additional surveys to confirm if the recommended criteria thresholds are met. The remaining three areas are within the development area and are associated with man-made ponds and sandtraps constructed to support the former golf course operations.

This analysis distinguishes between the natural areas on the subject property, specifically the wetland/woodlands within the Greenbelt and the anthropogenic units that have naturalized to provide various elements of wildlife habitat, namely the constructed golf course irrigation ponds and sandtrap areas. Constructed habitats such as golf course ponds and sandtraps are not typically considered in the SWH discussion, however these areas are further discussed below.

Two categories under the *Habitats of Species of Conservation Concern* were noted as having a potential presence within the subject property: suitable habitat for Terrestrial Crayfish and Special Concern and Rare Wildlife Species. Three terrestrial crayfish burrows were observed along the edges of meadow and swamp communities and one in the manicured areas of the golf course (**Figure 2**). The presence of one or more borrows in the listed suitable ELC community recognizes these communities as potential SWH as per the Technical Guidelines (MNRF 2000). Also, under this category, Special Concern and Rare Wildlife Species was identified as a potential SWH based on the presence of Eastern Wood-pewee and Snapping Turtle.

An additional two potential SWH types, listed under the *Seasonal Concentration Areas for Wildlife Species* category, were identified as Bat Maternity Colonies and Turtle Wintering Areas. The bat category is presumed given the presence of suitable ELC communities (FOM, FOD and SWD). Turtle wintering is assumed given the anecdotal observations of several turtles throughout the wetlands of the golf course. Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate DO, water deep enough to freeze and soft mud substrates. However, the ponds on the subject property do not meet the criteria for SWH as overwintering habitat as the Guideline (OMNRF 2015) specifically states “man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH” as turtle wintering areas.

Wetlands on the subject property may provide suitable habitat to support nesting for turtles. Therefore, Turtle Nesting Area, listed under *Specialized Habitats of Wildlife*, was identified as an another potential SWH type within the subject property.

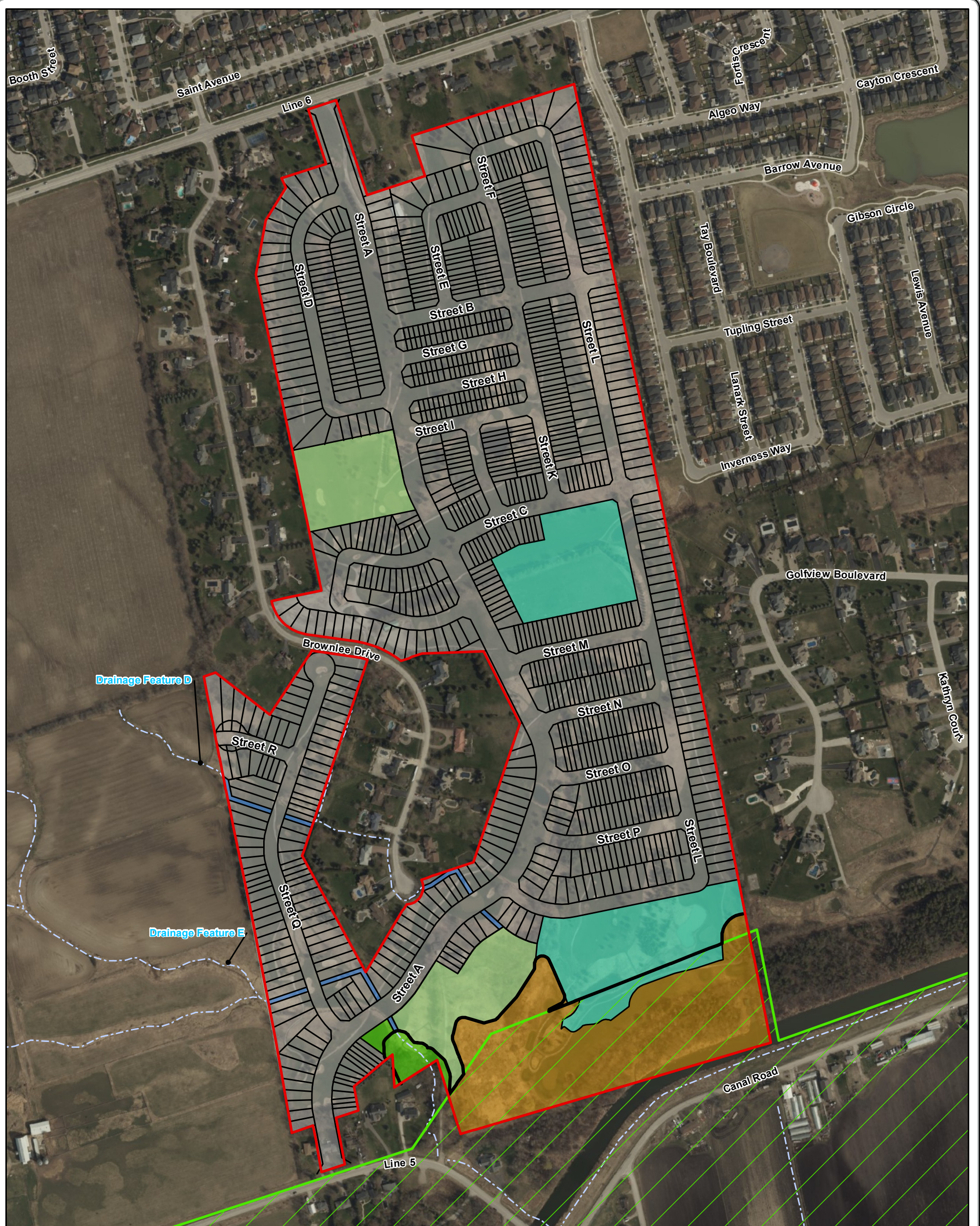
None of these areas have been identified as potential SWH by the Town or County. Significant Wildlife Habitat Screening Table is provided in **Appendix E**.

## 5. Assessment of Significant Natural Heritage Features

The findings of this study have been used to determine if the subject property supports any natural heritage components that are recognized under the PPS, the County of Simcoe Official Plan, and the Town of Bradford West Gwillimbury Official Plan (**Table 8**). Refer to **Figure 3** or mapping as it pertains to natural heritage and hydrological features on the subject property.

**Table 8. Summary of Natural Heritage and Hydrological Features**

Feature	Key Function and Attributes
Fish Habitat	<p>The PPS (2020) treats all fish habitat equally regardless of significance. However, the PPS applies only to waterbodies where the protection prohibitions of the <i>Fisheries Act</i> (1985) apply.</p> <p>HDF-D and HDF-E do not provide direct fish habitat. HDF-D ultimately flows into an online pond that has no surface connection to a fish-bearing watercourse during anytime of the year. HDF-E does have a surface connection to the North Canal; however, fish are unable to access this feature due to the gradient of the roadside ditch (along 5th Line) and vertical drop at the river embankment. Both features may contribute to the transport of allochthonous materials to downstream fish habitat, however, in the case of HDF-D, inputs are limited by online pond at terminal end of feature.</p> <p>The online irrigation ponds on the subject lands have been anthropogenically modified and historically used for golf course irrigation. Although the two southern ponds, associated with HDF-D, are within the regional floodline however they are not within the 100-year floodline of the North Canal and are therefore not connected to a fish bearing watercourse during any time of the year.</p> <p>The Fish and Fish Habitat Protection Policy Statement (DFO 2019), outlines exceptions, outside of the ministerial authorizations identified in subsection 34.4(2)(a) or 35(2)(a) of the Act, that provide authority for a proponent to complete work, undertaking, or activity without contravening the prohibitions against the death of fish or the HADD of fish habitat. One such exception includes the prescription of certain 'Canadian waters' where the prohibitions do not apply. The DFO Projects Near Water website provides further guidance on defining these 'specific types of minor waterbodies' where proposed work, undertakings, or activities are exempt and therefore do not require additional consultation with DFO. These include, but are not limited to, artificial waterbodies (including commercial ponds like golf course ponds and/or ponds used for irrigation) that are not connected to a waterbody (at any time of the year) that contains fish. Therefore, since the ponds are artificial and have no connection to a fish-bearing waterbody, the ponds meet the exception requirements for a waterbody where the prohibitions do not apply.</p>
Watercourse	<p>Observed conditions within HDF-E may be indicative of intermittent flows and is mapped on County OP (Schedule 5.2.2 – Streams and Evaluated Wetlands), provincial mapping and LSRCA mapping.</p> <p>Observed conditions within HDF-D were indicative of ephemeral flows in the upstream reach and intermittent flows in the downstream reach. Based on the definition provided in Section 5.2 of the Technical Definitions for the LSPP (MNRF, 2015b), "intermittent streams which are more or less predictable are distinguished from ephemeral streams, which contain water on a more or less unpredictable basis". HDF-D displayed differences in the flow conditions and the amount of water between observed during the 2016 and 2022 assessments. It should be noted that the 2016 assessments did not include a late spring event. However, year to year I groundwater discharge contributions may support an intermittent flow in the HDF-(2) reach. However, HDF-D is not mapped on the County OP schedule nor provincial mapping, however, it is identified as a regulated feature on LSRCA mapping. Furthermore, HDF-D does not have a surface water connection to downstream fish habitat as it flows into an irrigation pond at the terminal end of the feature.</p>



- Legend**
- ▭ Subject Property
  - Proposed Development
  - Greenbelt
  - Headwater Drainage Feature
  - Limit of Greatest Constraint
- Proposed Development Features**
- SWM Ponds
  - Parks
  - Drainage Swales
  - Compensation
  - Environmental Protection

**Proposed Development**

**Figure 4**

**Bradford Highlands Golf Course Redevelopment EIS**



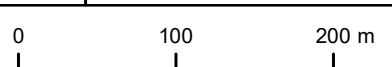
Project: 220036  
Last Revised: October 2023

Client: Bradford Highlands Joint Venture

Prepared by: BD  
Checked by: CS



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Feature	Key Function and Attributes
	<p>Intermittent streams are considered a KHF under the LSPP. Based on the assessment summarized above, HDF-meet the criteria to be considered an KHF as per the criteria within Section 5.2 of the Technical Definitions (MNR 2015b).</p> <p>HDF-A, B, C and D (1) have been determined, through correspondence with LSRCA and headwater assessments to be ephemeral features. Ephemeral streams and constructed ponds do not meet the definition of KHF's under the LSPP.</p>
Wetlands	<p>There are four types of wetland communities that occur within the subject property: Meadow Marsh, Shallow Marsh, Deciduous Swamp, and Thicket Swamp. Many of the wetland units are associated with riparian corridors of watercourses (i.e., North Canal), drainage features or irrigation ponds. Several small wetland pockets, within the anthropogenic areas of the former golf course, are proposed for removal.</p> <p>The Technical Guide for the LSPP (MNR, 2015b), states that wetlands &lt; 0.5 ha in size are not considered a KNHF/KHF if it can be demonstrated that the wetland does not constitute or provide one or more of the functions listed in <b>Section 2.6</b>.</p> <p>The northern wetland units (SWD4-1 [0.32 ha], MAS2-1/MAM2-2 [east and west units combined – 0.43 ha] and MAS2-1 [0.11 ha]) are primarily associated with the riparian areas adjacent to truncated HDF-A, B and C. These features have historically been altered by golf course maintenance and have been further impacted by the changes in drainage occurring as a result of the surrounding developed landscape. These wetland units do not meet the size or function of a KNHF/KHF as per the LSPP.</p> <p>There are four wetland units (MAM2-2 [0.09 ha], MAS2-1/MAM2-2 [0.13] and MAS2-1/MAM2-2 and the SWT2-2 units combined [0.23 ha]) associated with the riparian areas adjacent to HDF-D and the two southern irrigation ponds. There are two wetland units (MAM2-10 [0.28] and SWD4-1 [0.16 ha]) associated with the riparian areas adjacent to HDF-E. These wetlands are predominantly meadow marsh communities that have been continually manicured into narrow riparian areas throughout the active years of the golf course.</p> <p>Although the riparian wetland (MAM2-10) and the deciduous swamp (SWD4-1) associated with HDF-E are both less than 0.5 ha in size, both features have an intermittent surface water connection to an adjacent KHF/KNHF. Therefore, these wetland units meet one of the functions to be considered a KNHF/KHF as per the LSPP.</p> <p>A site visit with LSRCA was conducted and it was determined that it was not necessary to stake either the limits of the small wetland features associated with drainage features, nor the constructed irrigation ponds.</p> <p>None of the wetlands above are Provincially or locally significant based on their small size, limited function, and anthropogenic origin.</p> <p>Since the SWD4-1 wetland unit will be retained, a 10 m vegetation buffer has been applied to it and the feature and its associated vegetation protection zone will be restored and enhanced.</p> <p>The wetland units (SWD2-2 and MAM2-10), adjacent to the North Canal, meet the criteria to be considered a KNHF/KHF under the Greenbelt Plan and LSPP. They have not been recognized as provincially or locally significant within the County OP, however they are mapped as unevaluated wetlands within the Town OP and on provincial mapping (MNR). These wetlands are also regulated by LSRCA, and their boundaries (delineated</p>

Feature	Key Function and Attributes
Woodlands	<p>on <b>Figure 3</b>) were staked in the field with LSRCA staff. These wetland units have not been evaluated through OWES as they will be retained.</p> <p>There are four types of wooded communities that occur within the subject property: deciduous forest, mixed forest, deciduous plantation, coniferous plantation, and cultural woodland.</p> <p>The cultural woodlands/ plantations (CUP and CUW) units are predominantly small, isolated plantations scattered throughout the subject property, outside of the Greenbelt. These ELC communities do not meet the County OP's definition of woodlands. Although the CUP and CUW may meet the definition of woodland under the LSPP, they do not meet the criteria to identify them as significant. The proposed development will require the removal of these features.</p> <p>The forest units (FOD7 and FOD4) are predominantly deciduous and meet the definition of woodland per the County OP and the LSPP. FOD7 and FOD4 have been assessed as one as they are contiguous with one another and represent a woodland area outside of the Greenbelt Plan. Since the units combined are less than 2 ha in size (total of 0.75 ha), they are not considered significant per the County OP guidance. Furthermore, they do not meet the criteria (size, composition, age proximity or rarity) to identify them as significant under the LSPP.</p> <p>The proposed development will require the full removal of the FOD7 community and partial removal of the FOD4 community. The majority of the FOD4 community will be retained within the proposed park land.</p> <p>There is a small FOM unit, at the property boundary west of Brownlee Drive and a small FOD8-1 unit adjacent to HDF-C. The FOM unit is approximately 0.4 ha in size, however, only a portion of this unit is within the subject property boundary. The FOD8-1 unit is 0.04 ha in size. These units do not meet the size criterion identified in the County OP or the LSPP to identify them as significant. Both units will be removed to accommodate the proposed development.</p> <p>The dripline of the deciduous swamp community adjacent to the North Canal, was staked and confirmed by the LSRCA (<b>Figure 3</b>). This feature meets the size requirements in the Town OP, Greenbelt Plan and LSPP to be considered a significant woodland. This feature plus the 30 m buffer will be retained within the environmental protection area.</p>
Significant Wildlife Habitat	<p>There are five potential SWH types within the subject property.</p> <p><i>Seasonal Concentration Areas for Wildlife Species:</i></p> <ul style="list-style-type: none"> <li>• Bat Maternity Colonies (presumed given the presence of suitable ELC communities)</li> <li>• Turtle Wintering Areas (assumed based on presence of wetlands and species observations); and,</li> </ul> <p><i>Specialized Habitats of Wildlife:</i></p> <ul style="list-style-type: none"> <li>• Turtle Nesting Areas (assumed to be present based on suitable habitat and anecdotal evidence from the community); and,</li> </ul> <p><i>Habitats of Species of Conservation Concern:</i></p> <ul style="list-style-type: none"> <li>• Terrestrial Crayfish (confirmed based on observed crayfish burrows along the edges of meadow and swamp communities).</li> <li>• Special Concern and Rare Wildlife Species (based on observation of Eastern Wood-pewee).</li> </ul> <p>None of these areas have been identified as potential SWH by the Town or County.</p>

Feature	Key Function and Attributes
Habitat for Endangered or Threatened Species	<p>No threatened or endangered species were recorded on the property. Since there are forest and treed swamp communities within the subject lands, suitable habitat for endangered bat species may be present within the subject property. A snag survey or habitat assessment will likely be required to gain a better understanding of the individual snag tree presence/density on the property, with the potential requirement for acoustic monitoring. Consultation with MECP will be undertaken to confirm how the application should proceed to ensure conformity with the ESA.</p> <p>The buildings on the property were observed to be in good condition and therefore are unlikely to provide suitable habitat.</p> <p>No other threatened or endangered species were recorded within the subject property.</p>
Significant Area of Natural and Scientific Interest	<p>There are no Significant Area of Natural and Scientific Interest within 5 km of the subject lands.</p>

## 6. Proposed Development

The draft plan of subdivision prepared by Malone Given Parsons (MGP) proposes a development consisting of approximately 60 ha of land and approximately 1,000 units comprised of single detached units, semi-detached units, street townhouses units, back-to-back townhouse units, parks, two SWM ponds, a sanitary pumping station and roadway network. In addition to the proposed development blocks, the draft plan includes both environmental protection and compensation areas and maintains HDF-D and HDF-E as surface water features within the designated drainage blocks.

The proposed development will be serviced by municipal water, sanitary and storm sewer systems.

A road network system consisting of roads varying in width from 18 m, 20 m and 26 m are proposed will provide access to the subdivision from the existing municipal road network accessible at Line 6, Inverness Way (two locations) and Line 5.

**Figure 4** provides an illustration of the proposed development, and the Draft Plan of the Subdivision (MGP 2023) can be viewed in **Appendix F**.

### 6.1 Site Servicing

The Functional Servicing Report (FSR) prepared by Urban Ecosystems Ltd (UEL 2023) provided details regarding the proposed servicing of the subject property. Additionally, the Stormwater Management Report prepared by KSGS Engineering Corporation (KSGS 2023), outlines a SWM plan that meets the requirements of the applicable agencies.

The SWM design criteria has been previously established in the Town of Bradford West Gwillimbury Master Environmental Servicing Plan (R.J. Burnside and Associates Limited 2008) and has been advanced by the Stormwater Management Report Bradford Capital Residential Subdivision (Sernas

Associates 2014) and the Bradford Capital and Stormwater Management Report Bradford East Developments Residential Subdivision (GHD 2016) reports.

These reports indicate that the subject property has two distinct drainage areas. The northern drainage area drains to existing storm sewers located within Bradford Capital Residential Subdivision, to the east of the subject lands and the south drainage area drains towards the North Canal.

### **Water Supply and Sanitary Servicing**

The Functional Servicing Report (UEL 2023) provides detail regarding the functional servicing plan for the proposed development. To summarize, water supply and sanitary servicing will be provided by internal watermain and sanitary sewer system that will be connected to existing servicing infrastructure north at Line 6 and to the east of the proposed development to the existing residential subdivisions of Bradford Capital and to Bradford East. A pumping station, proposed to be located at the southeast limit of the subject property, will be required to pump sewage flows from the southern half of the development to an upstream sanitary manhole, which will also discharge to the sanitary sewer connection in the Bradford Capital Residential Subdivision.

### **Storm and Surface Water Management**

Functional Servicing Report (UEL 2023) identifies that the storm sewer system will be designed to convey the 10-year minor design storm in an underground piped network system (UEL 2023). Surface runoff along the streets will be conveyed via a roadside curb and gutter system and captured by a series of street catchbasins that are directed into an underground piped sewer system. External surface runoff along the west limit of the subject lands will be conveyed via drainage side yard swales and captured by a series of rear yard catchbasins that are directed into an underground piped system. The storm sewer system will be divided, like existing drainage patterns, into north and south drainage catchment areas with inlets into two SWM ponds (UEL 2023).

Functional Servicing Report (UEL 2023) identifies that the proposed park block and the existing flows from HDF-D and HDF-E will continue to drain as surface water drainage features. HDF-D and HDF-E will be realigned into drainage corridors for the reaches that transect through the proposed development. HDF-E will accommodate approximately 19.4 ha of external drainage from lands west of the proposed development and will tie back into its existing channel immediately north of the wetland unit (SWD4-1). HDF-D will accommodate approximately 11.8 ha of external drainage from west and along the existing subdivision of Brownlee Drive. HDF-D will be realigned into a drainage corridor through the proposed development, then it will tie back into its existing roadside channel along the Brownlee Drive for a period and then will continue southeast with a drainage corridor through parkland and the environmental protection area, ultimately draining into the North Canal. Design of the drainage corridors will be provided in future design phases.

Both SWM Ponds are identified as wet ponds and have been designed to meet the permanent pool volumes, extended detention and quantity control requirements identified within the MECP Manual (2003) (KSGS 2023).

Functional Servicing Report (UEL 2023) identifies that flows exceeding the capacity of the minor drainage piped underground system, up to the 100-year storm event, will be conveyed overland. These flows will be contained within side yard swale easements and roadside drainage and will generally follow

the minor storm sewer system to a SWM pond (UEL 2023). The minor drainage and major drainage system flows will ultimately outlet into one of the SWM ponds where they will be controlled to pre-development levels (KSGS 2023).

The SWM Report (KSGS 2023) identifies that the north SWM Pond (Facility 600-1) will accommodate approximately 49 ha of the northern part of the proposed development (including an external drainage area to the west) and will discharge into existing storm sewers infrastructure to a SWM Pond (Facility 702-2) the within the Bradford Capital Subdivision. The existing Facility 702-2 on adjacent lands drains to a tributary of the North Canal on the east side of Simcoe Road. These tributary drains northeast towards the main channel of the North Canal.

The south SWM Pond (Facility 800-1) will accommodate approximately 79 ha of the southerly part of the proposed development (including an external drainage area to the west) and the controlled flows will discharge into a proposed drainage swale outletting to the North Canal (UEL 2023).

Lake Simcoe Phosphorus Offset Program (LSPOP) requires that all new development must control post-development phosphorus loadings leaving their property to pre-development levels to support the objectives of the LSPP. Therefore, a detailed analysis of the phosphorus budget has been provided in the SWM Report (KSGS 2023). The analysis concluded that the phosphorus load calculated for the proposed development did not reach equilibrium and will thus require an offset measure.

### **Proposed Lot Level and Conveyance Controls**

The Functional Servicing Report (UEL 2023) and the SWM Report (KSGS 2023) provides detail regarding the proposed lot level and conveyance controls. At this stage of the design, a Roof/Foundation Drain Collector (RFDC) System is proposed for the development to address the Town's individual dwelling storm collection requirement and to aid in addressing the LSRCA's water balance requirement of matching post to pre-development conditions.

## **6.2 Site Grading**

The FSR (UEL 2023) provides detail regarding the grading requirements for the proposed development. Lot grading will conform to the Town's lot grading criteria. The road layout and grading design preserves the existing natural features of the adjacent lands, the internal surface drainage patterns, and will match the existing grades and ground elevations along the external boundary including the adjacent existing subdivision. The proposed road layout and grading design preserves the existing drainage patterns and minimizes earthworks and disturbances to the adjacent properties.

## **6.3 Water Balance**

A Water Balance Assessment was carried out by WSP (2023) to compare pre- and post development water balance conditions including estimates of annual infiltration and runoff volumes from the proposed development. Results from the pre-development scenario states that of the 689,000 m<sup>3</sup>/year precipitation over the subject property, 473,000 m<sup>3</sup>/year is lost to evapotranspiration, with the remaining 211,000 m<sup>3</sup>/year surplus being divided into 86,000 m<sup>3</sup>/year runoff.

Results from the from the post-development scenario used the same annual precipitation rate (689,000 m<sup>3</sup>/year), however the increase in impervious surfaces will result in a decrease in evapotranspiration losses and increase in surplus to 379,000 m<sup>3</sup>/year (an increase of 168,000 m<sup>3</sup>/year or 80% as compared to the pre-development scenario). Adding the proposed infiltration features (i.e., Roof/ Foundation Drain Collectors) will provide approximately 9,000 m<sup>3</sup>/year of infiltration. The increase in impervious surfaces in the post-development scenario will result in a decrease infiltration to 57,000 m<sup>3</sup>/year (a decrease of 29,00 m<sup>3</sup>/year or 34% compared to the predevelopment scenario). Furthermore, the post-development ruff will increase to 322,000 m<sup>3</sup>/year (which equates to a 197,000 m<sup>3</sup>/year or 158% increase above predevelopment conditions).

To summarize, the proposed development will result in a 34% decrease in average annual infiltration and 158% increase in average annual runoff and therefore, at this stage of design, the proposed development is not in compliance with the LSRCA's Water Balance Recharge Offsetting Policy or the LSPP.

## 7. Potential Impacts and Mitigation

Background review and field investigations identified that the subject property is primarily comprised of a former golf course with natural vegetation predominantly associated with the wetland communities in the southern portion of the lands within the Greenbelt as well as drainage features. The proposed development is largely confined to the anthropogenic areas of the subject property, which was previously developed as a golf course, outside of the Greenbelt.

The following sections present some of the key potential effect of the proposed residential development and identify mitigation opportunities to be utilized to minimize the adverse effects of the project.

### 7.1 Potential Impacts

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.

#### Hydrology and Hydrogeology

The North Canal, south of the subject property will continue to receive flows from the subject property via controlled flows from the south SWM Pond and the re-channelized surface drainage swales that will facilitate the flow from upstream drainage areas west of HDF-D and HDF-E during post-development conditions, as described **Section 6**. However, alterations to surface water and/or groundwater discharge and recharge capabilities during or after development of the subject property (e.g., soil erosion, grade changes, increases in impervious surfaces) can potentially have negative impacts on adjacent or downstream natural heritage and hydrologic features.

The proposed development will result in an increase in impervious surfaces and a corresponding decrease in infiltration which could potentially impact the hydrology of adjacent and downstream hydrological features (i.e., wetlands, aquatic habitat). Under post-development conditions, impervious

surfaces, specially over what is now golf course lands, has increased. Without mitigation, this will result in a decrease in infiltration and an increase in runoff.

The SWM Report (KSGS 2023) provides hydrology modeling for peak flows into the north and south SWM Ponds. The report confirms that under post-development conditions there will not be an increase in flows outletting from the facilities as a result of the 24-SCS storm or any other modelled storm events or types.

### **Watercourse Realignment and Crossings**

HDF-D and HDF-E will be realigned into straightened drainage corridors for the reaches that transect through the proposed development. Floodplain and erosion hazards associated with these features have not been addressed at this stage of design. These drainage corridors have been sized by UEL (2023) and in future design must ensure conveyance of flows downstream and not increase flood hazards.

Street Q and Street A will be required to cross the proposed re-aligned channels of HDF-D and HDF-E in two locations for each feature. The two road crossings are proposed in near segments that are already disturbed by the presence of the golf course trail crossings, of which, will be removed to facilitate the proposed development. In future design stages, UEL will be responsible for sizing these features appropriately as to not interfere with the function of the features and to account for any erosion hazards.

The overall function of the drainage features to provide flow, inputs of allochthonous materials (detritus/invertebrates) will remain at surface in post development conditions. Wetland removals associated with the features are discussed below and in **Section 8**.

### **Fish and Fish Habitat**

The artificial waterbodies (i.e., dug golf course ponds) are exempt from the protection provisions of the *Fisheries Act*. However, there may be an introduced (unnatural) fish population within the ponds. Therefore, all appropriate permits from relevant agencies will be obtained to facilitate the removal of the irrigation ponds including fish and wildlife collection and relocation.

A portion of the works will occur within the indirect fish habitat identified for the HDF-E. The function of the indirect habitat is to provide water and nutrients to downstream habitats. During construction, the function of the indirect habitat may be temporarily affected. However, provided the recommended environmental protection and mitigation measures are applied it is anticipated that the proposed work will comply with the fish and fish habitat protection provisions of the *Fisheries Act* and shall avoid any harmful residual effects to downstream fish habitat.

### **Stormwater Facilities and Outfalls**

The south SWM Pond (Facility 800-1) will accommodate approximately 79 ha of the southerly part of the proposed development (including an external drainage area to the west) and the controlled flows will discharge into a proposed drainage swale outletting to the North Canal. Location of the proposed outlet is provided in the Storm Servicing Plan of the FSR (UEL 2023). Impacts of the outlet drainage swale will be evaluated in more detail during future design stages of the development plan. However, it

is assumed that there will be a footprint encroachment into the Environmental Protection Area (as depicted on **Figure 4** and **Figure 5**), more specially the vegetation buffer of the SWD2-2 features. The SWM Report (KSGS 2023) states that water quantity controls will not result in an increase in flows to the south limit and into the North Canal.

### **Removal of Wetland and Woodland Communities**

There are a number of small wetland pockets on the property which are proposed for removal within the former golf course play area. These communities' range in area from 0.01 ha to 0.14 ha. Wetland units proposed for removal include swamp (0.44ha) and marsh (1.14 ha). The total area of wetlands that will be removed to facility the proposed development will be approximately 1.86 ha. A permit will be required for removal as all wetlands are regulated by the LSRCA.

The golf course lands included wooded areas that are proposed for removal, and this includes both cultural woodland, forest, and wetland communities (discussed in **Table 8**). As delineated in **Figure 5**, a total of 0.51 ha of forested ELC communities (FOM, FOD7 and a part of FOD4) are proposed for removal. There is a total of 1.7 ha of cultural plantation/ woodland proposed for removal which is predominantly composed of planted and non-native tree species, discussed **Section 4.3.1** of this report. A total of 1.51 ha of wetlands are proposed for removal. This includes the removal of 0.44 ha of small, isolated units of swamp (SWT and SWD) communities and the removal of 1.07 of marsh (MAS and MAM) communities.

### **Tree Removal**

An Arborist Report and Tree Inventory and Protection Plan (TIPP) were prepared by Beacon (2023) to outline the extent of tree removal and preservation opportunities through the proposed development plan. Per the companion report, a total of 2,899 trees were surveyed with 2,553 proposed for removal and 346 recommended for preservation.

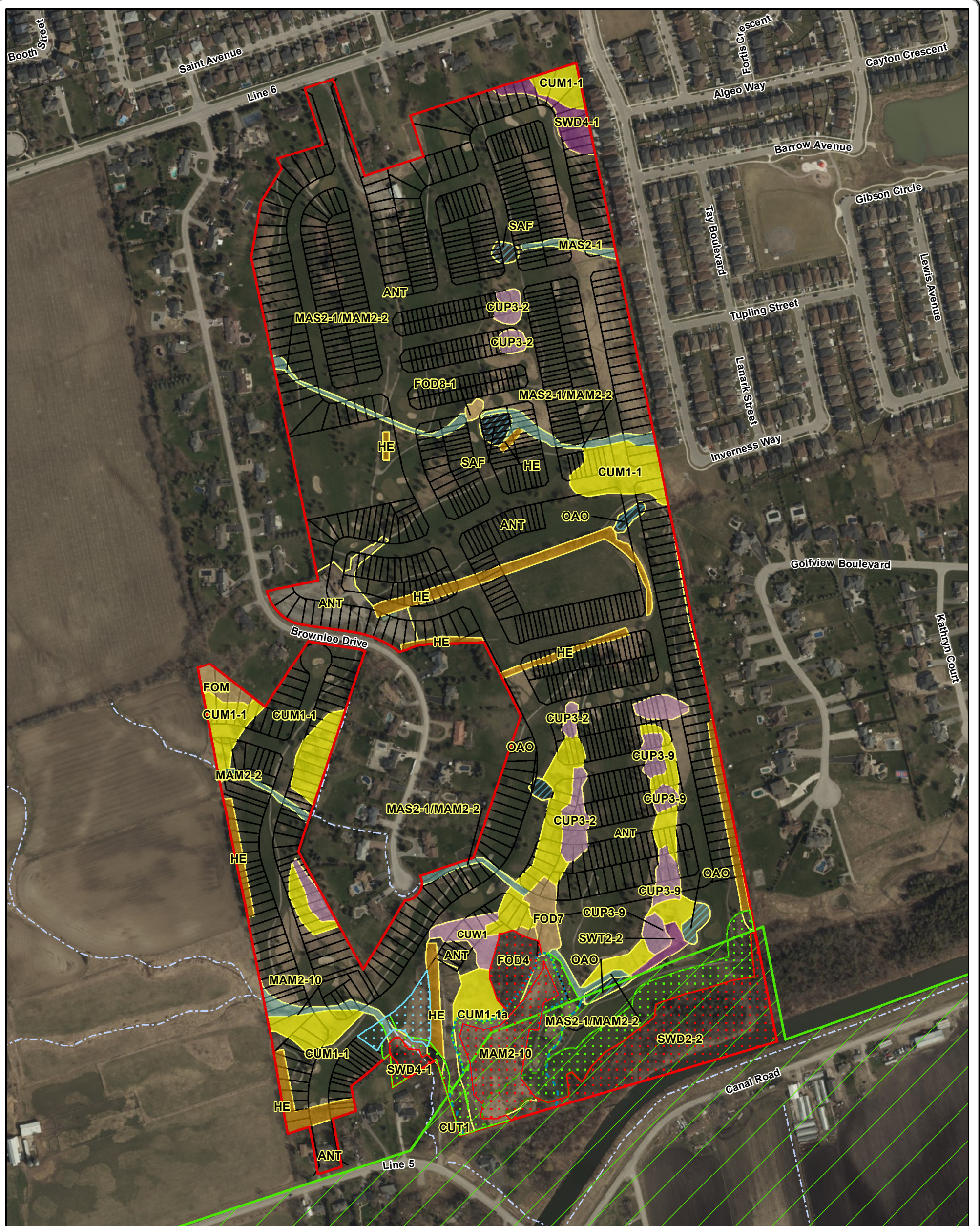
### **Erosion and Sediment Transport**

Construction works such as grading, grubbing and excavation have the potential to result in the movement of sediment into the natural features present on the subject property.

### **Loss of Wildlife Habitats**

Some common wildlife species use the vegetation communities associated with the golf course, so the conversion of these into a residential development does reduce the amount of available habitat. In this case the vegetation communities are fragmented by the mowed lawn associated with the golf course lands. Post-development there will be a loss of habitat for wildlife species that utilize this type of habitat, in this case none of these species are uncommon or are protected by the ESA.





- Legend**
- Subject Property
  - Ecological Communities
  - Proposed Development
  - Greenbelt
  - Staked Dripline (LSRCA June 2022)
  - Staked Dripline + 30 m
  - Staked Wetland Limit (LSRCA June 2022)
  - Staked Wetland Limit + 10 m
  - Staked Wetland Limit + 30 m
  - Headwater Drainage Feature
  - Ponds
  - Potential Wetland Restoration/ Enhancement (2.42 ha)
  - Potential Compensation Area (0.37 ha)
  - Environmental Protection Areas (3.65 ha)
- Restoration and Compensation Areas**

- Vegetation Removals**
- Wetland Communities (1.51 ha)**
- Swamp (SWT & SWD) (0.44 ha)
  - Marsh (MAS & MAM) (1.07 ha)
- Treed Communities (4.30 ha)**
- Forest (FOM & FOD) (0.51 ha)
  - Cultural (CUP & CUW) (1.74 ha)
  - Hedgerows (HE) (2.05 ha)
- Meadow Communities (3.96 ha)**
- Meadow (CUM1-1) (3.96 ha)

Code	Wetland Communities
SWT2-2	Willow Mineral Thicket Swamp
MAS2-1	Cattail Mineral Shallow Marsh
MAM2-2	Reed-canary Grass Mineral Meadow Marsh
MAM2-2	Green Ash Mineral Deciduous Swamp
SWD2-2	Willow Mineral Deciduous Swamp
SWD4-1	Willow Mineral Deciduous Swamp
SAF	Floating-leaved Shallow Aquatic
OAO	Open Aquatic
FOM	Mixed Forest
FOD4	Dry - Fresh Deciduous Forest
FOD7	Fresh - Moist Lowland Deciduous Forest
FOD8-1	Fresh - Moist Poplar Deciduous Forest
CUP1	Deciduous Plantations
CUP3-2	White Pine Coniferous Plantation
CUP3-9	Norway Spruce - European Larch Coniferous Plantation
CUW1	Mineral Cultural Woodland
CUT1	Mineral Cultural Thicket
CUM1-1	Dry - Moist Old Field Meadow
ANT	Anthropogenic
HE	Hedgerow

**Vegetation Removals and Compensation**

**Bradford Highlands Golf Course Redevelopment EIS**

**BEACON ENVIRONMENTAL**

Client: Bradford Highlands Joint Venture

**Figure 5**

Project: 220036  
Last Revised: October 2023

Prepared by: BD  
Checked by: CS

N

1:4,700

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## **7.2 Recommendation Mitigation Measures**

Based on the assessment of existing conditions within the subject property and the proposed development, the following recommendations for mitigation have been provided to ensure impacts to natural heritage features are avoided.

These measures will be refined in further detail as the project moves forward to detail design. It is recognized that this report is prepared in support of an OPA, and additional works will be required following this initial submission.

The proposed development is situated within an area that is transforming from a rural/ anthropogenic landscape to a residential landscape, which inevitably reduces natural heritage functions of any site within the larger landscape area.

### **Design Mitigation**

As impact avoidance is generally the most effective means of reducing the risk of development impacts on the natural environment, the development limits have been established outside the boundaries of the Key Natural Heritage feature limits (i.e., SWD2-2) and associated natural hazards (i.e., floodplain). The limits of the natural features present on the southern portion of the subject property have been confirmed with LSRCA in the field.

A 30 m buffer has been applied to the treed swamp within the Greenbelt Plan area, and a 10 m applied to the staked wetland units (MAM2-10 and SWD4-1) outside of the Greenbelt. These features have been contained within an environmental protection area and development which will abut the proposed parkland and the southern SWM Pond. The land uses proposed adjacent to the EP lands are intended to further buffer the natural features and their ecological functions from the proposed development. The park and the SWM block both provide impervious areas and opportunities for naturalization.

### **Buffer Enhancements and Naturalization**

Within the environmental protection area (i.e., Greenbelt) there is opportunity to expand the SWD2-2 wetland unit north into an area which is currently manicured lawn and then to provide native plantings to transition into the adjacent stormwater and pond blocks.

Restoration of this area outside of the features and buffers will serve to mitigate the removal of the small (1.51 ha) wetland pockets on the former golf course lands by expanding the existing wetland by up to 1.7 ha. There also may be opportunity to restore/ enhance the vegetation buffer of the SWD4-1 community outside of the greenbelt. Species selected for the plantings will be native to the eco-region, well-adapted to site conditions, and complimentary to those present in the existing natural features.

This area of expansion will create a larger, more robust feature contributing to the overall natural heritage system in the southern portion of the property and over time will enhance the ecological functions through the creation of additional cover and habitat for wildlife.

## **Low Impact Development Techniques**

To mitigate/off-set the infiltration deficit for the site and remain in compliance with LSRCA requirements, approximately 7585 m<sup>3</sup>/year of clean run-off would need to be harvested and infiltrated through low impact design measures such as infiltration galleries, swales, and rain gardens (KSGS 2023). Similarly, potential impacts on downstream hydrological features (wetlands/watercourses) due to the reduction in pervious surfaces/infiltration can be mitigated by ensuring that the required volumes of clean water are infiltrated through LIDs and/or appropriately directed to the features.

However, the SWM Report (KSGS 2023) identifies several constraints to designing lot level and conveyance controls for the proposed development. As identified in the Preliminary Hydrogeological Report (WSP 2023), the water table is high throughout the subject property. Although the subject property, has a particularly good percolation rate, the high-water table limits the areas available for infiltration. Also, the proposed development has been designed for maximum density with tightly spaced lots which requires tight grading behind the townhouses, and large slopes and retaining walls throughout the site.

Although restricted by high groundwater levels, the design has identified lots that may provide the appropriate conditions for the construction of infiltration trenches. Therefore, the SWM Report (KSGS 2023) has proposed the water collected from the roof collection systems either discharge into infiltration trenches within the park and school blocks or to rear lot infiltration trenches (to be installed within some of the larger lots) to improve the overall runoff volume control. However, even with the proposed roof collection system and rear lot infiltration trenches, the proposed development will only achieve 3.1 mm of runoff volume control. Ultimately, further refinement of the site grading and discussions with LSRCA will need to occur in future design stages (KSGS 2023).

## **Headwater Drainage Features**

HDF-E and HDF-D (2) have received a final management recommendation of Conservation. HDF-D (1) has received a final management recommendation of Mitigation. The recommended management measures for the Conservation classification from the HDFFA Guidelines (TRCA and CVC 2014) include:

- *Maintain, relocate and/or enhance drainage feature and its riparian corridor zone;*
- *If catchment drainage had been previously removed or will be removed due to diversion of stormwater flows, restore lost functions through enhanced lot level controls (i.e., restore original catchment using clean roof drainage), where feasible;*
- *Maintain or replace on-site flows using mitigation measures and/or wetland creation, if necessary;*
- *Maintain or replace external flows;*
- *Use natural channel design techniques to maintain or enhance overall productivity of the reach; and/or*
- *Drainage feature must connect to downstream.*

Design mitigations have been applied to the development plan to meet the management measures identified above. The drainage features will remain as surface water features; however, they will be re-aligned into straightened drainage corridors that will facilitate flows through the proposed development. It is recommended that the riparian corridor be replicated through a planting plan that mimics the existing meadow marsh communities associated with the features. Furthermore, the re-alignment of HDF-D will remove the feature from the online irrigation ponds and will restore surface water connection to the

North Canal via the MAM2-10 community. The re-aligned segments of HDF-E will tie back into the existing downstream reach within the restored and enhanced SWD4-1 wetland unit.

Replication of function for HDF-A, B and C shall be achieved through applying the proposed lot level/conveyance controls and stormwater management as identified above and **Section 6.1**. Details on the application of the LID measures will be determined and finalized in consultation with the LSRCA and in future design stages.

### **Sediment and Erosion Control**

Construction works such as grading, grubbing and excavation have the potential to result in the movement of sediment into adjacent natural features. An erosion and sediment control (ESC) plan should be developed and implemented to the satisfaction of the Town and LSRCA prior to the start of construction works. The ESC plan should follow the standards presented in Erosion and Sediment Control Guidelines for Urban Construction (TRCA 2019).

Any grading or site-alteration-related activities should, where possible, be confined to the established limit of development. Fencing at the development limit should be regularly inspected and maintained in good working order throughout the construction period. Fencing should be removed upon completion of construction, after exposed soils have been stabilized. Standard Best Management Practices, including the provision of sediment control measures, should also be employed during the construction process.

### **Measures to Protect Fish and Fish Habitat**

Potential indirect impacts to indirect fish habitat and downstream fish and fish habitat can be avoided and/or mitigated by implementing the following measures:

- Prior to construction, a detailed ESC Plan (as outlined above);
- Design any water management systems and dewatering operations for in-water construction activities to maintain flow to waterbodies downstream of the construction area and in a manner that prevents erosion and/or the release of sediment-laden or contaminated water;
- When dewatering, fish screens shall be used to avoid entrainment of fish in pumps or hoses;
- All equipment shall be operated, stored, and maintained in a manner that prevents the entry of any deleterious substances to any nearby waterbodies. All refueling should occur beyond 30m from a waterbody, and a spill tray should be used when completing maintenance and refueling; and
- A spill management plan (including materials, instructions regarding their use, education of contract personnel, and emergency contact numbers) shall be always kept on site for implementation in event of an accidental spill during construction.

### **Wildlife Salvages and Relocation**

Prior to the removal of the irrigation ponds on the subject property, staff will conduct a wildlife rescue to target fish, reptiles, and amphibians under a *Fish and Wildlife Conservation Act* permit. This will be performed in consultation with the provincial process of wildlife handling and will be timed appropriately to maximize success and retrieval of species.

### **Timing Window for Breeding Birds**

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. Considering this we recommend that during the peak period of bird nesting, no vegetation clearing or disturbance to nesting bird habitat occur. In the “shoulder” seasons of April 1 to 30, 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. If a nest is found, then vegetation clearing (in an area around the nest) must wait until nesting has concluded. From September 1 through to March 31, of any year, vegetation clearing can occur without nest surveys, but the law for nest protection still holds (i.e., if an active nest is known it should be protected).

### **Tree Protection, Replacement and Compensation Areas**

Details on tree protection and preservation guidelines are outlined in the accompany Arborist Report (Beacon 2023), including the establishment of Tree Protection Zones (TPZs) and several other specifications to be adhered to. Parameters to tree removals as well as tree replacement are also discussed, including the recommended species composition. The trees within all plantation communities and the FOD4/FOD7 woodland communities have been inventoried and are presented within the Arborist Report (Beacon 2023).

The proposed development includes an area dedicated to compensation in the southern portion of the property, the details of which are to be confirmed in future design stages. Similar to the tree replacement guidance, species composition should be of native, locally suited and self-sustaining vegetation with the purpose of increasing natural habitat at this location.

## **8. Policy Conformity**

A summary of federal, provincial, and municipal environmental protection and planning policies and regulations applicable to the study area were discussed in **Section 2**. An evaluation of how the proposed development complies with the applicable environmental policies and legislation are summarized below in **Table 9**.

**Table 9. Natural Heritage Policy Conformity**

Applicable Policy / Legislation	Relevant EIS Findings and Recommendations	Policy Compliance
<b>Federal Fisheries Act (1985)</b>	HDF-E and HDF- D provide indirect fish habitat due to it having a surface connection to a downstream fish-bearing watercourse. It is recommended that the duration of the work is kept minimal and environmental protection and mitigation measures are applied to ensure the proposed work will comply with the fish and fish habitat protection provisions of the <i>Fisheries Act</i> and avoid any harmful residual effects to downstream fish habitat.	Yes (Subject to DFO approval)

Applicable Policy / Legislation	Relevant EIS Findings and Recommendations	Policy Compliance
	When work is proposed within indirect fish habitat, a review of compliance with the Act shall be completed at the preliminary design stage. If required, a Request for Review shall be submitted to confirm compliance with DFO.	
<b>Provincial Endangered Species Act (2007)</b>	<p>Suitable habitat for endangered bat species may be present within the subject property within the forest and treed swamp communities. A snag survey or habitat assessment will be required to gain a better understanding of the individual snag tree presence/density on the property, and to determine the potential requirement for acoustic monitoring. Consultation with MECP will be undertaken and the proponent will ensure conformity with the ESA.</p> <p>No other Threatened or Endangered species were recorded on the subject property.</p>	Yes (Subject to future studies and MECP approval)
<b>Provincial Policy Statement (2020) Section 2.1 – Natural Heritage</b>		
<b>1. Habitat for Threatened and Endangered Species</b>	Suitable habitat for endangered bats has been identified within the subject property and will be addressed through the completion of additional studies and in conformity with the applicable acts (see above).	Yes (Subject to future studies and MECP approval)
<b>2. Significant Wetlands</b>	Not applicable – There are no PSWs on or adjacent to the subject lands.	Yes
<b>3. Significant Woodlands</b>	The lowland woodland / swamp (SWD2-2) in the southern portion of the property meets the criteria to be considered significant. The dripline of this feature was staked and surveyed with the LSRCA. This feature has been provided a 30m VPZ and will be retained.	Yes
<b>4. Significant Wildlife Habitat</b>	There are five potential SWH types within the subject property. None of these areas have been identified as potential SWH by the Town.	Yes (Subject to Municipal approvals)
<b>5. Significant Areas of Natural and Scientific Interest</b>	Not applicable – There are no ANSIs on or adjacent to the subject lands.	Yes
<b>6. Fish Habitat</b>	See Above.	Yes (Subject to DFO approvals)
<b>Greenbelt Plan (2017)</b>		
<b>Protected Countryside and NHS</b>	<p>A portion of the southern half of the subject property falls within the Greenbelt Plan Area, Protected Countryside and NHS (<b>Figure 2</b>). The proposed development, apart from the SWM Ponds, is outside of the Greenbelt Plan Area.</p> <p>In accordance with the Greenbelt Plan KNHF/KHF's within the Greenbelt Plan Area have been provided a 30m VPZ (<b>Figure 3</b>). The VPZ will be enhanced/restored with native, self-sustaining vegetation. Although a portion of the southern SWM Pond is within the Greenbelt Plan Area, it remains outside of any KNHF/KHF's, and their associated vegetation protection zones as per Section 4.2.3 of the Greenbelt Plan (<b>Figure 4</b>).</p>	Yes (Subject to Municipal, TRCA and provincial and federal agency approvals)
<b>Lake Simcoe Protection Plan (2009)</b>		
<b>Key Natural Heritage and Hydrologic Features</b>	Observed conditions within HDF-D (2) and HDF-E may be indicative of intermittent flows. Intermittent streams are considered a KHF under the LSPP. Wetland units (MAM2-10 and SWD4-1) associated with HDF-E meet one of the criteria to be considered a KHF/KNHF as per the LSPP. The SWD4-1 will be retained and enhanced/ restored. Design mitigations have been applied to the	Yes (Subject to Municipal, TRCA and provincial)

Applicable Policy / Legislation	Relevant EIS Findings and Recommendations	Policy Compliance
	<p>development plan to meet the HDFA management recommendations for the drainage features. As a result, the drainage features will remain as surface water features; however, they will be re-aligned into straightened drainage corridors that will facilitate flows through the proposed development.</p> <p>Given the size, function, potential habitat for Threatened or Endangered species and proximity to the North Canal, the SWD2-2 community in the southern portion of the property meets the criteria to be considered a KNHF or KHF (per the Greenbelt Plan and LSPP). This feature extends north from the adjacent North Canal. This feature was staked and surveyed with the LSRCA. In accordance with the Greenbelt Plan and the LSPP this feature has been provided a 30 m VPZ.</p>	<p>agency approvals)</p>
<b>County and Town Official Plans (2023 &amp; 2021)</b>		
	<p>Natural features within the Greenbelt have been staked in the field and will be maintained with a buffer. These features are in the southern portion of the subject lands and restoration and enhancement are proposed to protect ecological functions. Planting plans will be prepared at the detailed design stage.</p> <p>Outside of the Greenbelt Plan area there are several small, isolated cultural plantations and woodlands units on the subject property. None of these wooded communities meet the minimum size criterion to be considered significant by the planning authorities. Additionally, there are no PSWs on or adjacent to the subject property and none of the wetlands that are identified for removal are 2 ha or larger in size.</p>	<p>Yes (Subject to Municipal, TRCA and provincial and federal agency approvals)</p>
<b>Lake Simcoe Region Conservation Authority (LSRCA) Polices and Regulations (2023)</b>		
<p><b>Ontario Regulation 179/06 (Regulation for Development, Interference with Wetlands and Alterations to Shorelines and Watercourses)</b></p>	<p>The proposed development is within the regulated area of the LSRCA due to the presence of wetlands and intermittent drainage features, and, as such, a permit will be required for any grading, site alteration or development.</p> <p>Intermittent drainage features will be channelized and maintained at surface; wetlands greater than 0.5 ha will be maintained and provided with appropriate buffers to ensure no impacts on flood attenuation.</p>	<p>Pending the provision of a permit under <i>Ontario Regulation 179/06</i> from LSRCA.</p>

## 9. Summary

Beacon has conducted a background review and field investigations to prepare this Environmental Impact Study for the proposed re-development of the subject property. The proposed plan has been developed to achieve conformity with applicable natural heritage policies as set out in the PPS, LSPP, Town of Bradford- West Gwillimbury Official Plan and LSRCA policies.

The subject property is primarily composed of the Bradford Highlands Golf Club. It is approximately 60 ha (147 acres) in area, with frontage onto Brownlee Drive and Sixth Line. Much of the property consisted of manicured vegetation associated with a golf course. The subject property has been subject to a range of seasonally appropriate field investigations. The proposed development has been designed to occur primarily on the former golf course lands to minimize impacts to the natural environment.

In accordance with the applicable policy documents the southern wetlands and intermittent drainage features meet the criteria to be considered KNHF/KHF. These features have been protected and provided with appropriate buffers within the Greenbelt lands. Outside of the Greenbelt, potential impacts to features have been identified and mitigation and restoration measures have been recommended to enhance the natural heritage system and its ecological function. Recommended mitigation measures include natural feature protection through buffering, fish and wildlife rescue, LID techniques, seasonal timing windows, and erosion and sediment controls during construction.

Further studies will be required as the project moves forward including a detailed stormwater management plan including outfall details, a water balance and restoration and planting plans.

The LSRCA regulates the wetlands, shorelines, waterbodies, and adjacent lands on the subject property as they relate to flood attenuation and natural hazards. Therefore, the proposed development or site alteration of the subject property will need a permit pursuant to Ontario Regulation 179/06 under the *Conservation Authorities Act*.

Report prepared by:  
**Beacon Environmental**



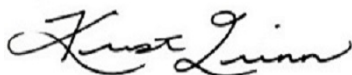
Devon Fowler, B.Sc., Dipl. Eco. Restoration  
Aquatic Ecologist

Report prepared by:  
**Beacon Environmental**



Chana Steinberg, B.Sc. (Hons.)  
Ecologist

Report reviewed by:  
**Beacon Environmental**



Kristi Quinn, B.E.S., Cert. Env. Assessment  
Principal, Senior Environmental Planner

Report reviewed by:  
**Beacon Environmental**



Carolyn Glass, B.Sc., MES  
Senior Ecologist



## 10. References

- Beacon Environmental Limited. 2023.  
Arborist Report. Bradford Highlands Golf Club, 23 Brownlee Drive, Town of Bradford West Gwillimbury. October 2023.
- Chapman, L.J. and Putnam, D.F. 2007.  
Physiography of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 228 ISBN 978-1-4249-5158-1
- County of Simcoe. 2023.  
County of Simcoe Official Plan. Office Consolidation February 2023.
- Fisheries and Oceans Canada. 2019.  
Fish and Fish Habitat Protection Policy Statement.
- Government of Canada. 1985.  
*Fisheries Act*. R.S., c. F-14, s.1.
- Hoffman, D. W., N. R. Richards and R.E. Wicklund. 1962.  
Soil Surveys of Simcoe County. Canada Department of Agricultural (Ottawa) and Ontario Agricultural College (Guelph).
- J. Ross Raymond & Associates Ltd. and Planscape. 2021.  
Official Plan of the Town of Bradford West Gwillimbury.
- KSGS Engineering Corporation. 2023.  
Stormwater Management Report – Bradford Highland Residential Subdivision, Town of Bradford West Gwillimbury.
- Lake Simcoe Region Conservation Authority. 2010.  
West Holland River Subwatershed Management Plan.
- Lake Simcoe Region Conservation Authority. 2023.  
Lake Simcoe Region Conservation Authority: of Ontario Regulations 179/06 Implementation Guidelines – Development, Interference with Wetlands and Alteration to Shorelines and Watercourses Regulation.
- Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998.  
Ecological Land Classification for Southern Ontario: First Approximation and Its Application. Ontario Ministry of Natural Resources. SCSS Field Guide FG-02. 225 pp.
- Malone Given Parsons. 2023.  
Draft Plan of Subdivision, Part of Block 36, Plan 51M-221 and Part of Lot 13, Concession 5 (Geographic Township of West Gwillimbury), Town of Bradford-West Gwillimbury, County of Simcoe.

Ministry of Municipal Affairs and Housing. 2017.  
Greenbelt Plan.

Ministry of Municipal Affairs and Housing. 2020.  
Provincial Policy Statement.

Ministry of Natural Resources. 2010.  
Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement (Second Edition).

Ministry of Natural Resources. 2015a.  
Technical Definitions and Criteria for Identifying Key Natural Heritage Features and Key Hydrologic Features for the Lake Simcoe Protection Plan. Toronto: Queen's Printer for Ontario. 31 pp.

Ministry of Natural Resources. 2015b.  
Significant wildlife habitat ecoregional criteria schedules: Ecoregion 7E. Toronto: Queen's Printer for Ontario. 41 pp.

Ministry of the Environment. 2009.  
Lake Simcoe Protection Plan, 2009. Toronto: Queen's Printer for Ontario. 95 pp.

Province of Ontario. 2007.  
*Endangered Species Act* (S.O. 2007).

Toronto and Region Conservation Authority and Credit Valley Conservation (TRCA/CVC). 2014.  
*Evaluation, Classification and Management of Headwater Drainage Features Guidelines*  
Approved July 2013 (Finalized January 2014).

WSP Canada Inc. 2023.  
Water Balance Report – Bradford Highlands Golf Course Redevelopment.

WSP Canada Inc. 2023.  
Preliminary Hydrogeological Assessment – Proposed Residential Subdivision, Bradford Highlands Golf Course, 23 Brownlee Drive, Bradford Ontario.

# Appendix A

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## LSRCA Correspondence



*E-mailed to: kquinn@beaconenviro.com*

June 12, 2017

File # : Pre-con  
IMS #: PCPC3C1

Ms. Kristi Quinn, BES  
Senior Planning Ecologist  
Beacon Environmental  
144 Main St. North, Suite 206  
Markham, ON L3P 5T3

Dear Ms. Quinn:

Re: Natural Heritage Feature Identification  
Proposed Re-Development  
Bradford Highlands Joint Venture  
23 Brownlee Drive  
Block 36, Registered Plan 51-221  
Town of Bradford West Gwillimbury, County of Simcoe

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Further to our email dated October 4, 2016, we understand that your client is preparing to proceed with an application related to the re-development of these lands. As such, based on current information, the following direction should be followed in the evaluation of the key natural heritage features found on this site:

1. We acknowledge that in the past the northern 3 tributaries that outlet into the adjacent plan of subdivision (S-10-01 Bradford Capital) were identified as ephemeral and as such we agree that the upstream parts of these features, on the subject lands, would also be considered ephemeral and not meet the definition of a key natural heritage feature in the Lake Simcoe Protection Plan.
2. As observed during our site meeting on September 12, 2016, the drainage features mentioned in comment #1 do convey water across the subject lands and are associated with wetland features. As such, conveyance of this water should be maintained in a similar manner as it is today and the role these features have in the function of the associated wetlands must be addressed to determine the appropriate protection and enhancement required.
3. All other natural heritage and hydrologic features on this site should be identified and addressed using the current technical guidelines associated with the appropriate Provincial Plans and other applicable policies.

Please note that new versions of the Greenbelt Plan and Growth Plan will be in effect as of July 1, 2017 and applicable policies therein should be addressed as part of any Planning Act applications.

June 12, 2017  
File # : Pre-con  
IMS #: PCPC3C1  
Ms. Kristi Quinn

If you have any questions related to these comments, do not hesitate to contact our office. For future correspondence please reference the above file numbers.

Sincerely,



Lisa-Beth Bulford, M.Sc.  
Development Planner

LBB/ph

- c. Ryan Windle, Town of Bradford West Gwillimbury (email only)  
Charles Burgess, Manager of Planning, LSRCA  
Taylor Knapp, Development Planner, LSRCA  
Kate Lillie, Natural Heritage Ecologist, LSRCA

# Appendix B

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## Photographic Record

# Appendix B

## Photographic Record



**Photograph 1.**  
HDF-D (2) Representative view of Feature Looking Downstream from First Golf Course Path Crossing East of Brownlee Drive (April 4, 2022).



**Photograph 2.**  
HDF-D (2) Representative view of Feature Looking Downstream from First Golf Course Path Crossing East of Brownlee Drive (May 10, 2022).



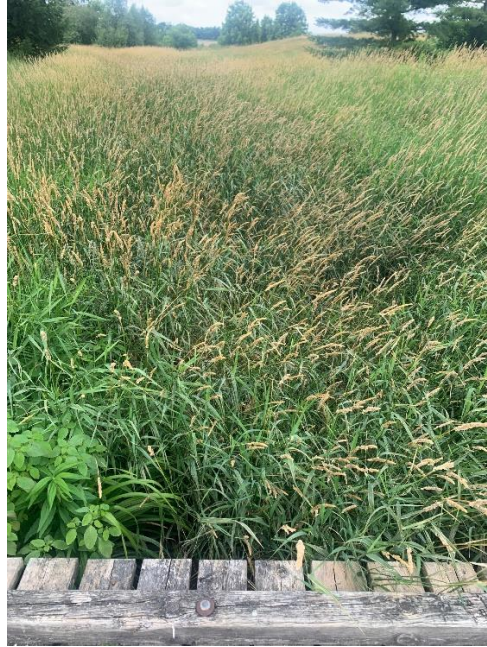
**Photograph 3.**  
HDF-D (2) Representative view of Feature Looking Downstream from First Golf Course Path Crossing East of Brownlee Drive (June 12, 2022).



**Photograph 4.**  
HDF-E Representative view of the Feature Looking Upstream from Center Golf Course Path Crossing (April 4, 2022).



**Photograph 5.**  
HDF-E Representative View of the Feature Looking  
Upstream from Center Golf Course Path Crossing  
(May 10, 2022).



**Photograph 6.**  
HDF-E Representative View of the Feature Looking  
Upstream from Center Golf Course Path Crossing  
(June 12, 2022).



# Appendix C

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## Vascular Plant List

## Appendix C

### Vascular Plant List

Scientific Name	Common Name	COSEWIC	SARO	SRank	Simcoe County (Riley, 1989)	Lake Simcoe (State of Watershed, 2003)	Nat Status
<i>Acer campestre</i>	Hedge Maple			SE1			I
<i>Acer negundo</i>	Manitoba Maple			S5			N
<i>Acer platanoides</i>	Norway Maple			SE5			I
<i>Acer saccharinum</i>	Silver Maple			S5			N
<i>Acer saccharum</i>	Sugar Maple			S5			N
<i>Acer x freemanii</i>	Freeman's Maple			SNA			N
<i>Aegopodium podagraria</i>	Goutweed			SE5			I
<i>Aesculus hippocastanum</i>	Horse Chestnut			SE2			I
<i>Alliaria petiolata</i>	Garlic Mustard			SE5			I
<i>Ambrosia artemisiifolia</i>	Common Ragweed			S5			N
<i>Amelanchier laevis</i>	Smooth Serviceberry			S5			N
<i>Arctium lappa</i>	Great Burdock			SE5			I
<i>Arctium minus</i>	Common Burdock			SE5			I
<i>Asclepias syriaca</i>	Common Milkweed			S5			N
<i>Betula papyrifera</i>	Paper Birch			S5			N
<i>Betula pendula</i>	Weeping Birch			SE4			I
<i>Bromus inermis</i>	Smooth Brome			SE5			I
<i>Carex bebbii</i>	Bebb's Sedge			S5			N

Scientific Name	Common Name	COSEWIC	SARO	SRank	Simcoe County (Riley, 1989)	Lake Simcoe (State of Watershed, 2003)	Nat Status
<i>Carex stipata</i>	Awl-fruited Sedge			S5			N
<i>Carex vulpinoidea</i>	Fox Sedge			S5			N
<i>Carya cordiformis</i>	Bitternut Hickory			S5			N
<i>Catalpa speciosa</i>	Northern Catalpa			SE1			I
<i>Circaea canadensis</i>	Broad-leaved Enchanter's Nightshade			S5			N
<i>Cirsium arvense</i>	Canada Thistle			SE5			I
<i>Cirsium vulgare</i>	Bull Thistle			SE5			I
<i>Cornus alternifolia</i>	Alternate-leaved Dogwood			S5			N
<i>Cornus sericea</i>	Red-osier Dogwood			S5			N
<i>Cotinus coggygria</i>	European Smoketree			SE1			I
<i>Crataegus</i> spp.	Hawthorn spp.						N
<i>Dactylis glomerata</i>	Orchard Grass			SE5			I
<i>Daucus carota</i>	Wild Carrot			SE5			I
<i>Digitaria sanguinalis</i>	Hairy Crabgrass			SE5			I
<i>Dipsacus fullonum</i>	Common Teasel			SE5			I
<i>Echinocystis lobata</i>	Wild Cucumber			S5			N
<i>Equisetum arvense</i>	Field Horsetail			S5			N
<i>Euonymus europaeus</i>	European Euonymus			SE2			I
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod			S5			N
<i>Eutrochium maculatum</i>	Spotted Joe Pye Weed			S5			N
<i>Fragaria virginiana</i>	Wild Strawberry			S5			N
<i>Fraxinus americana</i>	White Ash			S4			N

Scientific Name	Common Name	COSEWIC	SARO	SRank	Simcoe County (Riley, 1989)	Lake Simcoe (State of Watershed, 2003)	Nat Status
<i>Fraxinus pennsylvanica</i>	Red Ash			S4			N
<i>Geranium robertianum</i>	Herb-Robert			S5			N
<i>Geum aleppicum</i>	Yellow Avens			S5			N
<i>Geum urbanum</i>	Wood Avens			SE3			I
<i>Glechoma hederacea</i>	Ground-ivy			SE5			I
<i>Gleditsia triacanthos</i>	Honey Locust			S2?			N
<i>Hemerocallis fulva</i>	Orange Daylily			SE5			I
<i>Hosta ventricosa</i>	Hosta						
<i>Hydrophyllum virginianum</i>	Virginia Waterleaf			S5			N
<i>Hypericum perforatum</i>	Common St. John's-wort			SE5			I
<i>Hypopitys monotropa</i>	Pinesap			S4			N
<i>Impatiens balsamina</i>	Garden Balsam						
<i>Impatiens capensis</i>	Spotted Jewelweed			S5			N
<i>Inula helenium</i>	Elecampane			SE5			I
<i>Juglans nigra</i>	Black Walnut			S4?	R1 (Nat)	R	N
<i>Juniperus virginiana</i>	Eastern Red Cedar			S5			N
<i>Larix decidua</i>	European Larch			SE2			I
<i>Leersia oryzoides</i>	Rice Cutgrass			S5			N
<i>Lemna minor</i>	Small Duckweed			S5?			N
<i>Lolium perenne</i>	Perennial Ryegrass			SE4			I
<i>Lythrum salicaria</i>	Purple Loosestrife			SE5			I
<i>Malus baccata</i>	Siberian Crabapple			SE1			I
<i>Malus pumila</i>	Common Apple			SE4			I

Scientific Name	Common Name	COSEWIC	SARO	SRank	Simcoe County (Riley, 1989)	Lake Simcoe (State of Watershed, 2003)	Nat Status
<i>Melilotus albus</i>	White Sweet-clover			SE5			I
<i>Mentha x piperita</i>	Spearmint			SNA			I
<i>Morus alba</i>	White Mulberry			SE5			I
<i>Nasturtium officinale</i>	Watercress			SE			I
<i>Oxalis stricta</i>	Upright Yellow Wood-sorrel			S5	R5		N
<i>Parthenocissus quinquefolia</i>	Virginia Creeper			S4?	R1		N
<i>Parthenocissus vitacea</i>	Thicket Creeper			S5			N
<i>Phalaris arundinacea</i>	Reed Canarygrass			S5			N
<i>Phleum pratense</i>	Common Timothy			SE5			I
<i>Picea abies</i>	Norway Spruce			SE3			I
<i>Picea glauca</i>	White Spruce			S5			N
<i>Picea mariana</i>	Black Spruce			S5			N
<i>Picea pungens</i>	Colorado Blue Spruce			SE1			I
<i>Pinus nigra</i>	Austrian Pine			SE3			I
<i>Pinus strobus</i>	Eastern White Pine			S5			N
<i>Pinus sylvestris</i>	Scots Pine			SE5			I
<i>Plantago lanceolata</i>	English Plantain			SE5			I
<i>Plantago major</i>	Common Plantain			SE5			I
<i>Poa pratensis</i>	Kentucky Bluegrass			S5			N
<i>Populus balsamifera</i>	Balsam Poplar			S5			N
<i>Populus deltoides</i>	Eastern Cottonwood			S5			N
<i>Populus tremuloides</i>	Trembling Aspen			S5			N
<i>Prunus virginiana</i>	Chokecherry			S5			N
<i>Pyrus communis</i>	Common Pear			SE4			I

Scientific Name	Common Name	COSEWIC	SARO	SRank	Simcoe County (Riley, 1989)	Lake Simcoe (State of Watershed, 2003)	Nat Status
<i>Quercus alba</i>	White Oak			S5		R	N
<i>Quercus robur</i>	English Oak			SE1			I
<i>Quercus rubra</i>	Northern Red Oak			S5			N
<i>Ranunculus acris</i>	Common Buttercup			SE5			I
<i>Rhamnus cathartica</i>	European Buckthorn			SE5			I
<i>Rhus typhina</i>	Staghorn Sumac			S5			N
<i>Ribes americanum</i>	American Black Currant			S5			N
<i>Robinia pseudoacacia</i>	Black Locust			SE5			I
<i>Rubus idaeus</i>	Red Raspberry			S5			N
<i>Rudbeckia hirta</i>	Black-eyed Susan			S5			N
<i>Rumex crispus</i>	Curled Dock			SE5			I
<i>Salix alba</i>	White Willow			SE4			I
<i>Salix bebbiana</i>	Bebb's Willow			S5			N
<i>Salix eriocephala</i>	Cottony Willow			S5			N
<i>Salix euxina</i>	Crack Willow			SE			I
<i>Salix x sepulcralis</i>	Weeping Willow			SNA			I
<i>Sinapis arvensis</i>	Corn Mustard			SE5			I
<i>Solanum dulcamara</i>	Bittersweet Nightshade			SE5			I
<i>Solidago altissima</i>	Tall Goldenrod			S5			N
<i>Solidago canadensis</i>	Canada Goldenrod			S5			N
<i>Solidago gigantea</i>	Giant Goldenrod			S5			N
<i>Sonchus arvensis</i>	Field Sow-thistle			SE5			I
<i>Sorbus aucuparia</i>	European Mountain-ash			SE4			I

Scientific Name	Common Name	COSEWIC	SARO	SRank	Simcoe County (Riley, 1989)	Lake Simcoe (State of Watershed, 2003)	Nat Status
<i>Spiraea alba</i>	White Meadowsweet			S5			N
<i>Symphyotrichum lanceolatum</i> ssp. <i>Lanceolatum</i>	Eastern Panicked Aster			S5			N
<i>Symphyotrichum lateriflorum</i>	Calico Aster			S5			N
<i>Symphyotrichum novae-angliae</i>	New England Aster			S5			N
<i>Symphyotrichum puniceum</i>	Purple-stemmed Aster			S5			N
<i>Taraxacum officinale</i>	Common Dandelion			SE5			I
<i>Thuja occidentalis</i>	Eastern White Cedar			S5			N
<i>Tilia americana</i>	Basswood			S5			N
<i>Tilia cordata</i>	Little-leaved Linden			SE1			I
<i>Trifolium pratense</i>	Red Clover			SE5			I
<i>Tussilago farfara</i>	Coltsfoot			SE5			I
<i>Typha angustifolia</i>	Narrow-leaved Cattail			SE5			I
<i>Typha latifolia</i>	Broad-leaved Cattail			S5			N
<i>Ulmus americana</i>	American Elm			S5			N
<i>Verbena hastata</i>	Blue Vervain			S5			N
<i>Vicia cracca</i>	Tufted Vetch			SE5			I
<i>Viola sororia</i>	Woolly Blue Violet			S5			N
<i>Vitis riparia</i>	Riverbank Grape			S5			N

**Provincial S-Rank**

S1: Critically Imperiled—Critically imperiled because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation.

*S2: Imperiled - Imperiled because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation.*

*S3: Vulnerable - Vulnerable due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.*

*S4: Apparently Secure—Uncommon but not rare; some cause for long-term concern due to declines or other factors.*

*S5: Secure—Common, widespread, and abundant.*

*SNA: Not Applicable —A conservation status rank is not applicable because the species is not a suitable target for conservation activities (usually refers to non-native species).*

*SU, Unrankable—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.*

**TRCA RANK (i.e., level of conservation concern in TRCA region)**

*L5: Able to withstand high levels of disturbance; generally secure throughout the jurisdiction, including the urban matrix.*

*L4: Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix.*

*L3: Able to withstand minor disturbance; generally secure in natural matrix; considered to be of regional concern.*

*L2: Unable to withstand disturbance; some criteria are very limiting factors; generally, occur in high-quality natural areas, in natural matrix; probably rare in the TRCA jurisdiction; of concern regionally.*

*L1: Unable to withstand disturbance; many criteria are limiting factors; generally, occur in high-quality natural areas in natural matrix; almost certainly rare in the TRCA jurisdiction; of concern regionally.*

**COSEWIC (Committee on the Status of Endangered Wildlife in Canada)**

*Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario).*



# Appendix D

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## Breeding Bird List

## Appendix D

### Breeding Bird List

Common Name	Scientific Name	Status				# Breeding Pairs/ Territories
		National Species at Risk COSEWICa	Species at Risk in Ontario Listing a	Provincial breeding season SRANK <sup>b</sup>	Area-sensitive (OMNR)c	
Canada Goose	<i>Branta canadensis</i>			S5		F
Mallard	<i>Anas platyrhynchos</i>			S5		1
Turkey Vulture	<i>Cathartes aura</i>			S5		F
Merlin	<i>Falco columbarius</i>			S5		1
Killdeer	<i>Charadrius vociferus</i>			S5		F
Ring-billed Gull	<i>Larus delawarensis</i>			S5		F
Mourning Dove	<i>Zenaida macroura</i>			S5		6
Downy Woodpecker	<i>Dryobates pubescens</i>			S5		2
Northern Flicker	<i>Colaptes auratus</i>			S4		1
Eastern Wood-Pewee	<i>Contopus virens</i>	SC	SC	S4		1
Willow Flycatcher	<i>Empidonax traillii</i>			S5		3
Eastern Phoebe	<i>Sayornis phoebe</i>			S5		1
Great Crested Flycatcher	<i>Myiarchus crinitus</i>			S4		1
Eastern Kingbird	<i>Tyrannus tyrannus</i>			S4		3
Tree Swallow	<i>Tachycineta bicolor</i>			S4		F
American Crow	<i>Corvus brachyrhynchos</i>			S5		2
Black-capped Chickadee	<i>Poecile atricapillus</i>			S5		4
Red-breasted Nuthatch	<i>Sitta canadensis</i>			S5	A	1
White-breasted Nuthatch	<i>Sitta carolinensis</i>			S5	A	1
House Wren	<i>Troglodytes aedon</i>			S5		2
American Robin	<i>Turdus migratorius</i>			S5		13
Gray Catbird	<i>Dumetella carolinensis</i>			S4		2
Cedar Waxwing	<i>Bombycilla cedrorum</i>			S5		5
European Starling	<i>Sturnus vulgaris</i>			SE		3
Red-eyed Vireo	<i>Vireo olivaceus</i>			S5		3
Yellow Warbler	<i>Setophaga petechia</i>			S5		4

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	Area-sensitive (OMNR)c	
American Redstart	<i>Setophaga ruticilla</i>			S5	A	4
Northern Cardinal	<i>Cardinalis cardinalis</i>			S5		5
Chipping Sparrow	<i>Spizella passerina</i>			S5		5
Savannah Sparrow	<i>Passerculus sandwichensis</i>			S4	A	1
Song Sparrow	<i>Melospiza melodia</i>			S5		22
Red-winged Blackbird	<i>Agelaius phoeniceus</i>			S4		17
Common Grackle	<i>Quiscalus quiscula</i>			S5		4
Brown-headed Cowbird	<i>Molothrus ater</i>			S4		2
Baltimore Oriole	<i>Icterus galbula</i>			S4		2
House Finch	<i>Haemorhous mexicanus</i>			SNA		1
American Goldfinch	<i>Spinus tristis</i>			S5		8
House Sparrow	<i>Passer domesticus</i>			SNA		1

Field Work Conducted On: June 1, 8, 39, 2022.

Legend:

a - COSEWIC = Committee on the Status of Endangered Wildlife in Canada. END = Endangered, THR = Threatened, SC = Special Concern.

b - 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.

c- SRANK (from Natural Heritage Information Centre) for breeding status if: S1 (Critically Imperilled), S2 (Imperilled), 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).

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

F – species observed flying or foraging over the subject property

# Appendix E

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## Significant Wildlife Habitat Assessment

# Appendix E

## Significant Wildlife Habitat Assessment

Significant Wildlife Habitat Type	Habitat Description	Habitat Assessment
<b>Seasonal Concentration Areas of Animals</b>		
Waterfowl Stopover and Staging Areas (Terrestrial)	Cultural meadows and thickets that flood annually in the spring (mid-March to May). Agricultural fields with waste grains that are used by waterfowl are not considered Significant Wildlife Habitat.	<b>No</b> Suitable habitat is not present on the subject property.
Waterfowl Stopover and Staging Areas (Aquatic)	Ponds, marshes, lakes, bays, costal inlets, and watercourses that are used as stopover areas during migration. These habitats typically have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water).	<b>No</b> Suitable habitat is not present on the subject property.
Shorebird Migratory Stopover Area	Shorelines of lakes, river, and wetlands, including beach areas, bare and seasonally flooded, muddy and un-vegetation shoreline habitats.	<b>No</b> Suitable habitat is not present on the subject property.
Raptor Winter Area	A combination of fields and woodlands that provide roosting, foraging and resting habitat for wintering raptors. These sites need to be larger than 20 ha in size, of which at least 15 ha needs to be comprised of idle/fallow or lightly grazed field/meadow.	<b>No</b> Suitable habitat is not present on the subject property.
Bat Hibernacula	Hibernacula may be found in caves, mine shafts, underground foundations, and karsts.	<b>No</b> Suitable habitat is not present on the subject property.
Bat Maternity Colonies	Maternity colonies can be found in tree cavities, vegetation, and buildings. Deciduous and mixed forest communities with greater than 10 ha of large diameter (> 25 cm dbh) wildlife trees.	<b>Potential</b> Suitable habitat is present on the subject property.
Turtle Wintering Areas	Over-wintering sites for turtles are typically in the same area as their core habitat. Waterbodies must be deep enough to not freeze and have soft mud substrates.	<b>Potential</b> Suitable habitat for these species was identified within the Environmental Protection Area.
Reptile Hibernaculum	Reptiles hibernate in sites located below frost lines in burrows, rock crevices and other natural locations. Rock piles, slopes, stones fences and crumbling foundations can also be used by hibernating snakes. Areas of broken and fissures rocks can also provide access to sites below the frost line.	<b>No</b> Suitable habitat is not present on the subject property.
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)	Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permited aggregate area.	No

Significant Wildlife Habitat Type	Habitat Description	Habitat Assessment
		Suitable habitat is not present on the subject property.
Colonially - Nesting Bird Breeding Habitat Breeding Habitat (Tree/Shrubs)	Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used.	<b>No</b> Suitable habitat is not present on the subject property.
Colonially - Nesting Bird Breeding Habitat (Ground)	Nesting colonies of gulls and terns occur on rocky islands or peninsulas within a lake or larger river.	<b>No</b> Suitable habitat is not present on the subject property.
Migratory Butterfly Stopover Areas	Cultural meadow, savannah and thicket communities that are within 5 km of Lake Ontario, at least 10 ha in size and contain a combination of field and forest habitat.	<b>No</b> Suitable habitat is not present on the subject property.
Landbird Migratory Stopover Areas	Woodlands that are at least 10 ha in size and within 5 km of Lake Ontario.	<b>No</b> Suitable habitat is not present on the subject property.
Deer Yarding Areas	Deer yarding areas or winter concentration within a mixed or coniferous forest and swamp communities.	<b>No</b> Suitable habitat is not present on the subject property.
Deer Winter Congregation Areas	Deer movement in winter months within eco-region 6E are not constrained by snow depth, however they still congregate in suitable woodlands. These woodlands will typically be larger than 100 ha in size, however woodlands smaller than 100 ha may be considered significant based on MNR assessments.	<b>No</b> Suitable habitat is not present on the subject property.
<b>Rare Vegetation Communities</b>		
Cliffs and Talus Slops	A cliff is a vertical to near vertical bedrock that is greater than 3 m in height. A talus slope is rock rubble at the base of a cliff made up of coarse rocky debris.	<b>No</b> Suitable habitat is not present on the subject property.
Sand Barren	Sand barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little to no soil and the underlying rock protrudes through the surface. Usually located within other types of natural habitat such as forest or savannah.	<b>No</b> Suitable habitat is not present on the subject property.
Alvar	Alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil.	<b>No</b> Suitable habitat is not present on the subject property.
Old Growth Forest	Old growth forests are characterized by heavy mortality or turnover of over story trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris. Stands must be 30 ha or greater in size with a minimum of 10 ha of interior habitat (interior habitat determined with a 100 m buffer).	<b>No</b> Suitable habitat is not present on the subject property.

Significant Wildlife Habitat Type	Habitat Description	Habitat Assessment
Savannah	Savannah is a tallgrass prairie habitat that has tree cover between 20 - 60%.	<b>No</b> Suitable habitat is not present on the subject property.
Tallgrass Prairie	Tallgrass Prairie has ground cover that is dominated by prairie grasses. An open tallgrass prairie has less than 25% tree cover.	<b>No</b> Suitable habitat is not present on the subject property.
Other Rare Vegetation Communities	Rare vegetation communities may include beaches, fens, forests, marsh, barrens, dunes, and swamps, as identified in Appendix M of the Significant Wildlife Habitat Technical Guide.	<b>No</b> Suitable habitat is not present on the subject property.
<b>Specialized Habitat for Wildlife</b>		
Waterfowl Nesting Area	Waterfowl nesting areas are upland areas adjacent to marsh, shallow aquatic, and swamp habitat. To be considered significant these features must extend 120 m from of a wetland to deter predators.	<b>No</b> Suitable habitat is not present on the subject property.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Nests for these species are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands or on structures over water. Osprey nests are usually at the top of a tree, while Bald Eagle nets are typically in super canopy trees.	<b>No</b> Suitable habitat is not present on the subject property.
Woodland Raptor Nesting Habitat	Woodland raptor habitat can be found in all natural or conifer plantation woodland/forest stands that are greater than 30 ha in size with more than 10 ha of interior forest habitat (interior habitat determined with a 200 m buffer).	<b>No</b> Suitable habitat is not present on the subject property.
Turtle Nesting Areas	Ideal nesting habitat for turtles are close to water and away from roads and sites that are less prone to loss of eggs by predation. These areas are often associated with exposed mineral soil (sand or gravel) areas within 100 m of a marsh, shallow aquatic, bog, or fen habitat.	<b>Potential</b> Suitable habitat is present on the subject property.
Seeps and Springs	Seeps/springs are areas where ground water comes to the surface. Often, they are found within headwater areas within forested habitats.	<b>No</b> Refer to the Preliminary Hydrogeological Assessment (2023) as provided by WSP. The assessment indicates that recharging groundwater conditions occur at nearly all monitored locations, and throughout the year.
Amphibian Breeding Habitat (Woodland)	This type of habitat is associated with the presence of a wetland, lake or pond that is within or adjacent (within 120m) of a woodland. Woodlands with permanent ponds or those contain water until mid-July are more likely to be used as breeding habitat.	<b>No</b> Suitable habitat is not present on the subject property.
Amphibian Breeding Habitat (Wetlands)	Wetlands and pools that are greater than 500 m <sup>2</sup> and are isolated from woodlands (greater than 120 m).	<b>No</b> Suitable habitat is not present

Significant Wildlife Habitat Type	Habitat Description	Habitat Assessment
		on the subject property. Insufficient amphibian populations to be considered significant.
Woodland Area-Sensitive Bird Breeding Habitat	Habitats where interior forest breeding birds are breeding. These forests are typically larger mature forest stands or woodlands that are greater than 30 ha in size (interior habitat determined with a 200 m buffer).	<b>No</b> Suitable habitat is not present on the subject property.
<b>Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)</b>		
Marsh Bird Breeding Habitat	This type of habitat occurs in wetlands with shallow water and emergent aquatic vegetation present.	<b>No</b> Suitable habitat is not present on the subject property.
Open Country Bird Breeding Habitat	This type of habitat occurs in larger grassland areas (including natural and cultural fields and meadows) that are greater than 30 ha in size. Grasslands that are being actively used for farming (i.e., row cropping, intensive hay, livestock pasturing in the last 5 years) typically do not provide ideal habitat for open country bird species.	<b>No</b> Suitable habitat is not present on the subject property.
Shrub/Early Successional Bird Breeding Habitat	This type of habitat occurs in large field areas succeeding to shrub and thicket habitats that are greater than 10 ha in size.	<b>No</b> Suitable habitat is not present on the subject property.
Terrestrial Crayfish	Wetlands and pools that are greater than 500 m <sup>2</sup> and are isolated from woodlands (greater than 120 m).	<b>Potential</b> Suitable habitat for this species was identified on the subject property.
Special Concern and Rare Wildlife Species	This type of habitat occurs wherever special concern and provincially rare (S1, S2, S3 and SH) plant and animal species occur.	<b>Potential</b> Suitable habitat for these species was identified within the Environmental Protection Area.
<b>Animal Movement Corridors</b>		
Amphibian Movement Corridors	This habitat consists of movement corridors between breeding habitat and summer habitat. Corridors may be found in all ecosystems associated with water.	<b>No</b> Suitable habitat is not present on the subject property.
Deer Movement Corridors	This habitat consists of corridors in forested ecosites. Corridors typically follow riparian areas, woodlots, and areas of physical geography (ravines or ridges).	<b>No</b> Suitable habitat is not present on the subject property.



# Appendix F

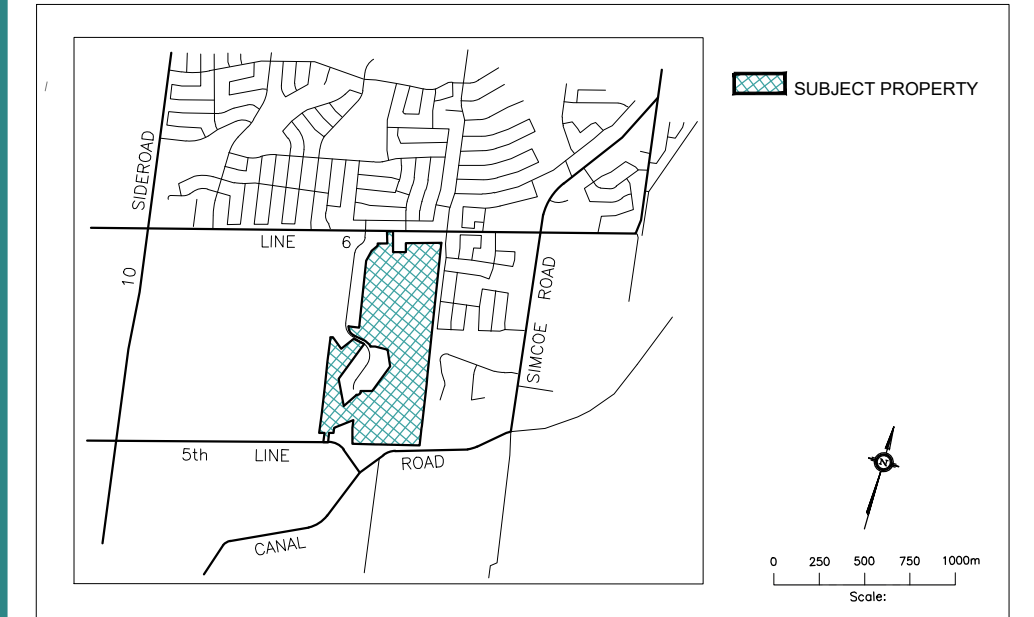
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## Draft Plan of Subdivision

# DRAFT PLAN OF SUBDIVISION

Part of Block 36, Plan 51M-221 and  
Part of Lot 13,  
Concession 5  
(Geographic Township of West Gwillimbury)  
Town of Bradford-West Gwillimbury  
County of Simcoe

## KEY PLAN



## SCHEDULE OF LAND USE

Lot/Block	Land Use	Units	Area (ha)
1-440	Single Detached min. 11.6m (38ft) Semi Detached min. 7.6m (25ft)	342	22.13
441-498	Street Townhouses min. 6.1m (20ft)	334	7.89
499-507	B2B Townhouses min. 6.4m (21ft)	126	1.35
508-509	Parks		3.06
510-511	Stormwater Management Ponds		4.76
512	Environmental Protection		5.38
513	Compensation		0.42
514	Pumping Station		0.06
515-521	Drainage Blocks		0.24
522-547	Future Development		1.11
Public Roads	Street 'A' 26.0m ROW 1,550m Streets 'B'-'C' 20.0m ROW 570m Streets 'D'-'N' 18.0m ROW 4,350m		13.60
<b>Total</b>		<b>998</b>	<b>60.00</b>

## OWNER'S AUTHORIZATION

We, Bradford Highlands Joint Venture, hereby authorize  
Malone Given Parsons Ltd. to prepare and submit this Draft Plan of  
Subdivision to the County of Simcoe.

Bradford Highlands Joint Venture \_\_\_\_\_ Date \_\_\_\_\_

## SURVEYOR'S CERTIFICATE

I hereby certify that the boundaries of the lands to be subdivided as shown on this Plan  
and their relationship to the adjacent lands are accurately and correctly shown.

\_\_\_\_\_  
Date \_\_\_\_\_

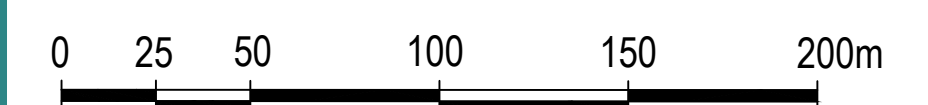
## ADDITIONAL INFORMATION

AS REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT, CHAPTER P.13  
(R.S.O. 1990).

- (a),(e),(f),(g),(j),(l) - As shown of the Draft Plan.
- (b),(c) - As shown on the Draft and Key Plan.
- (d) - Land to be used in accordance with the Schedule of Land Use.
- (i) - Soil is sands, silts, clay and tills.
- (h),(k) - Full municipal services to be provided.

NOTE: Contours relate to Canadian Geodetic Datum.  
Contour interval is 1m with 25m interpolated.

Scale: 1:2000



Date	Revision	By
02/11/20		GP
13/02/21		GP
24/11/21		GP
01/12/21		GP
16/12/21		GP
28/05/22		GP
29/08/23		GP

Prepared For:



MGP File: 15-2422

